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Faculty of Education, Bartın University, 74100 BARTIN – TURKEY
e-mail: buefad@bartin.edu.tr Tel: +90 378 223 54 59

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A Qualitative Study on the Impact of Covid-19 on Individuals with Autism Spectrum Disorder, Families' Coping Strategies and Beliefs about Online Education

Birgöl KOÇAK OKSEV^{a*}, Sedat YAZICI^b, Mahir UĞURLU^c, Tülay KAYA^d, Ayşenur NAZİK FAYIZ^e, Pınar ÇELEBİ DEMİRARSLAN^f

^{a*}Assoc. Prof. Dr., Bartın University (<http://orcid.org/0000-0002-6783-2843>) *brglkck@gmail.com

^bProf. Dr., Bartın University (<http://orcid.org/0000-0002-7393-0722>)

^cRes.Asst., Bartın University (<http://orcid.org/0000-0003-4005-4882>)

^dAssoc. Prof. Dr., İstanbul University (<http://orcid.org/0000-0002-1152-2811>)

^eLecturer, Bartın University (<http://orcid.org/0000-0002-8030-6071>)

^fLecturer, Bartın University (<http://orcid.org/0000-0002-0233-291X>)

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ABSTRACT

For a more in-depth understanding, we have conducted a qualitative study to understand the extent of the impact of the early stage of the pandemic on children with ASD. The findings in this study were obtained from two groups of participants. The first one included 92 parents or caregivers of children with ASD from six cities in Turkey. The participants in this group reported 159 negative behavior changes in 28 different behavior types. We also selected 32 parents, some of them from the first group, to investigate their coping strategies, use of online education, and expectations from institutions and organizations. Whereas most families report increased anxiety and stress, aggressive, obsessive and repetitive behavior, violence towards self and others, a significant number of families declared improvement in speech, social communication, academic skills, and eye contact. The participants also stated that online special education is dysfunctional and inefficient for some groups, depending on age and the severity of ASD.

Keywords: Pandemic, autism spectrum disorder, special education, online education.

Covid-19'un Otizm Spektrum Bozukluğu Olan Bireylere Etkisi, Ailelerin Başa Çıkma Stratejileri ile Çevrimiçi Eğitime İlişkin İnançları Üzerine Nitel Bir Araştırma

ÖZ

Bu çalışmada, pandeminin ilk döneminde OSB'li bireyler üzerindeki etkisini derinlemesine anlamak üzere nitel bir inceleme gerçekleştirilmiştir. Çalışmadaki bulgular iki grup katılımcıdan elde edilmiştir. İlki, Türkiye'deki altı ilden OSB'li çocukların anne-baba veya bakıcılarından oluşan 92 katılımcıyı içermektedir. Bu gruptaki katılımcılar çocuklarının 28 farklı davranış türünde 159 olumsuz davranış değişikliği gösterdiklerini bildirmişlerdir. Bazıları ilk gruptan olmak üzere, ikinci grupta yer alan 32 veliye daha derinlemesine görüşme sorularıyla bu süreçteki baş etme stratejileri, çevrimiçi eğitim kullanımları, kurum ve kuruluşlardan beklentileri incelenmiştir. Çoğu aile bu süreçte çocuklarının kaygı, stres, saldırganlık, takıntılı ve tekrarlayıcı davranışlar ile kendine ve başkalarına zarar verme davranışlarında olumsuz gelişme gösterdiklerini bildirirken, önemli sayıda katılımcı çocuklarının konuşma, sosyal iletişim, akademik beceri ve göz temasında olumlu yönde gelişme olduğunu beyan etmiştir. Katılımcılar ayrıca çocuklara yönelik çevrimiçi özel eğitimin yaş ve otizmden etkilenme düzeyine bağlı olarak bazı gruplarda işlevsiz ve verimsiz olduğunu belirtmişlerdir.

Anahtar kelimeler: Salgın, otizm spektrum bozukluğu, özel eğitim, çevrimiçi eğitim.

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1 | INTRODUCTION

The Covid-19 pandemic has affected every aspect of human life. Although numerous studies have been conducted to determine the effects of this period, more studies are needed to understand its short-term and long-term results. This effect has been even more widespread and profound in education. More importantly, because of the closure of schools and other education venues at all levels, the restriction of access to health and support services at home and out of the house, rehabilitation centers, and institutions related to special education, this process has resulted in more severe consequences for individuals with special needs. Research shows that children with autism spectrum disorder (ASD) and their families were more negatively affected than others (Alexander et al., 2020; Alyoubi & Ebtisam 2020; Factor et al., 2016; Courtenay & Perera, 2020; Rose et al., 2020; Van Steensel & Heeman, 2017). Students with ASD and their families in less well-off groups in terms of socio-economic opportunities have deeply felt this period (McCallion, 2020; Pelton et al., 2020; Pikulski et al., 2020).

Studies based on clinical findings and family observations show that children with ASD have experienced more intense behavioral problems, anxiety, eating and sleep problems, regressions in speech, and their gained skills, increase in stereotypes, aggressive behavior (Colizzi et al., 2020; Huang et al., 2021; Morris et al., 2021). However, there is also mixed evidence about the impact of Covid-19 on children with ASD. Some studies reported a negative and positive effect of the pandemic period (Lugo-Marín et al., 2021).

Most studies on individuals with ASD and their families during the pandemic were conducted via online data collection with short question-answers. For a more in-depth understanding, we have conducted a qualitative study with these questions: To what extent children with ASD were affected by this process? How did their families cope with the difficulties they have experienced? To what extent were they able to perform online education activities? To what extent have the socio-economic factors of families been effective in coping with this process? What are their expectations from institutions and organizations?

CONTEXT OF THE STUDY

This study was carried out after the first restriction of the Covid-19 period beginning March 16, 2020, in Turkey. The epidemic made it necessary to take measures that have affected entire social life globally. Soon after the first Covid-19 instance in Turkey, public and private schools were closed on March 16, 2020, and a week later, it continued with online education for students in formal education at all levels. All restaurants, cafes, gyms, shopping centers, parks, and gardens were closed, sports games postponed, curfews imposed on individuals over the age of 65 as of March 21, 2020, and under the age of 20 as of April 4, 2020. On April 11, an extended curfew was imposed in 31 provinces, which make up 79.88% of the total population.

These limitations have deprived individuals with ASD of outdoors, sports, and physical activities and limited their social communication opportunities, which are very important for their physical and mental health. Having been affected by this situation, families' complaints about coping with this process have come to the fore in public. The Ministry of Interior issued a circular on April 9, 2020, according to which individuals with ASD, Down Syndrome, severe mental retardation under the age of 20 could go out, walk-in parks and gardens, and travel by car within the borders of the same province, accompanied by their parents or caregivers. As the number of cases decreased, some restrictions gradually stretched from May 4, 2020.

There are no extensive autism statistics in Turkey. According to the Parliamentary Commission Report (2020), of the total 82 million population, there are approximately 1.5 million individuals with ASD, and the population affected by autism, including families, is about 4.5 million. In Turkey, children in need of special education, including autism, can receive instruction in separate special education schools, individual special education classes, or inclusive classes with other students. In addition, all special education students can attend special education and rehabilitation centers for three hours a week, paid for by the government. The monitoring, control, and supervision of the education processes of these institutions, most of which are operated by the private sector, are carried out by the Ministry of National Education.

During the first period of the pandemic, The Turkish Ministry of National Education has launched some training programs via public TV, supported materials such as booklets, and developed a mobile application called "Özelim Eğitimdeyim (I am Special and in Education." However, researchers have argued that these programs

were suitable for children with average development. They are ineffective for children with disability, and the families lack sufficient knowledge and skills to adopt for their children (Akbulut et al., 2020; Salman, 2020).

2 | METHOD

PARTICIPANTS

The findings in this study were obtained from two groups of participants. The first one included 92 parents or caregivers of children with ASD from six cities in Turkey. This group was asked to reply to one major open-ended and two or three follow-up questions regarding the impact of the Covid-19 on their children. The average age of individuals with ASD evaluated in this group is 9.4, the youngest is 1.5, and the oldest is 39 years old. Of these, 80 are men, and 12 are women. We also aimed at investigating parents' coping strategies and their expectations from the state or non-governmental organizations. To do this, we selected 32 participants for the second group, some of them from the first group, and 30 were mothers of the individual with ADS. The other two are the father and the uncle. Of the evaluated individuals with ASD, 24 were male, and eight were female. Besides demographic information questions, a semi-structured interview form comprising open-ended questions was used.

DATA COLLECTION

The research team obtained the data through face-to-face interviews and with the help of interviewers with a master's degree in two distant cities. Interviews were held in the parent waiting room during the children's education period. The answers were noted or audio recorded subject to their permission. The data were collected between 8 and 30 July 2020.

Purposive sampling with a maximum variation sampling method was used in the study. In purposive sampling, individuals and groups are selected among those who can respond most appropriately to the researcher's goals, depending on a particular criterion or feature. Maximum variation strategy for purposeful sampling aims at capturing and describing the central themes or principal outcomes that cut across a great deal of participant variation (Patton, 1990). In this context, the sample varies in terms of the city distribution, provincial and metropolitan, the ages of individuals with ASD, the severity of individuals with ASD (mild, medium, and severe), the participants' education levels, and household income.

DATA ANALYSIS

After transcribing the qualitative data obtained through audio recordings, all answers were read carefully by three research team members, and codes were independently chosen from the transcriptions. Later, the team completed the key themes and codes through discussions and a thorough evaluation process. In line with the themes and codes obtained, the frequency of the most common situations was determined, and the statements that typically reflected them were included in the study. Content analysis and descriptive-interpretative analysis were used in the analysis of the data.

RESEARCH QUESTIONS

The question posed to the first group of participants includes two general objectives: Understanding how the pandemic period has affected children with ASD and determining which behaviors of children with autism were most affected by this period. To this end, the participants were asked:

How did the pandemic period affect your child?

Have you observed any positive or negative changes in your child's behavior?

The 32 participants in the second group were asked questions about benefiting from online education, limiting activities, coping strategies of families, their emotional states, and expectations.

In this context, the following basic questions were asked:

What kind of problems have you experienced regarding your child's education during the pandemic period?

What problems did the restriction of social life and the closure of physical activity areas cause?

What did you do to cope with the problems you have experienced in this process?

What did you do about your child's education at home?

Did you receive support from teachers, professionals, organizations, or institutions during the process?

Were you aware of online activities with family participation? Did you use any of them?

How did you feel during this process? Can you describe your feelings?

In extraordinary times, such as the pandemic, what can be done to educate children with ASD? What are your expectations from government or non-governmental organizations for that?

RESEARCH ETHICS

The approval of the Bartın University Social and Behavioral Sciences Ethics Committee was obtained for ethical compliance with the research procedures. Verbal and written consent of the participants involved in the study regarding the evaluation of their children was obtained before the interviews.

3 | FINDINGS

FINDINGS ON THE BEHAVIORS OF CHILDREN WITH ASD

Findings obtained from qualitative questions were classified according to pre-specified codes. Although a few participants (N=8) reported that the pandemic did not affect their children, the vast majority (N=68) stated that their children were negatively affected. Another noteworthy finding from the qualitative data was the significant number of participants who reported positive effects of the pandemic on the development of their children. Table 1 includes positive and negative behavior changes reported by at least two or more participants.

Table 1. Frequency of positively and negatively affected behaviors

Negatively affected	Frequency	Negatively affected	Frequency
Generally negative	31	Fear and anxiety	3
Being bored and stressed	17	Forgetfulness/ forgetting what is learned	3
Being ratty, aggressive, angry	14	Regression in speech	3
Increase in obsessive and repetitive (stereotypical) behaviors	10	Increased shouting	3
Loss of friends and school community	9	Running away	2
Violence (towards objects, self, and others)	8	Weight gain	2
Stubbornness	6	Empty stare	2
Increased TV and tablet viewing	5	Impatience	2
Reduced social communication	5	Lethargy	2
Increased crying	5	Being insistent	2
Increased tantrums	4	Increased echolalia	2
Sadness, unhappiness	4	Fear of crowds	2
Disrupted eating pattern	3	Fear of the virus	2
Disrupted sleep pattern	3		
Positively affected	Frequency	Positively affected	Frequency
Generally positive	33	Improved academic skills	4
Improved speech	11	Increased eye contact	3
Improved social communication	10	Improved eating pattern	2
Calming down, reduced anger	7	Improvement in toilet training	2
Improved receptive language	4	Improved imitation skills	2

While the total number of negative behavior changes was 159, that of positive behaviors was 80. The negative effects mentioned only once were decreased eye contact, increased self-contracting, timidity, stopping to play with

toys, and decreased interest in books. The positive behavior changes reported only once included pointing at what they wanted and an improved sleep pattern.

The following section includes negative and positive effects related to the key themes. Even when the participants mentioned one key theme or code in the quotes, these statements were given no interpretation

Disruption in routines, stress, and anger

According to the participants, the most common negative effect of the pandemic was on children's emotional behaviors. Aggression, irritability, increased anger, boredom, stress, stubbornness, and unhappiness were the most frequently reported emotional effects:

“My child became more stressful, aggressive. He started spending more time on the phone. Echolalia increased. He does not listen to anyone other than his mother. He slept very late at night. He got up late in the mornings, his routine changed. His stress made me more stressed, too. I kept worrying whether he would improve or regress.” (P. 8)

“The behaviors that were eliminated earlier with the help of training came back. He gained 3 kilograms as he could not exercise. His tantrums increased. His sleep pattern became disturbed. He now sleeps only 3-4 hours at night and 1-2 hours daily. His obsessions have increased. Even though the house is ours and his mother is an educator, we have been experiencing these problems.” (P. 10)

“My daughter was attending the special education class of a kindergarten. We were benefiting from this. Her obsessions were gone. She was gaining skills she could not gain beforehand, but as the pandemic entered our lives, her obsessions reappeared, though not excessively. For example, before special education, my daughter used to “masturbate” (childhood masturbation), which was completely overcome. Unfortunately, it has now reappeared, though not excessively.” (P. 11)

“He became more aggressive, angry. These went away when special education started again.” (P. 23)

“His anger increased. Previously, going to the park helped calm him down. In these three months, there was much tension at home. He became aggressive.” (P. 3)

“As he’s always home, his stress level and anger increased.” (P. 36)

“His obsessions increased. He spun around himself and to spin objects. He started daydreaming more after he quit training.” (P. 9)

“My daughter was previously hurting herself. School had helped with this. But when they closed the school, my daughter got much worse. She hit her head a lot more.” (P. 18)

Linguistic and cognitive regression

In contrast to several families who stated that the close attention of family members had a positive effect on their children's language development, some others reported a clear decline in it:

“My child stopped speaking during this period. [Before the pandemic], she said many words, counted, and sang songs to herself even though she did not speak to others. There has been little change in our daily lives other than this. As we live in a village, we did not break from our immediate environment. We continued our usual activities with her aunt, cousins, and the neighborhood children she saw every day, anyway. The pandemic was a happy time, so I could not understand why she stopped talking. When education started again, her words came back.” (P. 81)

“His speech is disturbed. He used to utter good sentences before, but now his speaking has become disjointed. As he is describing a toy that he has at home, he suddenly switches to talking about a bird in the park.” (P. 54)

REGRESSION IN SOCIAL BEHAVIORS

An unfavorable outcome of staying at home has been disturbance by crowded and noisy environments and avoiding others:

“B. normally did not avoid sitting next to people in the park. When he went out for the first time after four months, he didn't want to go to the crowded parts of the park. When we forced him, he shouted at us, grabbed our hands, and led us out of the park.” (P. 18)

“There have been negative changes. He used to be a very calm child; he did not use to cry. Now he cries when he wants something. He doesn't like crowds and goes to sit in other rooms. Previously, even when I didn't hold his hand outside, he wouldn't run from me. He started doing so after the pandemic.” (P. 67)

“As he stayed away from other children, he experienced communication problems. He stopped playing games. He stopped playing with his toys. He became shy around strangers.” (P. 30)

“During the pandemic, his sensitivity to sounds increased. He never used to cover his ears. During the pandemic, hearing another child cry made him start crying too. Sometimes he even covered his ears upon hearing birdsong. Such behaviors decreased as he resumed education and became familiar with crowded environments again.” (P. 92)

REASONS FOR POSITIVE DEVELOPMENTS

Some participants claimed that parents being able to spend more time at home, playing more games with their children, spending quality time with them, and especially the increase in the time spent with the father due to restrictions led to positive developments in their children:

“There was a negative change during the first month because he wanted to go out as we normally used to do all the time. When he couldn't, he became angry and aggressive. After a month, he got used to staying at home. He calmed down. His eye contact improved as I had more opportunities to give him individual attention. His perceptions became more acute. He started to spend better time with his relatives and loved ones. He became a more normal kid. He was more unresponsive before the pandemic.” (P. 60)

“He spent more time with his father as they were both at home, so my son was pleased.... During our family time at home, he communicated better with us, his imitation skills improved.” (P. 7)

“His older sister was also at home; they drew together. We didn't waste our time. He read books with his father. We did everything together. Daily chores, making beds. We folded laundry together. We tried to include him in everything. His perception became better. His writing became faster, his reading and comprehension improved. It was good for him to spend more time at home.” (P. 84)

“He started saying single-syllable words. As he spent more time with his older brothers, he learned to play games. He liked eating more. His eye contact increased. He responded more to his name.” (P. 22)

Problems related to the restriction of outdoor activities

Most participants stated that restriction of outdoor activities caused a very challenging situation and increased the existing behavioral problems of their children:

“He was more into digital because he could never go out. His screen time increased. Tablet and computer time increased a lot, so when we took it away, he became more aggressive...we couldn't go too far, we released him.” (P. 4)

“Right now, the minute I take him outside, he goes crazy, the sound of cars, at the smallest sound. He goes crazy in crowded places or when he sees people.” (P. 27)

“Since the house was a bit crowded during the curfew, the child could sometimes derail when he was very calm. It was especially negatively impacted by the crowd.” (P. 21)

It seems that socioeconomic conditions and place of residence played a determinant role in the level of influence by the restrictions. Those who own a house with a garden, live in the complex or rural village are less affected by the restriction of outdoor activities: *“We were not affected, because we live in a house with a garden. This is how we live, even normal time. We don't go to other places. There is a pool, swing, etc. in the house.”* (P. 15)

"He played with animals in the village, visited the vineyard or garden, it was good for M. He'd probably go completely crazy if we stayed at home." (P. 26)

Coping strategies and parents' educational support for their children

The most obvious consequence of the pandemic was that parents had to assume the role of education. They tried to apply what they learned from their children's educators or various sources in their ways:

"I supplied home education. Education continued in the same way. I found intelligence-enhancing games. I learned figures from special education teachers. We carried out a behavior study in front of the mirror to keep him from forgetting behaviors. I involved him with beading, bead removing, collecting, woodworking... as directed by his teachers." (P. 2)

Most participants stated that the basic strategies during the pandemic were to keep their children busy with something, not leave them alone, and expose them to a constant stimulus. Household chores such as doing activities together at home, going to the kitchen and cooking, vacuuming the house together, hanging laundry were considered opportunities. Some parents stated that spending time together at home and involving the child in daily chores at home reduced behavioral problems:

"I have involved her in everything. For example, if I was vacuuming the house, he got dust." (P. 3), *"We laid the laundry together and loaded the machine together. We bought brain teasers. She likes to paint on pencil and paper. We played them."* (P. 10), *"I did many activities. He likes to play with water very much. Here I filled the basins with water; I built a ship... His father was always interested and played. We concentrated very much on the things he likes."* (P. 5), *"I tried different things. I turned on music; we changed venues. We changed channels. Water painting, salt work, hand printing, playing with the soil, carrying water in buckets, trying to distract him."* (P. 12)

Given the findings obtained in this study, variables such as the child's age and the level of being affected by autism, the mother's emotional state, education level, and domestic workload played an essential role in this process. Some mothers stated they could not cope with the problems, remained unresolved, and could not receive any support. For example, a mother who stated that she was "not conscious" said that she could not help her child: *"I usually tried to silence him because he cried a lot."* (P. 6) Regarding her 16-year-old child, whom she described as severely autistic, a mother said: *"There is no solution. He was shouting. There was a sedative I was giving it, and I was taking him for a walk. I couldn't do anything else. When I couldn't find a cure, sometimes I used to give medicine and put him to sleep."* (P. 18) said.

For some families, the process was quite challenging: *"Believe me, I tried so hard to get away from the phone, I brought my nephews home... Even though we tried to lock the door to block car sounds or something, it didn't work because he was most reactive to the road and cars. After that, we tried to paint, although we were not very good at it because he was always biting and eating the paint tips."* (P. 17)

Research shows that restrictions increased the responsibilities of families in the home education process and caused them to need professional support (Hyseni Duraku & Nagavci, 2020). During the pandemic, one of the most important issues forcing families is that education is on families' shelters (in most cases, mothers). Some participants could keep the child busy at home, develop a hobby, and gain educational attainment.

"We tried to work according to the curriculum. We painted as they [teachers] said, we played with play dough. We played with his toys, jumped together, played on the table, that things." (P. 4)

"She didn't like to read books. I mean, he didn't like to listen when I read a book. I cared for her a lot. She hated to sing out loud. We are over it. She's trying to accompany me....B. We had a teacher, I contacted him. I asked what I should do. He said that I wouldn't get bored too much... We cooked together... We spread the laundry together while laying the laundry... So both she and I tried to relax a little somewhere." (P. 5)

The following statements of the mother of 24-year-old D. reveal the importance of being an educated parent of a child with ASD in homeschooling:

“I made a checklist for D showing the points he is weak at. I wrote what I did on certain days on that checklist. I knew that D. was weak in painting, math and rhythm, and articulation problems. I worked in these areas every day. Again, we learned to crawl in this process. This is important. Our children are already in a panic. He developed in rhythm. When playing badminton, for example, the racket could not be synchronized. We have turned our hall into an area to play badminton. Each week we focused on an English song from youtube. Now he can recite it. In painting, perspective works. So we improved our weaknesses a lot.” (P. 31)

Some participants pointed to the importance of parent involvement in their children’s education process. The mother of a 34-year-old individual thinks that no child can learn to read, write, do the math, or anything in special education rehabilitation centers and that parental education is more critical: *“Children with autism have a quality memory. You have to process it. You have to do everything together, repeating together, playing together. These things happen with parents rather than an outside educator. This doesn’t happen in special education centers, so you can’t make any progress by doing something for one hour and two hours a week.” (P. 32)*

ONLINE FAMILY EDUCATION ACTIVITIES AND SUPPORT FROM OTHER ORGANIZATIONS

During the pandemic, live broadcasts were made through social media channels such as YouTube and Instagram for families with special needs who stayed at home and were deprived of professional support. In these live broadcasts, academics, psychologists, special education teachers shared much information to families on how to cope with their children’s problem behaviors to create new routines and activities that can be done. Parents also tried to develop a "solidarity network" by sharing their daily life and straightforward activity tools that can be done at home for their children through other social media channels such as Facebook and WhatsApp.

When asked, “Did you follow educational activities made by various institutions and individuals for families through online broadcasting (channels such as Instagram, YouTube) during the epidemic period?” Few participants gave a positive answer.

“Yes, we followed it intensely. Online programs were very busy. One was ending, the other was beginning. We had an intense process during these three months.” (P. 32)

Another mother, who answered positively, stated that she took part in the broadcasts of “academic mothers” who broadcast live on social media and shared videos, rather than experts in the field:

“I think it’s [useful]. For example, I was doing the activities that academic mothers did at home, with what I saw from them. They guided us during this time.” (P. 5)

All of the families interviewed in one of the major cities stated that they were “informed”, but only some of them followed:

“I was aware of the online educations. But I didn’t follow because they were on Instagram. I already know what they’re talking about. Nothing was new to me. Moreover, our child no longer needs basic education because of his age. We need more doctors and psychiatrists.” (P. 29)

“I was informed, but I did not follow. I was so integrated into my normal routine that there was no time left to watch other people’s live broadcasts and listen to do this or that etc. Because I was already very busy.” (P. 31)

Some parents said they had not heard of these activities for families and had no knowledge of the subject. Very few knowledgeable ones declared that they regularly follow a comprehensive training program. Table 2 includes frequencies about parents’ use of online education and support from other organizations.

Table 2. Participation in online family education activities and support from other organizations

Themes	Sub-code	Frequency
Professional support	Received from teachers	23
	Not received any support	9
Online family education activities (on Youtube, Instagram, etc.)	Not participated	27
	Participated	3
	Know but not participated	2

Apart from limited support of the school teacher or the teacher in the rehabilitation center over the phone or online talk, most parents interviewed stated that they did not receive institutional or organizational support during the pandemic, although they needed it:

“A WhatsApp group was created, material sets were thrown over that group, the reading sets, audio stories, museum trips, etc... were supported. They said that we were here if there were anything we could do. That was the only support we got.” (P. 2)

“His teacher was already meeting once a week as a class, and he was meeting. He was giving a class lesson during the time we were closed. He was doing lessons from Zoom again. Other than that, we did not receive any professional support.” (P. 3)

“We had support from his teacher in the rehabilitation center. He guided behavioral problems. He suggested that I be calmer. He suggested I use the tactic of ignoring.” (P. 9)

“I talked to his teacher in the rehabilitation center once, that's all.” (P. 11)

“We didn't talk to anyone other than talking to the sports coach on the phone.” (P. 14)

“The teacher here formed a group and threw us activities so that you can do this or that. His school teachers also supported him in the same way. They were interested enough. We always talked. We only got support from here and the public education school.” (P. 26)

BELIEFS ABOUT THE EFFECTIVENESS OF ONLINE EDUCATION

Using technology, online education, interactive access, active participation have created various problems for families of individuals with special education (Serafini et al., 2020). As a result, a significant part of individuals who received special education could not benefit from online education or did not get the desired benefit compared to face-to-face education. Some researchers have stated differences in the socio-economic status of families in terms of the use of online education in special education settings (Bozkurt et al., 2020; Cluver et al., 2020; Nicola et al., 2020). Our research findings show that the benefit of online education varies according to the levels of ASD range (mild, moderate, severe), the age of the child, the family's education, and the income level. In addition, regional differences make the quality of online education relative. The absence of qualified teachers, specialists, and educational institutions in rural provinces exposes families to situations such as "not knowing what to do, not being able to find someone to support." This situation was observed in families' statements in provinces such as Van, Konya, and Bartın.

The mother of 34-year-old A also stated that online education support was beneficial:

“It wasn't that he couldn't get an education, but on the contrary, he was affected by the state of being too much educated... It is a very intense education process. It was almost more and more intense training than at the rehabilitation center. ... I will continue for at least another six months, as long as I can afford it. If I run out after that, I quit. Because it is based on material things... In other words, we have been very positively affected by this process.” (P. 32)

It is striking that older autistic individuals benefited much more from online education.

The mother of 39-year-old E. stated that the pandemic process was very productive:

“We had a great time during the pandemic. He followed the programs offered online with the cooperation of İZEV and Tomurcuk. He admitted no one could go anywhere because he saw his friends in online classes, whom he already knew from the center. I was very pleased with these special programs during this period. These programs filled his life, and he didn't keep it for us to go out.” (P. 30)

Other parents stated that the restriction period did not have any positive or negative effect on their children. A mother:

“The pandemic like everyone else affected us. Nevertheless, not enough to change my child's behavior. We live in a condominium. I took my child out to the park every day. He rode his bicycle. He met his friends by keeping

their social online. My child's disability rate is 40% anyway. He behaves normally. We were not extremely negatively affected.” (P. 49)

Table 3: Use and evaluation of online education

Themes	Sub-code	Frequency
Use of online education	Used	6
	Not used	26
Evaluation of online education	Not helpful/efficient/suitable	10
	Helpful	3

On the other hand, opinions were also voiced on the ineffectiveness and limitations of online education:

“I don't think online education is useful for my child. He is already addicted to the phone. Using it for education as well makes him even more addicted. If there is ever a similar process again, I would like my child to receive one-to-one education at home.” (P. 43)

A mother of a 9-year-old child with severe autism stated that online education did not work at all:

“EBA didn't work. We couldn't get an education, it didn't interest him. We downloaded some things [special education apps] on the phone, but it did nothing. What he received from individual training, what he learned was disappeared. He was learning to hold a pencil, he doesn't want to hold a pencil right now. A program was sent to us from the school that we can't it at home. He does everything with his teacher, but not with us.” (P. 14)

We found differences according to some variables in the effect of online education and the benefit of families. A mother replied whether online learning was helpful for her 5-year-old daughter with mild autism:

“So it's better than nothing, of course... At least it wasn't empty, it would have been worse if it was empty. Z. shows more signs of autism when we quit education.” (P. 3)

When educational institutions are closed, it is possible to see results such as students losing their interaction with the school. Some families devalued the importance of their children's education from the school. Some parent statements also make the view that education is worthless or dysfunctional. One participant said that since their child has already received education since early years, he was not affected much by not receiving education in this process. Another said, *“It does not matter whether he gets an education or not.” (P. 12)*

Interestingly, another participant not receiving education and leaving the child whatever he wants is better: *“I can't say it impressed him. We were interested, but not too much. He was relieved. Tablet-TV, cycling in front of the door, gave him much relief.” (P. 20)*

The mother of 24-year-old D. considers special education “useless” even though her daughter has been receiving special education since she was three and a half years old:

“She wasn't affected at all; on the contrary, she had a better time with me. Every day we did activities such as cooking, dancing, studying math, music, and English. Even when we went to the village, we continued our activities. I taught arithmetic with stones one by one. Now she can easily add numbers. In this process, we did not receive online education.” (P. 31)

We observed that most parents consider this situation a part of the disruption of their routine, since they cannot fully measure the effect of not receiving education. The answers to the problems arising from not going out and the lack of socialization environments are mainly similar to the answers about education. We can say that families see “going” to special education as part of the routine that keeps the child and themselves busy.

PARENTS' EMOTIONAL STATES

In normal times, families of children with special do already face many problems in the education process of their children. Studies show that the unknown and uncertainties experienced in this process increase the anxiety levels of their families (McConnell & Savage, 2015). Many researchers have observed this finding during the pandemic (Asbury et al., 2021; Colizzi et al., 2020; Fiorillo & Gorwood, 2020). Considering the statements of the interviewed mothers, it can be said that they felt inadequate, tired, and exhausted and in this process:

“Well, frankly, I can't say that I felt excellent as a mother in this situation because my anxiety is getting worse. When we are in the special education center outside, I feel more comfortable because I think he's learning. We're more comfortable when he is in education and as a family. Because he's learning, the learning process continues... In this process, of course, I was a worried mother too...” (P. 3)

We have observed that the mood of the family, especially the mother, has affected the children. *“Especially the shouting increased a lot. It was necessary to ignore them, but I couldn't do much to ignore them.. we were in a constant fight. Then he slowly calmed down... When I calmed myself down, he calmed down too because he was very impressed with me.” (P. 24)*

In most societies, women are given the role of caring for children, sick and older people, cleaning the house, and cooking. Although women spend long hours on these regular but unpaid jobs, their labor is ignored. Studies show that women's housework load has increased during the pandemic period and that various types of domestic violence became widespread (Başterzi & Yılıgör, 2013; Kalaylıoğlu, 2020). Some statements of the participants support this finding:

“I felt tired, exhausted, helpless. We were at a dead-end. quarrel, Quarrels with my wife multiplied. We didn't know what to do.” (P. 9)

“I had trouble, I fell asleep, I suffer from panic attacks, I take medication. I had a nervous breakdown.” (P. 12)

This burden was even more remarkable for the mother with over one child: *“I'm exhausted. The trouble of four children, two of them children with special educated. I'm completely exhausted.” (P. 8)* Most mothers see their children's school hours as a "breathe time" for themselves at the same time. Because during the time of school closure women were in totally locked in the house and could not spare time for themselves given because of their traditional responsibilities such as education and care, this situation adversely has affected their psychological state:

“Of course you are bored, you have to find something for that child all the a time. If our child were normal , she/he would manage himself somehow, but you have to take care of the autistic child.” (P. 23)

“It was bad not being able to go anywhere, staying at home. Normally, I am not a person who goes out much, but I was bringing my children to school, my daughter was going to kindergarten, my son was in the first grade, I was bringing them, I was going to the tying course myself, I could not go out for this, I could not take it at home in any way, for example, this affected me a lot.” (P. 24)

The fear of being infected with the Covid-19 virus has also been one of the most worrying situations in this process. The mothers of children with different disabilities besides autism are more concerned about the risk of infection. *“I was terrified that the virus would come because God bless, N. should not get sick. He cannot go to the hospital, he cannot use every drug. I was most afraid for him.” (P. 25)* Frequencies about parents' emotional states during the pandemic are shown in Table 3.

Table 4. Parents' positive and negative emotional states during the pandemic

Themes	Sub-code	Frequency
Positive Emotions	Good	8
	Happy	2
Negative Emotions	Bad	8
	Fear and Anxiety	6
	Exhausted	4
	Stressful irritable	4
	Sad	2
	Hopeless	2
	Insufficient	1

What has mostly affected families psychologically is that the burden of education fell on families, especially mothers, who did not get expected results. This situation caused mothers to feel more inadequate. *“Clearly, I felt*

very inadequate, and when it wasn't the same as before, I felt a lack in myself. No matter how much I did, he never reacted to me.” (P. 27)

Some mothers have stated that being at home together with all family members has made them psychologically good. *“His father was also at home... In that way, family ties became stronger, and we spent more time with each other.” (P. 3)*

Others, on the contrary, stated that being together has negative effects: *“In other words, staying at home with the whole family together causes friction after a while, and everyone became aggressive. Frankly, we're overwhelmed.” (P. 4)*

EXPECTATIONS AND DISAPPOINTMENTS

Like everyone else, the pandemic caught families with children with special needs unprepared to close home with their children. Our finding is that the younger mothers had difficulties managing the process and did not know. In general, schools providing special education were uninterested in families and children's education. One participant explained this situation by saying, *“Government institutions could have provided guidance. But they didn't. We were alone.” (P. 11)* Another mother similarly expressed her expectation: *“I would expect more education and daycare centers. I would like the children to be followed at home... I would like the government to show more interest.” (P. 14)*

Based on the interviews, families have received limited support from the schools, such as the individual efforts of the teachers by making a few phone calls, creating a group on social media, and sharing an event video. Those families who did not know how to overcome the process increased their anxiety levels and fatigue.

The expectations of the families comprise requests such as being called by their schools during weekly class hours, doing one-to-one online interviews with the family and the child, showing the methods they can apply in the lessons to the families with video, the teacher visiting the home and giving education at home, and providing psychological support to the families. In general, the perceived judgment is that online special education for children is dysfunctional and inefficient, and these children cannot learn from the screen. They believe that more family participation education would be better and more effective.

“At least they could come and visit. They could call on the phone and give directions about their lessons. The doctors who follow our kid from hospitals could call and tell us what to do, for example, in a tantrum. The Ministry of National Education could send materials that these children would love. We couldn't go and get it because everywhere was closed.” (P. 9)

Interestingly, some interviewees had no expectations from the institutions and were unaware of what could be done. Most parents said they have no plans for what to do in a possible re-closure period in the future.

Besides expectations related to the pandemic period, the participants also expressed other general expectations from schools and education institutions related to special education. The most striking of these is to increase the weekly hours of special education courses paid by the government. Some participants also pointed out the necessity of in-service special education for classroom teachers:

“The classroom teachers in the schools are very uneducated, very incompetent; there are those who say that they have encountered these children for the first time... Attending the seminars should be compulsory... You see all kinds of teacher negativity, but you have to take it from the bottom, making you exhausted. At least during the pandemic, our teacher could show more interest and say, how are you, are you okay, what are you doing, other than just calling once or twice.” (P. 2)

4 | DISCUSSION & CONCLUSION

Just like others, the pandemic has let individuals with ASD stay at home and to significant educational losses. Our results show that online education during this period was not helpful. First, online education seems to be dysfunctional because of the very nature of special education. Teaching techniques should be arranged according to one-to-one education. Whereas adult autistic individuals could adapt more quickly to online education and benefit from it, early years children have gained minimal benefit.

The most intense problem experienced by individuals with ASD in this process is behavioral problems that arise due to the change in their usual routine. Whereas positive developments (language skills, toilet training, etc.) were observed in some aspects, behavioral problems that challenged families increased. For some families, the father's being at home and taking care of the child has led to positive developments.

Most families saw education as significantly related to their routine rather than being deprived of education in this period. Their statements about the impact of the pandemic were interwoven and failed to identify the importance of education independently. Few participants evaluated the deprivation of direct education regarding their child's academic success and behavioral development. This perception may be because of common judgment about the ineffectiveness of special education in Turkey. Indeed, some families complained about the ineffectiveness of special education in general and demanded more weekly hours paid by the government. during the pandemic

On the other hand, some families have experienced deep concern about their children, an alarming uncertainty about what to do because they cannot receive qualified and professional support. We found evidence that this concern varies according to the family's location, the parents' knowledge about autism, their education level, financial conditions, the child's age, and the level affected by autism. Families who could identify their child's needs well managed this process. While highly educated and wealthy mothers living in big cities were aware of it, mothers with low socioeconomic levels in rural provinces said they had never heard of it. It was observed that he was not aware of these activities.

Our findings are consonant with research evidence that access to educational activities for children with ASD and their consistency depends on socio-cultural, economic, and individual factors (Barry et al., 2020; Dawson et al., 2010; Khateeb et al., 2019), and that parental beliefs and attitudes are likely to affect their education. This study also provides evidence of such an effect in extraordinary circumstances, such as a pandemic.

Spending time together with their children at home has also been an opportunity for some families to get to know them. As a mother has said: "During the pandemic period, I observed my child more. I had more time to care. Eye contact increased because I was so interested. I taught him to count to ten when he was interested one-on-one." (P. 6) Very similar evidence was obtained by Cahapay (2020) on Filipino parents with children with ASD during the pandemic. Given their experience during the pandemic, the participants declared a precise determination and will to take a more active and more extended role in their children's education.

Both in the ordinary course of life and extraordinary conditions, such as a pandemic, the function of special education would remain limited unless it spreads to all areas of the life of the individual with special needs. In Turkey, making education for families an essential part of the special education system and ensuring that families actively participate in the education process of individuals with autism are of strategic importance. Online education during extraordinary conditions is not the only cure, but it can be used actively. Educators and program developers should research reliable and valid online education models for individuals with special needs.

STATEMENTS OF PUBLICATION ETHICS

Ethical permission of the research was approved by Bartın University Social and Human Sciences Ethics Committee.

RESEARCHERS' CONTRIBUTION RATE

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Discussion & Conclusion
Birgöl Koçak Oksev	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sedat Yazıcı	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mahir Uğurlu	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tülay Kaya	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ayşenur Nazik Fayız	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pınar Çelebi Demirarslan	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CONFLICT OF INTEREST

We confirm that there are no conflicts of interest associated with this research.

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A Survey Study for The Comparison of Meta-Analysis Softwares

Mehmet Taha ESER^{a*}, Gökhan AKSU^b

a* Assist. Prof. Dr., Aydın Adnan Menderes University, Aydın/Turkey, (0000-0003-2563-6112) *m.taha.eser@adu.edu.tr

b* Assoc. Prof. Dr., Aydın Adnan Menderes University, Aydın/Turkey, (0000-0001-7031-1953)

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ABSTRACT

In recent years, meta-analysis studies have become a popular field of study in order to quantitatively analyze the results obtained from more than one study carried out independently from the same subject and to interpret the results from a holistic perspective. Because of this reason, different licensed and open source software has been developed in the last 20 years. With this study, it is aimed This study aims to compare the existing programs and software in terms of meta-analysis in terms of quantitative and qualitative aspects. For this purpose, the results obtained from Jamovi, CMA, RStudio and Meta-Essentials programs were compared within the determined criterias. As a result of filtering the 1906 studies obtained from databases in accordance with the flow diagram, the number of studies to be included in the meta-analysis was determined to be 32. As a result of the study, it was found that forest plots obtained from different programs do not differ according to the program used. In addition, the open source and free of R, Jamovi and Meta-Essentials programs have been determined as the superiority of the programs compared to CMA. According to the findings, Jamovi has much more test for heterogeneity compared to the other softwares. At the same time, the number of model prediction options is much higher for Jamovi compared to Meta-Essentials and CMA. While the other software does not provide any information regarding model fit index and information criterion, Jamovi offers a rich output in this regard. It can be said that these features make Jamovi advantageous over other software.

Keywords: Meta-analysis, RStudio, Jamovi.

Meta-Analiz Yazılımlarının Karşılaştırılmasına İlişkin Bir Tarama Çalışması

ÖZ

Son yıllarda, aynı konuya ilişkin bireysel çalışmaları nicel olarak analiz etmek ve sonuçları bütüncül bir perspektiften yorumlamak için meta-analiz çalışmaları popüler bir çalışma alanı haline gelmiştir. Bu nedenle, son 20 yılda farklı lisanslı ve açık kaynaklı yazılımlar geliştirilmiştir. Bu çalışma ile mevcut programların ve yazılımların meta-analiz açısından nicel ve nitel açıdan karşılaştırılması amaçlanmıştır. Bu amaçla Jamovi, CMA, RStudio ve Meta-Essentials programlarından elde edilen sonuçlar belirlenen kriterleri temel alarak karşılaştırılmıştır. Veri tabanlarından elde edilen 1906 çalışmanın akış diyagramına göre filtelenmesi sonucunda meta-analize dahil edilecek çalışma sayısı 32 olarak belirlenmiştir. Çalışma sonucunda farklı programlardan elde edilen orman grafikleri kullanılan programlar bazında göre farklılık göstermemiştir. Özellikle de R programının CMA karşısında bütüncül anlamda değerlendirildiğinde daha gelişmiş özelliklere sahip olduğu sonucuna ulaşılmıştır. Bulgulara göre, diğer yazılımlarla karşılaştırıldığında Jamovi kapsamında çok fazla heterojenlik testi yapılabildiği; model tahmin seçeneklerinin sayısının Jamovi için Meta-Essentials ve CMA'ya göre çok daha yüksek olduğu; diğer yazılımlar model uyum indeksleri hakkında herhangi bir bilgi sağlamazken Jamovi'nin bu konuda zengin bir çıktı sunduğu sonucuna ulaşılmıştır.

Anahtar kelimeler: Meta-analysis, RStudio, Jamovi.

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1 | INTRODUCTION

Meta-analysis, which is sometimes characterized as “scientific chaos” in the scientific world, is a subject on which very heated discussions are held (Eysenck, 1994; Hunt, 1997; Bax et al., 2007). Meta-analysis is defined as a quantitative method used to combine information through interrelated but independent studies (Normand, 1995; Hedges and Olkin 1985). Meta-analysis methodology is old enough to be based on Birge (1932) and Pearson (1904) (Normand, 1995). The significance of meta-analysis as a quantitative part of the systematic review, lies in the formal and reproducible analysis of the heterogeneity on the effect sizes of the small-size studies and other data indices (Bax et al., 2007). Meta-analysis is used in the context of many different applications today, from the process of combining knowledge in the field of astronomy to the synthesis of research results in social sciences.

Conducting a meta-analysis study requires combining information and summarizing evidence through the studies independent in terms of process. If there are numerous studies on a hypothesis established by a researcher, the researcher can achieve a clearer and single result by approaching these studies methodologically. This is one of the reasons that strengthen meta-analysis (Egger et al., 1997: 1998). Trying to determine the statistical significance of the differences between two groups from a single study is not reliable enough. Type I and Type II errors are the types of errors that every researcher want to avoid at all costs and meta-analysis attempts to overcome such a situation (Fagard et al., 1996). Generalization of the results obtained by a meta-analysis study means that the variations of different groups are included in the analysis process by including different populations. This makes more sense than the generalization made with a single study (Borenstein et al., 2009; Harrer et al., 2022). At the same time, the review process on the topic performed by meta-analysis and the holistic evaluation of the researches provide a statistically reliable approach and thus the results are quite far from subjective judgments (Lipsey & David, 2001; Pigott, 2012; Eser & Yurtçu, 2020).

Besides the strong points of meta-analysis, criticisms targeting meta-analysis are related to the reliability of meta-analysis studies, behind which the concept of “bias” lies. According to Egger, Davey Smith (1997), publication bias, database bias, citation bias, multiple publication bias, bias related to data collection, and bias related to setting criteria pose a threat for meta-analysis studies.

Similar to the researches studies in which non-meta-analysis methods are used, there are three basic steps in meta-analysis: (1) creating the research question; (2) collecting and analyzing the data; and (3) reporting of the research results (Egger et al., 1997; Lipsey & David, 2001). There are some important steps to ensure that the measurement results of a meta-analysis study are valid and reliable. According to Egger, Smith and Phillips (1997) these steps are: (1) setting the criteria of the data to be collected; (2) defining a strategy for determining the studies to be included in the research; (3) establishing a standard form for data collection; (4) standardizing the statistics to compare the studies included in the research; (5) combining data to calculate overall impact.

There is no single software that is best for everyone. The most appropriate software for a researcher depends on the researcher's request. Today, computer softwares related to meta-analysis are very important. It should be noted that in the last 15 years important softwares used in meta-analysis were produced. Among them, the most remarkable ones are of course free softwares and free tools. Free software philosophy is based on producing and sharing. Free software is the type of software that gives the user the freedom to operate, copy, distribute, review, change and develop the program. Although being free of charge it is perceived as the biggest factor in choosing a software, the characteristics of analytical models and graphs, validity or comparability of results, ease of use and usability are as important as being free of charge (Fagard et al., 1996; Eser et al., 2020).

Departing from the free software philosophy, which is based on producing and sharing, it was aimed in the study to compare two different free softwares, a free tool and a commercial software used for meta-analysis, which is one of today's popular research topics, from different aspects. The research is thought to contribute to reducing the tendency of using non-free meta-analysis software in publications involving meta-analysis, especially in the national literature. This study also aims to raise awareness about the availability of various free softwares and tools for meta-analysis. Although the main purpose of the study is the comparison of the softwares, some criteria have been taken into consideration in the selection of the publications to be included to ensure the originality of the data sets and the interpretability of the study in a theoretical sense, such as the study should be in English, the sample

size should not be less than 30, and the paper should be published after 2010. The problem statement was expressed as “How does the year of study affect the effect of foreign language anxiety on foreign language achievement?”.

2 | METHOD

In this section, the validity and reliability of the research type, software selection process, data collection process and coding process are discussed.

RESEARCH DESIGN

In this study, the analyzes analyses were performed on a real data using 4 different meta-analysis softwares and these softwares were compared in terms of general features and analysis results. In this regard, the study is a basic research which is aimed to add new information to existing information (Karasar, 2015). The research is thought to have the characteristics of a screening survey research, as it reveals and describes a situation that exists. Screening Survey research aims to describe the characteristics related to individuals or situations as they exist (Fraenkel & Wallen, 2009). The type of analysis performed in the study was correlation-based meta-analysis. In this sense, the effect size of the analyzed studies was based on Pearson Correlation.

SOFTWARE SELECTION PROCESS

Within the scope of the study, Jamovi 1.1.9.0, R-3.6.2, Meta-Essentials 1.5 and CMA 3 softwares were compared. Criteria for the selection of software were set as popularity, being free software, and having/not having a drop-down menu. Jamovi (2018) is a new, free software based on R programming language and the analysis are based on popular R packages and performed via drop-down menus; R (1993) is an old, free and popular software; Meta-Essentials (2015) is a new and free tool; CMA (2000), on the other hand, is a popular and relatively older commercial software where the analysis are performed via drop-down menus. The 10-day free version of the CMA software was used to perform the analysis (Schmidt & Huy, 2005).

DATA COLLECTION PROCEDURE

In order to reach more publications related to the purpose of the study, international publications were accepted as the data source of the study. In this context, publications in the Web of Science and Google Scholar database have been scanned, using the following keywords: ‘Foreign language anxiety’, ‘Foreign language anxiety academic achievement’, ‘Foreign language anxiety academic performance’, ‘Foreign language classroom anxiety’, ‘Second language anxiety’, ‘Second language anxiety academic achievement’, ‘Second language anxiety academic performance’. The criteria determined for the publications were: Publications in which Pearson Correlation was reported (to minimize the amount of error without any need of transformation); publications made in 2010 and after (to ensure the up-to-dateness of the data); studies written in English (to form a database of international studies); publications in which the sample size was reported and having non-small sample size ($n > 30$). 32 studies were included in the research as a result of the screening conducted according to these criteria. The start date of the screening process is 10.11.2019; the end date is 22.12.2019. The flowchart followed for the data collection process is shown in Figure 1.

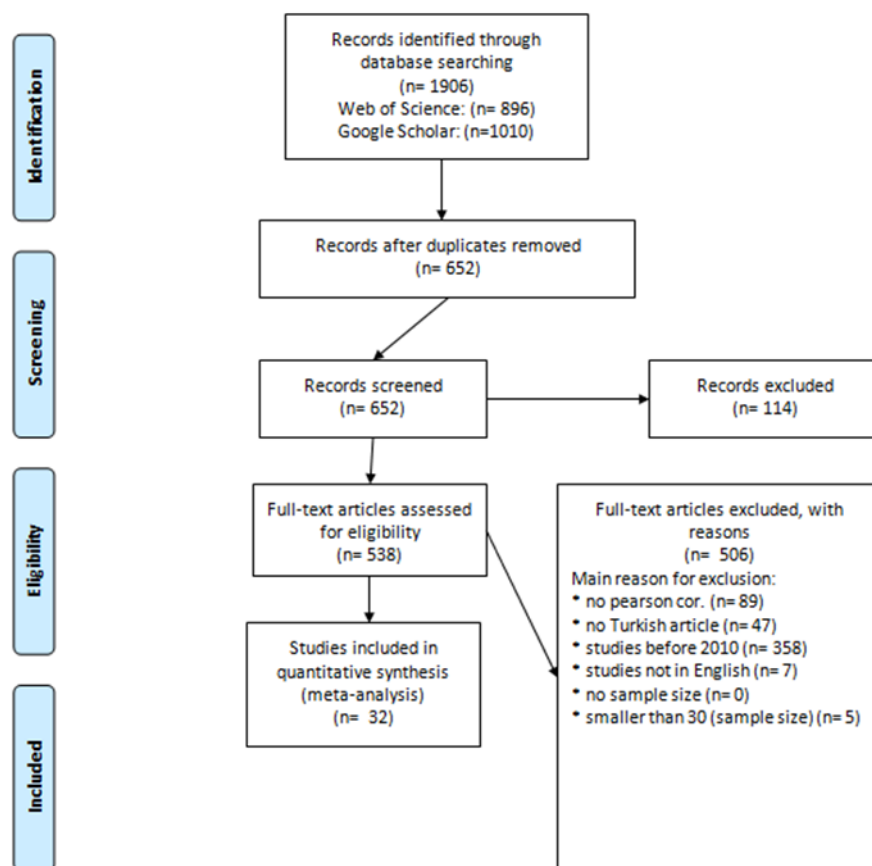


Figure 1. Flowchart of Data Collection

In the international literature, it is recommended to use the flow diagram suggested in the PRISMA Statement for systematic review and meta-analysis studies (The PRISMA Group, 2009). The purpose of the PRISMA Statement is to help researchers in improving the presentation and reporting of systematic review and meta-analysis studies. The flowchart of the data collection process is illustrated in Figure 1. The studies included in the meta-analysis are shown in Table 1, as included in the coding form.

Table 1. List of the Studies Included in the Meta-Analysis

Author	N	Effect size	Year
Ujjwal Kumar Halder1	266	-.327	2018
Ujjwal Kumar Halder2	139	-.242	2018
Ujjwal Kumar Halder3	127	-.351	2018
Mahfouz Abdelsattar Abuelfadl	450	.321	2015
Farhad Ghorban Dordinejad and Roghayeh Moradian Ahmadabad	400	-.472	2014
Riffat-un-Nisa Awan et al.	149	-.273	2010
Farhor Ghorban Dordinejad and Amir Hosein Farjad Nasab	631	-.357	2013
Mostofa Amiri and Behzad Ghonsooly	258	-.348	2016
Masoomah Salehi and Fahimeh Marefat	200	-0.22	2014
Christopher C. Anyadubalu	318	-.283	2010
Ying Zheng	830	-.450	2010
Yi-Ting Jocelyn Lan	212	-.570	2010
Wang Yao and Li Jingna	92	-.346	2011
Eleina Hewitt and Jean Stephenson	40	-.490	2012
Magdalena Szyszka	48	-.540	2011
Zhongshe Lu and Meilhua Liu	934	-.317	2011
Naser Atasheneh and Ahmad Izadi	60	-.469	2012
Samaneh Serraj and Noreen bt. Noordin1	210	-.214	2013

Samaneh Serraj and Noreen bt. Noordin ²	210	-.414	2013
Mona Mohammadi Golchi	63	-.630	2012
Yasser Teimouri et al.	19933	-.360	2019
Rosa Meleno Corchero ¹	35	-.285	2017
Rosa Meleno Corchero ²	103	-.376	2017
Rosa Meleno Corchero ³	43	-.142	2017
Berhane Gerencheal ¹	50	.039	2016
Berhane Gerencheal ²	28	-.490	2016
Meihua Liu and Liu Xiangming ¹	324	-.375	2019
Meihua Liu and Liu Xiangming ²	324	-.244	2019
Meihua Liu and Liu Xiangming ³	324	-.136	2019
Meihua Liu and Liu Xiangming ⁴	324	-.155	2019
Meihua Liu and Liu Xiangming ⁵	324	-.317	2019
Ya-Chin Tsai and Yi-Chih Li	302	-.325	2012

* If there is more than one effect size in the same study in terms of Pearson correlation, these different effect sizes are indicated by adding numbers to the author names.

* In the meta-analysis, year variable was coded as 1 (for 2010-2014) or 2 (for 2015-2019) and used as intermediary variable.

Table 1 contains information about the sample size, effect size and study year of the studies examined within the scope of the meta-analysis study.

VALIDITY AND RELIABILITY OF THE CODING PROCESS

The coding form created by the researchers was used in the coding process. The coding forms used in the previous meta-analysis studies were reviewed while creating the coding form (Rudy, 2001). Expert opinion was consulted to ensure the content validity of the form. The opinions of 3 experts working in the field of Educational Sciences and having at least one publication related to meta-analysis were taken and as a result of this review the publication date range of the studies to be included in the data set has been changed to 2010-2019. Arrangements have been made in the sections of the explanation form, which were found to be unclear by the experts. Cohen's Kappa Coefficient is used to determine the reliability of the coding forms used in meta-analysis studies (Leary, 2012). In order to determine the reliability of the coding process to be carried out, 8 studies and the coding forms were sent to the experts via e-mail and they were asked to code within the specified period. As a result of the analysis on intercoder reliability, Kohen's Kappa Coefficient was found to be 0.83, where 0.81 or above indicates perfect fit (McHugh, 2012). In the light of this information, the reliability of the coding process was confirmed by the researchers. As a result, the final version of the coding form was used in the research.

RESEARCH ETHICS

This research was evaluated at the meeting (no 84982664-100) by Aydın Adnan Menderes University Educational Research Ethics Committee in 05.03.2020 and found ethically acceptable.

3 | FINDINGS

In this section, findings and interpretation of the survey results comparing the results of the analysis, comparing the features of the software, analyzing the software analytically and scoring the qualitative features of the softwares are discussed.

COMPARISON OF ANALYSIS RESULTS

The analysis results were compared after comparing various features of the softwares. This comparison can also be considered as the validity of the formulas that run in the background of the software while performing meta-analysis. The correlational meta-analysis was performed using the data set in Table 1. In analyses performed by the 4 softwares DerSimonian-Laird estimation (the only option in Meta-Essentials) at 95% confidence interval was kept constant as the model estimation option. Regarding the analysis results, the same outcomes have been reached up to second decimal point in the test results including heterogeneity test results; overall effect size;

estimation range; subgroup analysis results; and meta regression results (single covariate variable). It was found that the results of publication bias analysis (Egger Test) performed by Jamovi, R and Meta-Essentials are the same. The results related to funnel charts were also found to be the same for all programs. It was concluded that the rank correlation test results of Begg and Mazumdar were the same for CMA and Meta-Essentials, whereas the results obtained from Jamovi and R differed from these results by a slight margin due to continuity correction used by these softwares. Rosenthal Failsafe-N numbers were observed to be the same for Jamovi, Meta-Essentials and CMA (no Failsafe-N test is available in R). Orwin Failsafe-N numbers were observed to be the same in CMA and Meta-Essentials and different in Jamovi. No software errors were encountered while performing the analyzes. Although the analysis results obtained by different software within the scope of the meta-analysis study are very close together, the forest graph obtained in the R program is shown in Figure 2, which helps to easily view the results as a whole in terms of being an example.

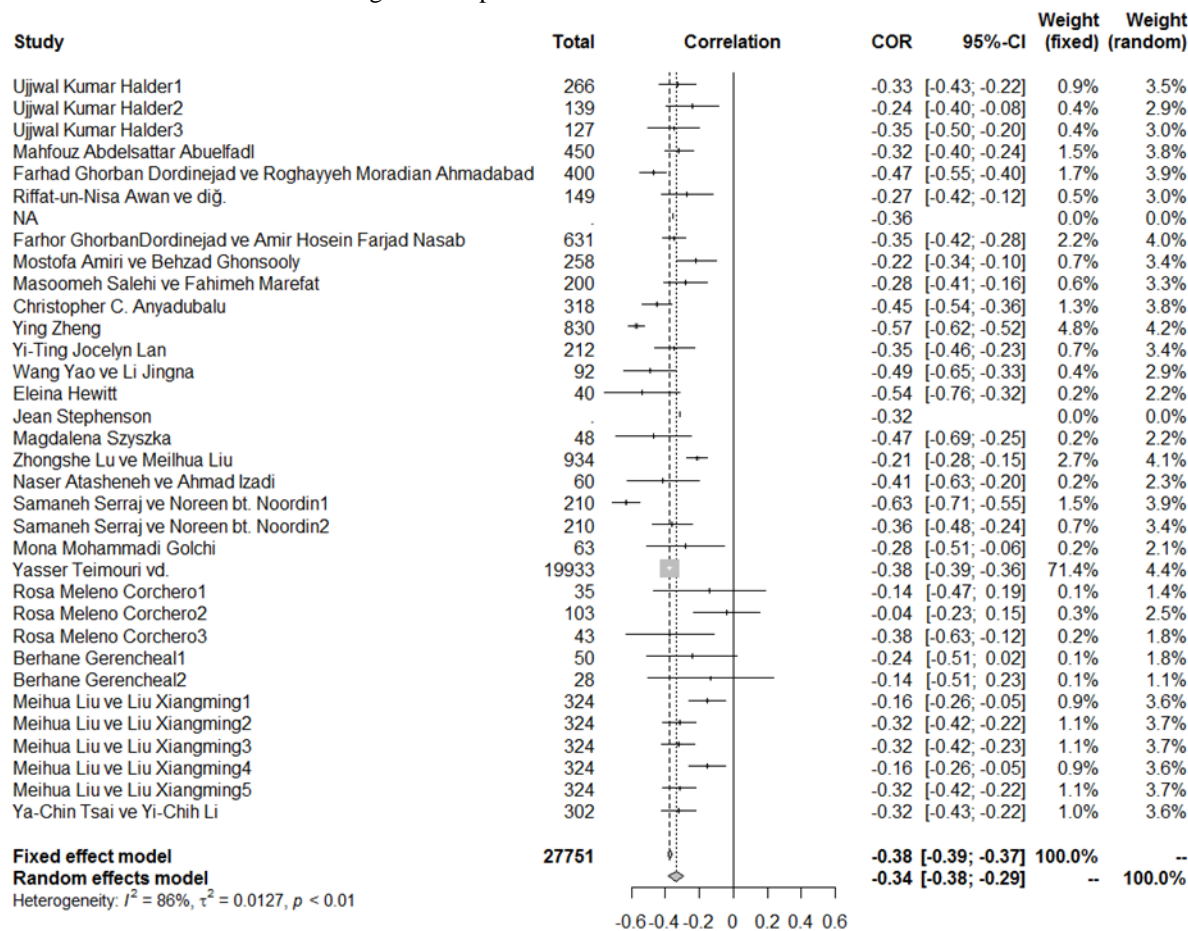


Figure 2. Forest Graph Results

In Figure 2, there is a forest chart containing values that will facilitate the interpretation of the combined effect size value of the studies included in the meta-analysis.

COMPARISON OF SOFTWARE RELATED FEATURES

Table 2 contains the features related to the softwares.

Table 2. Features of the Software

General features	Jamovi 1.1.9.0	R-3.6.2	Meta-Essentials	CMA
		RStudio		
License	Free of charge	Free of charge	Free of charge	Commercial
Open source	Yes	Yes	Yes	No

User Interface	Pop-up Menu	Script	Graphical user interface	Pop-up menu
Prerequisite software	Not available	R (Free)	Microsoft excel	Not available
Program size	186 megabytes	R: 83 megabytes RStudio 1.2.5033: 150 mb	2.2 megabytes	25 megabytes
Compatibility	Windows, Mac OS, Linux	Windows, Mac OS, Linux	Windows, Mac OS	Windows
Web site	www.jamovi.org	www.meta-essentials.com	www.erim.eur.nl	www.meta-analysis.com
Is it only for meta-analysis?	No	No	Yes	Yes
Input features				
Manual data entry	Available	Available	Available	Available
Copy / paste data Set with .xls and .sav extension	Available	Not available	Available	Available
Reading data files in different formats	.omv, .csv, .txt, .sav, .zsav, .por, .dta, .sas7bdat, .xpt, .jasp	.sav, .xls, .sas7bdat, .dta, .txt, .dat, .	.sav, .xls, .dat,	Data can be transferred from programs that display the data set in grid form, such as Excel, SPSS, Stata.
Information sources				
	User guide, website, book	Website, book, help function in the software	User guide, website	Website, book, tutorials
Export options				
Output in APA standard	Yes	Yes	No	No
Copy option	Yes	Yes	Yes	Yes

The first software included in Table 2 is Jamovi. According to Table 2, Jamovi is a free and open source software. Being open source means that users can contribute to the development and modification of the software. In addition to meta-analysis, the software can perform basic and multivariate statistical analyzes and it runs on Windows, Mac OS and Linux operating systems. With these aspects, Jamovi differs from CMA and Meta-Essentials. CMA and Meta-Essentials are the softwares designed for meta-analysis. Similar to R, Jamovi allows direct import of text or other data files. Data sets copied from cell-based programs such as Excel and SPSS can be pasted into Jamovi's dataset window. The software, which has various sources of information about usage, gives outputs in APA standard and researchers can use these outputs with the copy/paste feature. The software differs from CMA and Meta-Essentials in this aspect. The user interface of the software is in the form of drop-down menu, and with this feature, the software differs from R and Meta-Essentials.

The second software included in Table 2 is R. This free and open source software can run on all popular operating systems, it can be used for data mining and machine learning, and it gives outputs in APA standard within the relevant packages. These features distinguish the software from CMA and Meta-Essentials. Although the analyzes can be carried out easily using the packages containing the scripts related to the analyzes, it is required to know the basic scripts needed to use the software and researchers are anxious about using open source softwares, which can be considered as the reasons why R, which is older than CMA, is less popular than CMA, which allow to perform meta-analysis via drop-down menus.

The third software included in Table 2 is Meta-Essentials, which is an Excel-based free meta-analysis tool, it is free of charge and open source, like Jamovi and R. The tool is not as rich as other softwares in terms of information sources, and it doesn't have Jamovi's and R's APA standard output feature. The tool gives simultaneous output after pasting data sets copied from cell-based programs such as Excel and SPSS, which can be thought equivalent of Jamovi's and CMA's ability to perform analysis via drop-down menus and this feature differs the tool from R.

The last software included in Table 2 is CMA, which is the only commercial software among the four softwares. Although CMA is a commercial software, it is the one with the highest profile in the internet search engines, which can be explained by the fact of being one of the oldest meta-analysis software. While other softwares run on almost all operating systems, CMA can only run on Windows based computers, which can be considered as the second restrictive feature of the software. CMA allows direct import of text or other data files such as Jamovi and R. Data sets copied from cell-based programs such as Excel and SPSS can be pasted into the data set window of CMA. Not being open source is one of the most important limitations of the software. The software, which is very rich in terms of information sources, does not give output in APA standard. The user interface design is in the form of a drop-down menu, which makes it easy to use and the software differs from R and Meta-Essentials in this respect.

ANALYTIC COMPARISON OF SOFTWARES

Table 3 contains the analytic features related to the softwares.

Table 3. Analytical Comparison Table of the Softwares

Features	Jamovi	Meta 4.9-9 Package (R Software)	Meta-Essentials	CMA
Decimal places	Available	Available	Available	Available
Confidence interval	Available	Available	Available	Available
Estimation Range	Available	Available	Available	Not
Continuity Correction	Available	Available	Not	Not
Confidence Interval Distributions	Normal or KNHA Student's t	Normal or KNHA Student's t	KNHA Student's t	Normal or KNHA Student's t
Effect Size Calculation	family d and family r	family d and family r	family d and family r	family d and family r
Heterogeneity Test	Q, I ² , Tau ² , H ²	Q, Tau ²	Q, I ² , Tau ²	Q, I ² , Tau ²
Automated Forest Plot	Available	Available	Available	Available
Subgroup-Analyses	Available	Available	Available	Available
Meta-regression	Available	Available	Available	Available
Funnel plot and trim- and-fill	Available	Available	Available	Available
Weighting Methods	Inverse Variance, Mantel-Haenszel, Peto	Inverse Variance, Mantel-Haenszel, Peto	Inverse Variance, Mantel-Haenszel, Peto	Inverse Variance, Mantel-Haenszel, Peto

Model Estimation Options /Estimation of Between Study Variance	Hedges, Hunter-Schmidt, DerSimonian-Laird, Sidik-Jonkman, Maximum likelihood, Restricted Maximum Likelihood, Empirical Bayes, Paula Mendel, Fixed-Effect	Hedges, Hunter-Schmidt, DerSimonian-Laird, Sidik-Jonkman, Maximum likelihood, Restricted Maximum Likelihood, Empirical Bayes, Paula Mendel, Fixed-Effect	DerSimonian-Laird	DerSimonian-Laird, Restricted Maximum Likelihood
Model Fit Indices and Information Criteria	Log-likelihood, Deviance, AIC, BIC, AICc	Not	Not	Not
Model Measurement Options	Raw correlation coefficients, converted correlation coefficients	Raw correlation coefficients, converted correlation coefficients	Raw correlation coefficients, converted correlation coefficients	Raw correlation coefficients, converted correlation coefficients
Failsafe-N Tests	Fail Safe N, Rosenthal, Orwin, Rosenberg	Not	Fail Safe N, Rosenthal, Orwin, Fisher, Gleser & Olkin	Fail Safe N, Orwin
Publishing Bias	Egger Test, Begg & Mazumdar Rank Correlation	Egger Test, Begg & Mazumdar Rank Correlation	Egger Test, Begg & Mazumdar Rank Correlation	Egger Test, Begg & Mazumdar Rank Correlation

The first software included in Table 3 is Jamovi. The first remarkable feature of Jamovi is that the variety of results obtained from the heterogeneity test is wider than other softwares. Jamovi differs from Meta-Essentials and CMA with more diverse model estimation options. While other softwares don't provide any information about model fit index and information criterion, Jamovi provides a rich output in this regard.

The second software in Table 3 is R, in which the analysis was performed using the meta package. Regarding Table 3, it can be seen that a variety of heterogeneity test results could not be obtained for the meta-analysis carried out in the meta package, but the number of model estimation option in the package is the same as Jamovi. This feature can be interpreted as a positive factor for the package. There is no model fit index, information criterion and even Failsafe-N test results related to the analysis output carried out by the package, which can be interpreted as the limitation of the package.

The third tool in Table 3 is Meta-Essentials. The first noticeable feature of Meta-Essentials in Table 3 is that the tool offers only one model estimation option, which can be interpreted as a limitation. At the same time, the tool doesn't give any output regarding model fit index and information criteria. The tool offers rich options in terms of Failsafe-N test compared to other softwares, which can be interpreted as an important feature that distinguishes the tool from other softwares.

The last software in Table 3 is CMA. The first noticeable feature of CMA in Table 3 is that it offers only two model estimation options, which can be interpreted as a limitation. At the same time, the software does not give results regarding any model fit index and information criteria, like Meta-Essentials and R. The results of the analysis conducted with Meta-Essentials 5 and Jamovi can be obtained from 4 different Failsafe-N tests, while CMA gives only the outputs of two statistics related to Failsafe-N test. This fact can be considered as a limitation of the software just like the model estimation option.

COMPARISON OF THE SCORES FOR THE QUALITATIVE FEATURES OF SOFTWARES

7 researchers who have used or who are using all 4 softwares were asked to evaluate the following features of the softwares on a scale from 0 to 10, where 0 indicates "bad" and 10 "excellent": "user interface", "data management", "ease of use", "documentation" and "quality of images". Table 4 includes the average, minimum and maximum values of the scores given by 7 researchers for the softwares under five headings.

Table 4. Meta-Analysis Software – Usability Ratings

	Jamovi	CMA	RStudio ²	Meta-Essentials
User interface*	9.5	7.5	7.6	7.5
Data management	9.3	7.8	8.9	7.8
Ease of use	10	7.6	6.3	7.6
Documentation	9.1	10	10	9.3
Visualizations	8.9	8	8	7.4
Overall score (min-max)	9.36 (8-10)	8.18 (7-10)	8.16 (5-10)	7.92 (7-10)

*All scores are mean scores, based on the scores of 'User interface', 'Data management', 'Ease of use', 'Documentation', 'Visualizations' categories. Each item was scored from bad to excellent on a scale from 0 to 10. ²RStudio IDE has been evaluated within the scope of Meta 4.9-9 package

According to the overall scores in Table 4, which is the average of the scores given by the researchers, Jamovi was observed to be the software with the highest score (9.36) followed by CMA (8.18), RStudio (8,16) and Meta-Essentials (7.92). Jamovi achieved higher average scores than other softwares in terms of user interface, data management, ease of use and the quality of the images, got a lower average score only in terms of documentation. Jamovi is a newer software than others, which can be the reason of this fact. CMA also uses drop-down menus like Jamovi, and the software seems to be easy to use, but in Jamovi the dataset is transferred in fewer steps and Jamovi has a much simpler and easier user interface, which are the main reasons why the overall score of CMA is lower than Jamovi. The analysis carried out in RStudio were using the meta package containing meta-analysis functions, but performing the analysis by using packages is more complex than making them with drop-down menus, which caused the analysis made with RStudio to have a lower score than Jamovi and CMA. Although Meta-Essentials has a higher score than RStudio and the same score as CMA in terms of ease of use, it is in the last place in overall score. As an Excel-based meta-analysis tool, the quality of the images obtained is not as good as other softwares and its limitations in terms of data management causes the Tool's overall score to be lower than others.

4 | DISCUSSION & CONCLUSION

Meta-analysis is an indispensable method for researchers, it is used in synthesizing the results of many studies under one study. Systematic studies carried out within the scope of meta-analysis are at the top of the evidence-based hierarchical formation (Bax et al., 2007). Numerous softwares were developed in the last 20-25 years for meta-analysis, however the review of the literature revealed that there is no research focusing both on the analysis results and the evaluation of the analytical, general and qualitative features of the latest software in a comparative way. Within the scope of the research, some new softwares have been compared with a systematic perspective based on the mentioned criteria.

Analysis results of the research showed that the compared softwares did not make much difference in the analysis results. Although there are some differences in some values obtained from different softwares, these differences tend to be very small and typically occur in the fourth decimal place and do not affect the meta-analysis results. For example, the rank correlation test results of Begg and Mazumdar computed in Jamovi and R (meta package), in which continuity correction is used in the meta-analysis, differ from the results CMA and Meta-Essentials in decimal points.

Regarding the findings of the research about the comparison of software features, Jamovi and R were observed to be free and open source and both software can run on Windows, Mac OS, and Linux operating systems. Both software can give output in APA standard and researchers can use these outputs by copy/paste. Jamovi and R, which were evaluated within the scope of free software, are quite open to the contribution of the users in the development and modification process by definition of free software. It can be said that being free of charge put

both softwares one step ahead of the commercial CMA, which is shown to be as one of the most popular software in the research, and also meta-analysis. CMA runs only on Windows operating system and this feature can be said to be one of the limitations of the software against Jamovi and R that can run on multiple operating systems. The analyzes analyses are performed in Jamovi via drop-down menus and the lack of drop-down menu option for the meta-analysis performed in R can be considered as a limitation of R against Jamovi, CMA and Meta-Essentials. Meta-Essentials which a free meta-analysis tool, is not as rich as R and CMA in terms of information sources, it does not produce outputs in APA standards such as Jamovi and R, and it works only on Windows and Mac operating systems. It can be said that these shortcomings of Meta-Essentials left the software one step behind Jamovi and R, like CMA.

Regarding the findings about the analytic comparison of the softwares, it was observed that the results of heterogeneity test obtained by Jamovi are more diverse than other softwares. At the same time, the number of model estimation options is much higher in Jamovi compared to Meta-Essentials and CMA. While other softwares do not provide any information regarding model fit index and information criterion, Jamovi offers a rich output in this regard. It can be said that these features make Jamovi advantageous over other softwares. Considering as a whole, it can be said that Jamovi is more remarkable than other softwares in terms of analytical features.

According to the overall scoring result of 7 researchers, who have used or who are using the softwares, about the usability of the software under 5 different headings, the ranking was Jamovi, CMA, R and Meta-Essentials. It was observed that Jamovi has a higher average score than other softwares in terms of "user interface", "data management", "ease of use", "documentation" and "quality of images". The reason for Jamovi to score more than other softwares can be cited as: the user interface is very simple and understandable; in addition to performing meta-analysis, it allows to generate basic and multivariate statistics, which enables detailed data management processes to be created.

The review of all the comparisons in the study by the authors in a holistic way shows that Jamovi is ahead of the other softwares. Although CMA appears to be the most used meta-analysis software in the internet databases, the authors of this paper believe that CMA holds such a position because it is quite old, so its recognition is higher, and the analysis is carried out via drop-down menus. Failure to perform meta-analysis via pop-up menus in R and the researchers' prejudices against the softwares in which the analysis is performed using functions, syntax, and command directories rather than pop-up menus were thought to be the reasons why R is positioned behind CMA. Jamovi is free software like R. The first version was released in 2017. The authors of the paper think that this software, which is much newer than CMA, is not sufficiently known. Free softwares such as R and Jamovi are economically and developmentally very important tools for the researchers and universities, when considered on a larger scale. For this reason, it is recommended to expand the use of free softwares. The authors of the paper think that using commercial softwares do not contribute to the researchers in terms of change and development as much as free softwares.

Although this research concluded that there are no significant differences between the results of the softwares, there are differences in the available statistics, features and capabilities of the softwares. Therefore, researchers are recommended to consider the criteria or the results of this and similar studies before deciding the software to be used in the meta-analysis. Moreover, it is suggested to compare different softwares and/or different meta-analysis methods in future studies. As a result, researchers are advised to make the softwares and software procedures they will be used in the future meta-analysis studies an integral part of their studies.

STATEMENTS OF PUBLICATION ETHICS

Throughout this study, research and publication ethics were observed. In all steps of the research, researchers followed the ethical principles. It was evaluated at the meeting (no: E.17615/2020) by Aydın Adnan Menderes University Educational Research Ethics Committee in 05.03.2020 and found ethically acceptable.

RESEARCHERS' CONTRIBUTION RATE

The first author contributed with data analysis, reported the results and contributed the article revisions. The second author contributed with data analysis and reported the results. All authors contributed to the literature review, read and approved the final article.

CONFLICT OF INTEREST

The authors of this article declare that there is not conflict of interest.

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The Observation of Pre-service Teachers' Argumentation Skills on Different Socioscientific Issues

Aybike Gökçehan CENK^a, Feride ERCAN YALMAN^{b*}

a Science Teacher, Ankara Üniversitesi Geliştirme Vakfı Okulları, Ankara, Turkey. (<https://orcid.org/0000-0001-6463-0771>)

b *Asst. Prof. Dr., Mersin University, Mersin, Turkey. (<https://orcid.org/0000-0003-1037-1473>). *feride@mersin.edu.tr

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ABSTRACT

In this study, it was aimed to determine the argumentation skills of pre-service science teachers studying at the 4th grade in different socioscientific issues. The study was designed in accordance with the case study. In the study involving 8 teacher candidates, the data were obtained by observation method. For data analysis, descriptive analysis was performed. The data in the argumentation process were evaluated both in terms of quantity and quality. In terms of quantity, it was seen that teacher candidates had more codes and frequencies in biotechnology and health themes, and less in environment and energy themes. When the argumentation process was examined qualitatively, it was seen that the pre-service teachers could not form arguments by paying attention to all components. It was also concluded that the participants formed better arguments on socioscientific issues such as global climate change, genetically modified organisms, nuclear energy, organ donation and stem cells, medicine-alternative medicine. It was found that the participants were able to form arguments at a lower level on socioscientific issues such as cloning, euthanasia, space pollution and pandemic vaccine. From this point on, it can be stated that the argument attributes are affected by the subject context.

Keywords: Argumentation, teacher candidate, socioscientific issues, observation.

Öğretmen Adaylarının Farklı Sosyobilimsel Konulardaki Argümantasyon Becerilerinin Gözlenmesi

Öz

Bu çalışmada fen bilgisi öğretmenliği 4. Sınıf düzeyinde öğrenim gören öğretmen adaylarının farklı sosyobilimsel konularda argümantasyon becerilerinin tespit edilmesi amaçlanmıştır. Çalışma, durum çalışmasına uygun olarak tasarlanmıştır. 8 öğretmen adayının yer aldığı çalışmada veriler gözlem metodu ile elde edilmiştir. Veri analizi için betimsel analiz yapılmıştır. Argümantasyon sürecindeki veriler hem nicelik hem de nitelik olarak değerlendirilmiştir. Nicelik olarak bakıldığında öğretmen adaylarının biyoteknoloji ve sağlık temalarında daha fazla, çevre ve enerji temalarında ise daha az kod ve frekanslara sahip olduğu görülmüştür. Argümantasyon süreci nitelik olarak incelendiğinde öğretmen adaylarının tüm bileşenlere dikkat ederek argüman oluşturmadığı görülmüştür. Ayrıca katılımcıların küresel iklim değişikliği, genetiği değiştirilmiş organizmalar, nükleer enerji, organ bağışi ve kök hücre, tıp-alternatif tıp gibi sosyobilimsel konularda daha iyi düzeyde argümanlar oluşturduğu sonucuna ulaşılmıştır. Katılımcıların klonlama, ötenazi, uzay kirliliği ve pandemik aşı gibi sosyobilimsel konularda daha düşük düzeyde argümanlar oluşturabildiği tespit edilmiştir. Bu noktadan hareketle argüman niteliklerinin konu bağlamından etkilendiği ifade edilebilir.

Anahtar kelimeler: Argümantasyon, öğretmen adayı, sosyobilimsel konular, gözlem.

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1 | INTRODUCTION

Today, living conditions are changing very rapidly and human beings are faced with many dilemmas due to the effects of scientific processes on society. When considered ethically, morally and socially, the effects and interventions of science in human life and the diversity of these dilemmas also increases (Zeidler & Sadler, 2008). In other words, the obtained scientific knowledge also prepares the ground for new problems, dilemmas and solutions. Human beings, who are among the key concepts of problem, solution and dilemma, enter the decision-making process by considering the above dimensions. One of the main goals of science education is to enable students to make conscious decisions in their lives and to use their scientific understanding in the discussion processes they may encounter in their daily lives (Dawson & Venville, 2010). Waste control and renewable products (Kortland, 1996), genetic engineering applications (Sadler & Zeidler, 2005a, 2005b; Zohar & Nemet, 2002), nuclear power (Zengin Kırbag, Kececi, Kirilmazkaya, & Sener, 2011), hydroelectric power plants (Ozturk & Leblebicioglu, 2015; Yavuz Topaloglu & Balkan Kiyici, 2017), gene therapy, cloning (Concannon, Siegel, Halverson & Freyermuth, 2010), global climate change (Topcu, Sadler & Yılmaz Tuzun, 2010) are the concrete examples of such issues. The aforementioned issues are seen as controversial issues on which studies are carried out both in social and scientific grounds every day. Socioscientific issues (SSI) have been conceptualized in the recent past, draw attention by researchers and are frequently used in daily life (Sadler, 2003). They are scientific situations that involve social dilemmas related to science and affect the society in which students will have mutual dialogue, conflict and debate (Zeidler & Nichols, 2009). In addition to the issues mentioned above, pandemic vaccines, seal hunting, biotechnology applications and space pollution can be shown as examples of socioscientific issues (Yaman, 2012). It can be said that these controversial issues are generally of a universal nature. However, these issues can be local, as well as universal (Atasoy, 2018). For example, topics such as "İğne Ada, Akkuyu, Sinop nuclear power plant projects, green road project in the Black Sea, Cerattepe mine operation project, illegal electricity usage, base stations" are also socioscientific issues in our country. (Capkinoglu, 2015; Evren Yapicioglu & Kaptan, 2018; Furuncu, 2016). Discussions could not be put to an end in any of the issues given as examples and dilemmas continue. In fact, as scientific developments increase, it is thought that the variety and number of socioscientific issues will increase over time (Karakaya, 2015).

These controversial issues on the agenda are also reflected in science education and the curriculum, because the main purpose of science education is to help students gain skills rather than providing scientific knowledge on the axis of research inquiry-based approach (MoNE, 2018). In addition, the present curriculum focuses on values education as well as developing skills in students. Socioscientific issues play a key role in providing students with many skills as well as values education. To give a specific example, while contributing to a mental skill such as critical thinking, socioscientific issues also focus on values such as global citizenship awareness (Lee et al., 2013; Zeidler, Applebaum & Sadler, 2011). However, it is stated that socioscientific issues also provide a basis for students to gain argumentation skills (Wu & Tsai, 2011). It can also be said that socioscientific situations are the process of reaching a decision within the context of argumentation (Sadler & Zeidler, 2005a; Zeidler & Sadler, 2008). From this point of view, it is possible to say that socioscientific issues and the argumentation process are key concepts associated with it. Argumentation can be expressed as a written or verbal process in which there is a mutual exchange of ideas about the validity of a claim, using data, reasoning, support and rebuttal to convince people, and criticizing, discussing and reviewing the opposing claim (Berland & Reiser, 2011; Driver, Newton, & Osborne, 2000; Toulmin, 2000). In order to raise individuals who have developed argumentation skills and are science literate, first of all, teachers should have this developed skill (Evren Yapicioglu, 2016), because the teacher acts as a guide that guides this process in the discussion environments where students present their claims based on valid data (MoNE, 2018; Ozcan, Aktamis, & Higde, 2018). The use of argumentation in science lessons is thought to provide students with high-level cognitive skills, ability to use language, understanding the nature of science, being science and technology literate, having creative and critical thinking, and questioning skills (Jimenez-Aleixander & Erduran, 2007). Asserting that argumentation should be used especially in socioscientific issues, Lin et al. (2014) state that the most appropriate science subjects for the nature of argumentation are socioscientific subjects. It can be said that the argumentation process, which is dealt in the context of socioscientific issues, plays a key role in raising science literate individuals (Zeidler & Sadler, 2011). Science teachers have an important role in raising science literate individuals. However, it is thought that another group that is as important as teachers is pre-service teachers. When the socioscientific issues mentioned above and the

pre-service teacher dimension of argumentation skill are examined, there are many studies in the literature where teacher candidates and socioscientific issues are discussed together such as (Barret, 2007; Bell, Matkins, and Ganseder, 2011; Cansız, 2014; Cenk, 2020; Cirit Gul & Apaydin, 2021; Demircioglu & Ucar, 2014; Es & Varol, 2019; Halverson, Siegel & Freyermuth, 2009; Kutluca, 2012; Kutluca & Aydin, 2017; Liu, 2014; Matkins & Bell, 2007; Ozturk, 2011; Ozturk & Yenilmez Turkoglu, 2018; Sadler & Zeidler, 2005b; Surmeli & Sahin, 2012).

It is possible to talk about many argumentation models (Lawson, 2003; Sandoval, 2003; Schwarz et al., 2003; Toulmin, 2003) and analytical frameworks (Sadler & Fowler, 2006; Toulmin, 2003; Zohar & Nemet, 2002) in the literature. It can be argued that Toulmin's (2003) argumentation model is generally used in both national and international literature (Aktamis & Higde, 2015). Based on Toulmin's argumentation model, Erduran, Simon, and Osborne (2004) also created a framework that presents the argumentation skills to be used in small group discussions and student-teacher dialectics. The theoretical framework in question has been the reference point in many studies. The argumentation model, suitable for using with socioscientific issues, can clearly reveal the quality of the argumentation. For this reason, it is believed that selecting the argumentation model developed by Erduran et al. (2004) based on Toulmin's (2003) argumentation model would be appropriate in this study. On the other hand, literature review on socioscientific issues, the key concept in this research, shows that the studies on socioscientific issues in Turkey conducted with pre-service teachers have generally focused on participants' level of knowledge (Ayvacı, Bulbul & Turker, 2019), participants' attitude (Cebesoy, Donmez Sahin, 2013), identification of opinions (Sabıç, 2017; Tekgoz & Ercan Yalman, 2020; Turkmen, Pekmez & Saglam, 2017) and the argumentation process (Ozturk & Yenilmez Turkoglu, 2018; Yaman, 2012). When the studies are examined as research design, it can be said that studies are generally carried out with a quantitative approach (Genc & Genc, 2017). Unlike most studies in the literature, qualitative data were obtained by making long-term observations in this study. The observation technique is thought to help obtain rich and multidimensional results. As a matter of fact, the effectiveness and importance of argumentation practices in the socioscientific issues as small group discussions or class discussions are mentioned in the literature. (Maloney & Simon; Walker & Zeidler, 2007) Because in each discussion environment, the participants can find the opportunity to criticize the socioscientific issue discussed and gain a different perspective (Liu, 2014). In addition, when the literature is examined, it is noteworthy that in general, the studies on socioscientific issues are shaped around a single subjects such as GMO, nuclear energy etc. However, there is a limited number of studies examining the quality of arguments by addressing more than one socioscientific issue (Turkoz, 2019; Tuskan, 2020; Urhan, 2016). For example, Turkoz (2019) examined the argument quality of pre-service teachers on three different socioscientific issues such as glucose tolerance in pregnancy, raw and processed milk and nuclear power plants. Turkoz's (2019) study is similar to the current research since it addressed different socioscientific issues as well. However, studies questioning the quality of arguments in a wider range do not exist in the literature. In this context, the present study is considered to be important because it addressed nine different socioscientific issues. In other words, the discussion skills of the teacher candidates were observed over and over again in many subjects and tried to reveal qualified results in this study. From this point of view, in the present study, it was aimed to observe how the argumentation skills of science preservice teacher candidates in socioscientific issues are different in other socioscientific issues. The study conducted in line with this purpose included two starting points or sub-objectives.

RESEARCH QUESTIONS

1. What is pre-service teachers' argumentation skills in regards to socioscientific issues?
2. Do pre-service teachers' argumentation skills change according to the context of the subject?

2 | METHOD

In this study, it was aimed to examine the argumentation skills of pre-service science teachers and to determine how the argumentation skills of pre-service teachers would change according to the subject context. Thus, the study was conducted according to a case study, one of the qualitative research approaches. Yin (2012) defines case studies as a type of assessment in which the researcher analyzes a situation, action, process and people in depth. Yildirim and Simsek (2016) mentions that while describing the characteristics of the case studies, it is necessary to carry out the research with relatively smaller working groups in order to obtain detailed and in-depth

information. The rationale for conducting this research according to the case study can be based on the above definitions. To put it more clearly, the situation investigated in this study is considered to be suitable for the case study, since it presents rich and explanatory information in its natural context in a small group. For this reason, observation was used to examine the non-verbal behaviors of the study participants.

PARTICIPANTS

Pre-service teachers had received their high school education in provincial centers in the Mediterranean region (Mersin, Adana, Antalya, Osmaniye, etc.) and were presently studying at a state university in the Mediterranean Region at the time of the study. The sample of this study consists of 8 4th grade teacher candidates (3 male, 5 female) studying in Faculty of Education, Science Education Department. The study was conducted within the scope of an elective course named “Special Topics in Science”. For this reason, the number of students choosing the course constitutes the research group. Before taking the elective course in which the study was conducted, pre-service teachers had taken courses such as "Nature of Science", “History of Science” and “Evolution”, courses that could have shaped their opinions and decisions on socioscientific issues. In this context, it can be argued that the participants have had prior knowledge on socioscientific issues, both due to the department they studied in and due to the previous courses they took.

DATA COLLECTION

Socioscientific issues -based training was conducted with the teacher candidates for nine weeks and the process was recorded via camera. In the implementation process, the entire socioscientific issues were handled with the argumentation process. The preservice teachers tried to produce arguments in each socioscientific issue in this process. Different methods and techniques (6 thinking hats, station, cornering, etc.) were used while making presentations with socioscientific issues. The socioscientific issues and application process discussed within the scope of the research are presented in Table 1.

Table 1. Socioscientific Issues Examined Within the Scope of the Research and Application Process

Week	Subject	Argumentation Question	Data collection tool
1	Global climate change	Is global climate change beneficial or harmful for the environment? Why?	Classroom observation (video recording)
2	Genetically modified organisms	Is GMO useful or harmful? Why?	Classroom observation (video recording)
3	Nuclear energy	Should nuclear power plants be built? Should nuclear power plants not be built? Why?	Classroom observation (video recording)
4	Space pollution	Should Space Pollution be cleaned or not? Why?	Classroom observation (video recording)
5	Cloning	Should cloning be used on humans or not? Why?	Classroom observation (video recording)
6	Organ donation and stem cells	Should organ donation be supported or not? Why?	Classroom observation (video recording)
7	Euthanasia	Should euthanasia be practiced or not? Why?	Classroom observation (video recording)
8	Pandemic vaccine	Should pandemic vaccine be administered or not? Why?	Classroom observation (video recording)
9	Medicine – Alternative Medicine	Should alternative medicine be supported or not? Why?	Classroom observation (video recording)

Data were collected from pre-service teachers with observation records. Data were collected over nine different socioscientific issues. These issues are global climate change, genetically modified organisms, nuclear energy, space pollution, cloning, organ donation, euthanasia, pandemic vaccine and medicine-alternative medicine.

Observation, which is used as a data collection tool in the research process, is a data collection tool with strengths since it examines non-verbal behaviors under natural environmental conditions for a long time (Yildirim & Simsek, 2016). Unstructured observation type was used in the study. In this type of observation, the researcher should observe in a more natural and open-ended manner rather than using predetermined categories and classifications. The aim is to allow the categories and concepts necessary to analyze and describe observation data to emerge while research is being carried out rather than being based on previous data or concepts (Punch & Oancea, 2013). For this reason, it is thought that the classroom observation method is an appropriate data collection tool for prospective teachers to reveal the researcher structures in the classroom and the discussions they will make among themselves.

For data analysis, firstly, the preservice teachers' speeches in the camera recordings were transcribed. After the transcripts were created, descriptive analysis was used. Transcripts were reviewed by two field experts. The transcripts are divided into codes and themes by two experts and researchers (4 people in total). At this stage, four people in the analysis process carried out the analysis independently. Then, the harmony between the analyzes was tried to be determined. Inter-coding (transcoding) is based on the acceptance of two or more encoders of codes used for the same sentences in a transcript (Creswell & Plano Clark, 2011). When the codes of the experts in the analysis process were compared, it was defined as consensus if codes similar to the same sentence were given, and disagreement if different codes were given. According to the calculation formula proposed by Miles and Huberman (1994), the compliance was determined as 83%. It was tried to reach consensus by coming together on the codes and themes where there was a difference of opinion. The second compliance percentage calculated in this way was determined as 92%. In addition, the quality of the arguments was analyzed to evaluate the data created by the participants on socioscientific issues in a versatile way. Pre-service teachers' argumentation quality was determined by evaluating the transcripts obtained from the observation data. "Argumentation Quality Rubric" (Sadler & Fowler, 2006), presented in Annex 1, was used to determine pre-service teachers' argumentation quality.

Based on the general summary of the data analysis process, it can be argued that both quantitatively and qualitatively analyses were performed on the arguments developed while trying to identify the argumentation skills that the participants used in answering the research questions. The quantity of the arguments was analyzed with the descriptive analysis method and the quality of the arguments was analyzed with the "Argumentation Quality Rubric" (Sadler & Fowler, 2006).

Key concepts such as validity, reliability, credibility and transferability were taken into consideration in the study. Lincoln and Guba (1985) state that each of the concepts of "credibility, transferability, consistency and verifiability" are important in qualitative research. The applications for each of these concepts are explained in detail below.

In order to ensure validity and reliability, the above-mentioned analysis process was carried out first. The fact that more than one person takes part in the analysis process is important in terms of not causing the researchers' subjective assumptions or misunderstanding the data (if any). In order to ensure validity, reliability and verification, participant confirmation was used as the second method. In the participant's confirmation, the researchers presented the data to the participant and asked them to express their opinions on the accuracy of the collected data. There are two key concepts (credibility and transferability) that are as important as validity and reliability in qualitative research. Merriam (1998) states that explaining the process to the reader as transparent as possible in qualitative research will help to ensure transferability. The research process has been explained to the reader in detail in order to ensure credibility and transferability. In addition, from time to time, examples from the natural data of teacher candidates were presented in the findings section to ensure credibility and transferability. Considering the applications made during the analysis process, it is thought that the study is appropriate in terms of validity, reliability, credibility and transferability.

RESEARCH ETHICS

The issues that the researcher should behave ethically towards the participants can be listed as conscious consent, freedom of the participants, respecting for the private life of the participants, not deceiving and harming the participants (Hammersley ve Traianou, 2017). In this study, attention was paid to both legislative ethics and

applied ethical principles. Within the scope of legislative ethics, approval for this study was obtained by the Social and Human Ethics Committee (26/08/2020-36) of the university where the present study was conducted. In the applied ethics part, firstly, the participants were informed about the research. When the researchers explained the purpose and scope of the study to the participants, the prospective teachers stated that they could be involved in the study voluntarily. In this sense, it can be said that the conscious consent principle is taken into consideration. In addition, codes such as P1, P2 were given to the participants in order not to damage the privacy of the participants.

It was emphasized by the researchers that the participants could easily express their opinions and should not have grade concerns in this process. In addition, it was stated that when participants talked about religious, political, cultural issues in the argumentation process, the researchers would not make any intervention. Researchers also have an ethical responsibility to the reader. The research content was described in as much detail as possible and the data was adhered to during the reporting process of the research. As a result of all these actions, it can be said that ethical rules are adhered to.

Mention of the role of researchers is also important for the comprehensibility of the process. The first author in this research participated in the classroom environment as an observer. The role of the researcher is known by the participants. The second author is the lecturer who is conducting the course named "Special Topics in Science". In order for the second researcher not to manipulate the process and affect the research results, the participants were guaranteed that the statements in the argumentation process would not be associated with the scoring of the course. Both researchers did not take an active role in classroom practices and the argumentation process and so did not interfere with the situation.

3 | FINDINGS

The data obtained from the observation records of the pre-service teachers were evaluated both in terms of quality and quantity. First of all, the records of prospective teachers were evaluated in terms of frequency of repetition. Afterwards, the data were evaluated qualitatively. The frequency of repetition of the information obtained from the observation records is presented in Table 2.

Table 2. Themes and Codes Obtained from Observation Records

Category	Code	Sub-code	%
Biotechnology (168)	Genetically modified organisms (50)	Genetic engineering (16)	9,5
		Conducting research (14)	8,3
		Increasing efficiency (12)	7,1
		Durability (12)	7,1
		Immune system (11)	6,5
		Technology 11	6,5
		Embryo (10)	6
	Stem cells (30)	Increase in resource consumption (9)	5,4
	Cloning (54)	Hereditary diseases (9)	5,4
		Treatment methods (9)	5,4
		Subject creatures (8)	4,8
		Trivialization of living things (8)	4,8
	Pandemic vaccine (34)	Organism community (7)	4,2
		Domestication (7)	4,2
Commercial purposes (7)		4,2	
Bio-factories (4)		2,4	
		Tube- baby (3)	1,8
		Expert opinion (18)	13,2
		Empathy (14)	9,6

Health (136)	Euthanasia (52)	Religious perspective (13)	10,3
		Laws (12)	8,8
		Awareness (11)	8,1
		Active ingredients (10)	7,4
	Transplantation (46)	Scientific methods (9)	6,6
		Treatment methods (8)	5,9
		Conscience (8)	5,9
		Information pollution (7)	5,1
		Right to life (7)	5,1
		Medicine- Alternative Medicine (48)	Hope (6)
		Miracle (5)	3,7
		Herbal medicines (5)	3,7
		Psychology (3)	2,2
Environment (92)	Space pollution (41)	Danger (17)	18,5
		Human-made (13)	14,1
		Waste (12)	13
		Scientific research (11)	12
		Fossil fuels (9)	9,8
		Wars (8)	8,7
	Global climate change (51)	Pollution (8)	8,7
		Mechanization (7)	7,6
		Costly measures and solutions (7)	7,6
Energy (57)	Nuclear energy (57)	Risks (9)	15,8
		Accidents (9)	15,8
		Radioactive substances (9)	15,8
		Energy requirement (8)	14
		Nuclear waste (8)	14
		Safe waste storage (7)	12,3
		Alternative energy sources (7)	12,3

When Table 2 was examined, four different categories were formed in line with the data obtained from the observation records of the pre-service teachers. These categories are biotechnology, health, environment, and energy. According to the answers given by the teacher candidates, genetically modified organisms, cloning, stem cell, pandemic vaccine were included in the biotechnology category. Euthanasia, organ transplantation, medicine-alternative medicine subjects are included in the health category. Global climate change and space pollution are included in the environmental category, while nuclear energy is under the energy category. In general, the codes in the biotechnology category were repeated 168 times, and the codes in the health category were repeated 136 times. The codes in the environmental category were repeated 92 times. The codes in the energy category were repeated 57 times. Looking at Table 2, it can be said that both codes and frequencies are less in environmental and energy categories.

It can be said that the codes created in the observation records according to the data show similarities in some subjects but differ in other subjects. The codes on which teacher candidates refer to are shown with the colored letter "X". Different colored "X" letters are defined for different subjects. These data are presented in Figure 1, Figure 2 and Figure 3.

In the biotechnology category created within the different socioscientific issues, the subject of genetically modified organisms is indicated with the letter 'X' in red, the subject of pandemic vaccine with the letter "X" in blue, the subject of cloning with the letter "X" in orange, and the subject of stem cell with with the letter "X" in green. When the socioscientific issues in the environmental category are examined, the issue of global climate change is represented by the letter "X" in purple, and codes related to the subject of space pollution are represented by the letter 'X' in pink. The subject of euthanasia in the health category is represented by the gray letter "X", organ

transplantation is represented by the letter "X" in turquoise, and the subject of medicine-alternative medicine is represented by the yellow letter "X". The codes determined in line with the answers of the teacher candidates are represented by the letter "X" in that color, in which socioscientific issues they are repeated. Since there is only one socioscientific issue in the energy category, all the codes specified are repeated codes related to the nuclear energy issue. For this reason, a separate figure has not been prepared for the energy category. The similarities of the codes in the biotechnology category are shown in Figure 1.

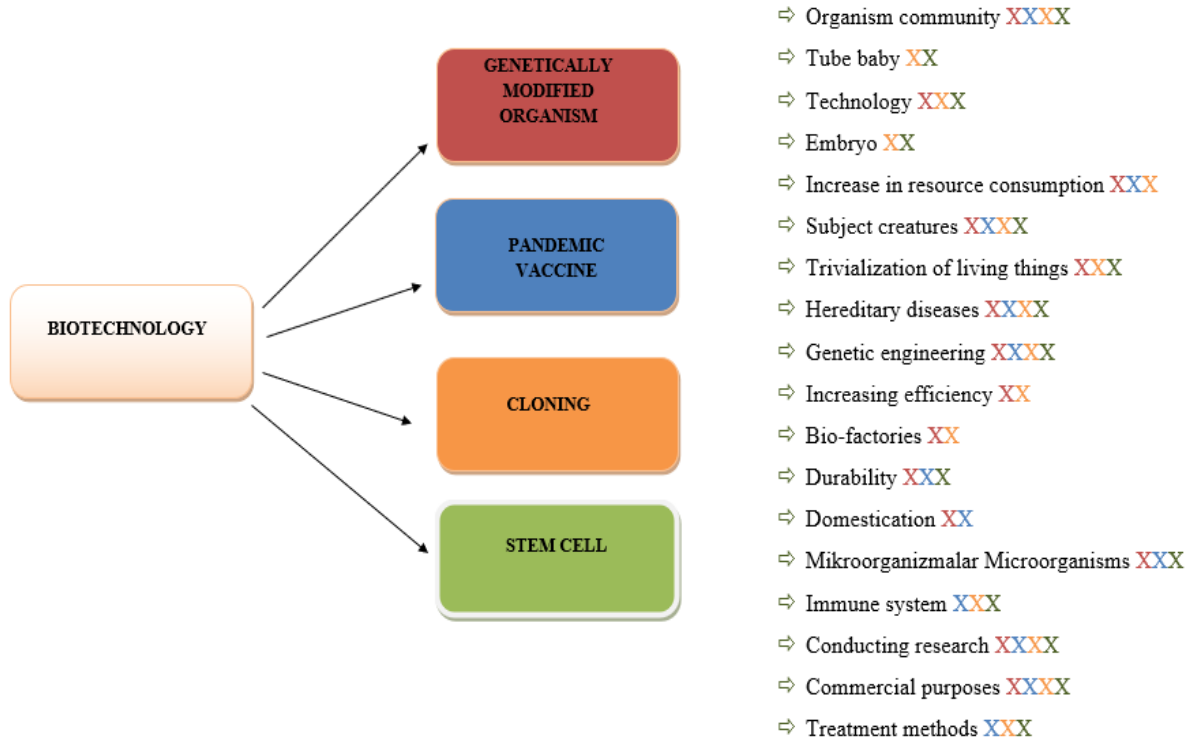


Figure 1. Similarities of the Codes in the Biotechnology Category

Genetically modified organisms, pandemic vaccine, stem cell, cloning are included in the biotechnology category. It has been determined that the codes of organism group, living things, hereditary diseases, genetic engineering, research and commercial purposes, which are included in the codes repeated for these issues, are common in all socioscientific issues in the biotechnology category. While test tube baby and embryo codes have been used in cloning and stem cell issues, increasing efficiency, bio-factory codes have been used in genetically modified organisms and cloning issues. It has been determined that the domestication code was repeated in genetically modified organisms and pandemic vaccines issues. Technology code has been determined to be commonly repeated in cloning, stem cell, and genetically modified organisms, issues. The code of trivializing living things has been commonly repeated in genetically modified organisms, cloning, and stem cells. It has been determined that durability and microorganisms, codes are commonly repeated in genetically modified organisms, pandemic vaccine, and stem cell issues. Immune system and treatment methods codes have been found to be commonly repeated in pandemic vaccine, cloning and stem cell issues. The similarities of the codes in the environmental category are shown in Figure 2.

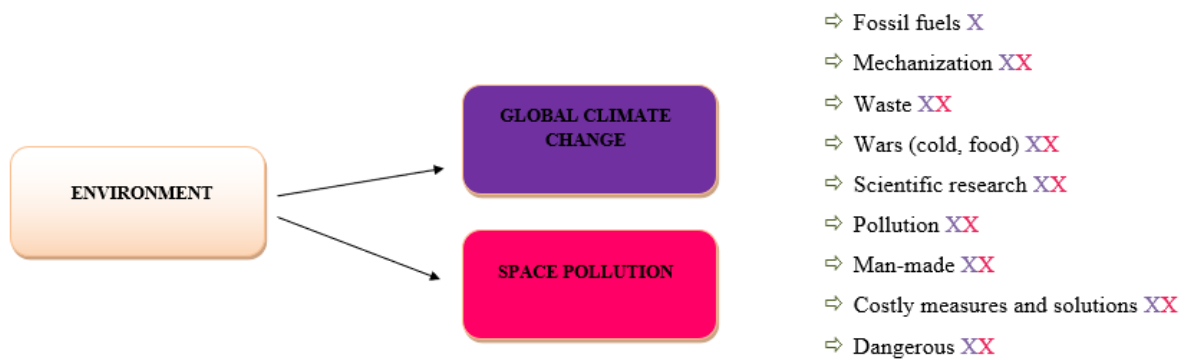


Figure 2. Similarities of the Codes in the Environment Category

Global climate change and space pollution issues are included in the environmental category. It has been determined that mechanization, waste, wars (cold, food, water), scientific research, pollution, human made, costly measures and solutions, danger codes, which are among the repeated codes for these issues, are common in all socioscientific issues within the environmental category. It can be said that the fossil fuel code is stated only on global climate change. The similarities of the codes in the health category are shown in Figure 3.

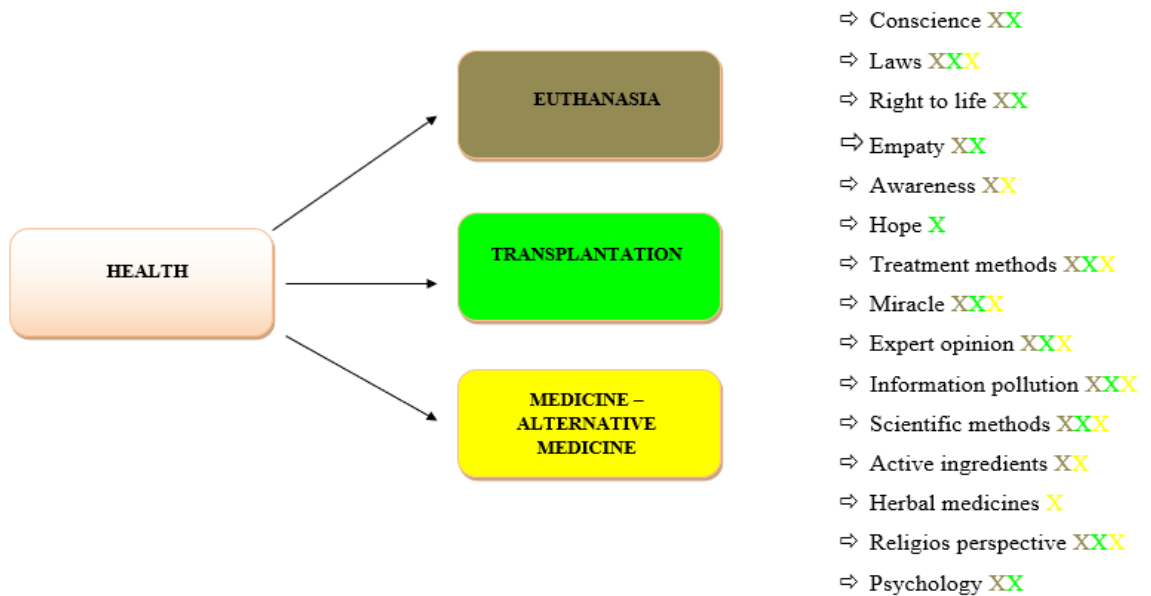


Figure 3. Similarities of the Codes in the Health Category

Subjects of euthanasia, organ transplantation and medicine-alternative medicine are included in the health category. It has been determined that the treatment methods, expert opinion, miracle, laws, information pollution, scientific methods and religious perspective codes included in the codes repeated for these issues are common in all socioscientific issues in the health category. It has been determined that the conscience code, the right to life code, the empathy code and the psychology code are common in euthanasia and organ transplantation issues. The awareness code repeats itself jointly on organ transplantation and medicine-alternative medicine issues. Hope code is specified only in organ transplantation. It has been determined that the active ingredients code is reproduced jointly in euthanasia and medicine-alternative medicine issues. The herbal medicines code has been mentioned only in the subject of medicine-alternative medicine.

When the results are examined in general, it is noteworthy that some codes are common to all subjects in that category. For example, codes such as the organism community in the biotechnology category, test subject organisms, hereditary diseases, genetic engineering, research, commercial purposes have been repeated jointly on GMO, pandemic vaccine, cloning and stem cell issues. In addition, in the environmental category, mechanization,

waste, wars (cold, food), scientific research, pollution, man-made, costly measures and solutions, hazard codes, global climate change and space pollution have been mentioned jointly. In addition, codes such as laws, treatment methods, miracle, expert opinion, information pollution, scientific methods, religious perspective in the health category are common in euthanasia, organ transplantation and medicine-alternative medicine issues.

It was observed that some of the arguments that the teacher candidates presented on different socioscientific issues were in a similar direction, and some common codes could emerge in different weeks, albeit on different subjects. Some quotations are given below in order to support the findings shown in Figure 1, Figure 2 and Figure 3.

P1: Global climate change is one of the important problems of today. I think that measures should be taken and solutions should be sought. We can turn to renewable energy sources. We can use clean energy sources We can do awareness raising activities. (Global climate change - solutions, renewable energy code)

P8: I don't think there is a place where nuclear waste could be stored. It seems very counterintuitive to me to take this to another field. If we are going to use electricity, we must apply to cleaner ways. For example, it can be efficient if we install wind energy in certain areas. For example, I think that if we meet some of our energy from wind, some from bio-diesel, some from boron and some from solar energy, we will already be able to meet most of our energy. For example, the city of Çanakkale is windy most of the year. We should install wind energy there or is there boron in Eskişehir? We must use boron as energy. Or we must benefit from Black Sea for wave energy. Although it may seem costly during the installation phase in the first place, it can pay for itself in the long run. Moreover, I believe it can be more beneficial because it is clean energy. Also, I don't think we are a very suitable country for nuclear energy. (Nuclear energy - solutions, renewable energy code)

P5: A car brand makes a claim that the exhaust gases of the car we produce are not harmful. In order to test this, they set up a system in which the monkeys they selected as subjects were closed in a glass bowl and diverted the gases from the exhaust of the vehicle they produced into the glass bell and they say the monkeys will not be harmed by this. Of course, the monkeys suffer from this. Subject creatures should not be used in such experiments. Ultimately, exhaust gases harm nature. They harm living things. (Global climate change - subject creatures code)

P4: Animals are used as live subjects for cloning. Considering that we are in the group of vertebrates, I think that cloning can also be done on humans. And it is really sad that animals are used in such experiments. I do not lean towards the cloning of people either. I don't think so. (Cloning – subject organisms code)

Striking results, not seen in the tables, but observed by the researchers in the classroom environment and confirmed in the observation records, were also obtained. For example, it was observed prospective teachers could make clear decisions as a result of discussions on some socioscientific issues, but abstained from some socioscientific issues. While the teacher candidates provided clear ideas on nuclear energy, global climate change, organ donation and stem cells, cloning issues, they were observed to abstain from euthanasia, medicine-alternative medicine, space pollution, genetically modified organisms. Among the different socioscientific issues, the teacher candidates were able to make the most arguments about nuclear energy, while the least argument was made about the pandemic vaccine.

When the data obtained from pre-service teachers were examined, the findings in the argumentation process were also examined in terms of quality. In this part, the discussions that the teacher candidates had in the classroom, which is their natural environment, were evaluated and their argument levels were tried to be determined. In other words, it was examined whether the argument components existed in the discussions of the prospective teachers. The argument levels of the teacher candidates in different socioscientific issues are presented in Table 3.

Table 3. Argument Levels Obtained from the Observation Records of Pre-Service Teachers

	Global climate change	Genetically modified organisms	Nuclear Energy	Space pollution	Cloning	Organ donation and stem cell	Euthanasia	Pandemic vaccine	Medicine-alternative medicine
P1	All components	Claim and proof	All components	Claim and proof	Claim and proof	Claim and proof	There is a claim	All components	All components
P2	Claim and proof	All components	All components	All components	Claim and proof	All components	Claim and proof	There is a claim	Claim, proof and support
P3	All components	Claim and proof	Claim, proof and support	All components	All components	Claim and proof	Claim and proof	Claim and proof	Claim, proof and support
P4	Claim and proof	All components	Claim and proof	Claim, proof and support	Claim, proof and support	Claim, proof and support	There is a claim	Claim and proof	All components
P5	Claim, proof and support	Claim and proof	There is a claim	Claim, proof and support	Claim and proof	Claim, proof and support	Claim and proof	Claim, proof and support	Claim, proof and support
P6	Claim, proof and support	Claim, proof and support	All components	Claim and proof	All components	Claim and proof	All components	All components	Claim, proof and support
P7	Claim and proof	All components	Claim and proof	None	None	None	There is a claim	Claim, proof and support	Claim and proof
P8	Claim, proof and support	All components	All components	All components	Claim, proof and support	Claim, proof and support	All components	All components	Claim, proof and support

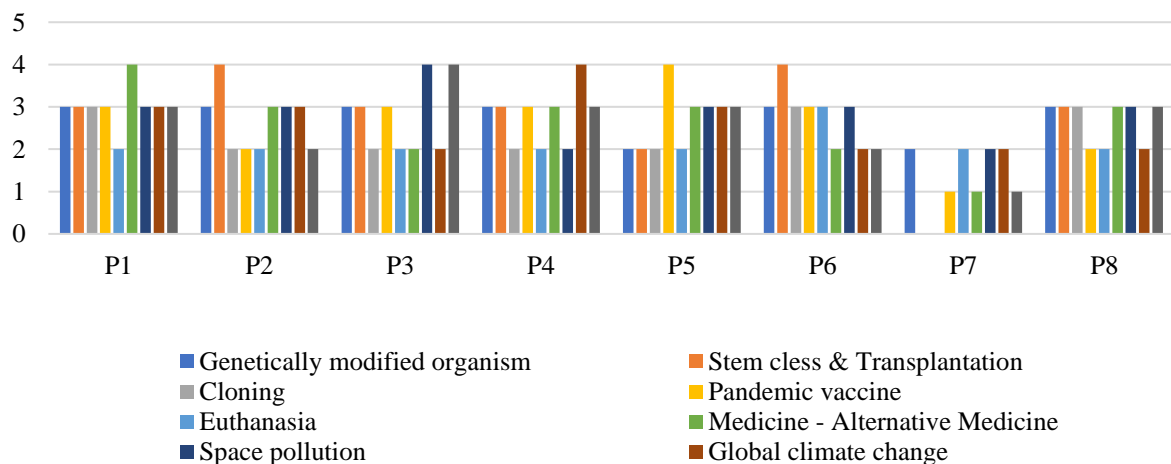
During the argumentation process, it was observed that the pre-service teachers had the power to use all the components (claim, evidence, supportive, rebuttal) in some subjects, while it was determined that no arguments could be formed in some subjects. For example, while P3 created arguments that included all components on global climate change, space pollution and cloning issues, he created arguments on GMO, nuclear energy, organ donation, stem cell, euthanasia, pandemic vaccine and medicine-alternative medicine, but he created arguments that did not include all components. In addition, it was determined that P7 could not create any arguments on three different socioscientific issues. Below are excerpts about the cases in which there are complete components and not all argument components are presented.

P3: I am not in favor of cloning. There are points where I am indecisive or where my claim can be refuted. Scientifically, I think that having one more of the same living thing and applying cloning events on humans will have bad consequences. It can become a weapon that powerful states can use in case of war. So, I think this situation means trivialization of human. I think that no matter what the creature is cloned, it will not exactly reflect the characteristics of the cloned human being. Because, while the human grows and personalities begin to form, the environment is of great importance as well as genetic factors. In identical twins, individuals can be affected by different environmental conditions and have completely different thoughts and emotions. The point where I am indecisive is that a leader like Atatürk can be born again as a result of cloning. But someone like Hitler can appear, too and I think this is not a situation that can be put at risk. (Cloning-argument containing all components)

P3: I am not in favor of leaving a person's being alive or being killed to other people's wishes and preferences. It is impossible for me to support this topic. Life is a very precious thing and every human being demands immortality. I can't approve of doing something to someone else that I don't want done to myself (euthanasia-argument lacking all components).

Chart 1 presents the data obtained from the analyses of participants' argument quality based on the "Argumentation Quality Rubric".

Chart 1. Quality of Argumentation



The eight participants included in the study formed arguments on nine different socioscientific issues. According to Chart 1, pre-service teachers generally produced arguments of above average quality. Evaluation of arguments based on specific subjects shows that pre-service teachers produced better quality arguments on topics such as genetically modified organisms, stem cell and organ donation and global climate change, compared to others. Their arguments on cloning and euthanasia were found to be of moderate quality. Based on the examination of pre-service teachers' arguments, it was concluded that the argument quality of the participants P1, P3, P4, P6 was at a higher level with a more homogeneous distribution. P7 was found to produce low-level arguments.

It can be argued that no significant change was observed in participants' argument levels over time according to the interpretation of the data in Table 3 and Chart 1. However, when examined in the context of specific subjects, a qualitative difference was observed in the level of arguments. In addition, considering the components that make up the argument, it can be stated that the participants were partially more successful in presenting the argument components such as claim, data, justification and supporting points, but they were not as successful in presenting rebuttals.

4 | DISCUSSION & CONCLUSION

In this study, the results obtained through observation were categorized in terms of both quantity and quality. In terms of quantity, four different categories were obtained: "biotechnology", "health", "environment" and "energy". These categories were divided into some codes within themselves. It was concluded that the categories created were similar to some studies in the literature. (Demiral, 2014; Tekin, 2018)

When the category of "biotechnology" was examined, it was concluded that the participants generally dealt with scientific studies that closely affected living things. While the teacher candidates created many of the codes related to the biotechnology category related to the genetically modified organisms (f: 50) and cloning (f: 54) subjects, they created less code about the pandemic vaccine (f: 34) and stem cell (f: 30). In other words, it can be said that the participants reached more codes and frequencies in genetically modified organisms and cloning than other issues. This can be explained by the fact that genetically modified organisms and cloning issues are related to genetics and technology. In addition, it is thought that the fact that the participants took the biotechnology course one year (3rd grade) before experiencing the argumentation process within the scope of this study can be related to this result. When the literature is examined, it has been concluded that genetically modified organisms and cloning are often associated with biotechnology in some studies (Babacan, 2017; Tekin, 2018; Topcu, Mugaloglu, & Guven, 2014; Ture, 2018).

When the category of "health" was examined, it was concluded that the code mostly repeated by pre-service teachers was "expert opinion". Participants emphasized the importance of obtaining expert opinions on socioscientific issues with health content. Studies containing the code of expert opinion (Babacan, 2017; Demiral, 2014; Demiral & Turkmenoglu, 2018) are available in the literature. In addition, according to the observation records of the teacher candidates, euthanasia, medicine-alternative medicine, organ donation were discussed in the "health" category. It was noteworthy that teacher candidates approached the subject from a religious, moral and psychological point of view on health issues. This situation was reflected in the codes (Table 2).

When the category of "environment" was examined, it was seen that the codes created focused on the causes of environmental problems. It has been observed that the most repetitive code in the environmental category is the "danger" code. When the different socio-scientific issues covered in the environmental category are examined, it has been determined that these issues are space pollution and global climate change. When the literature is examined, it is seen that according to the researchers (Barraza, 1999; Ozsoy, 2012; Shepardson, Wee, Priddy, & Harbor, 2007; Ozata Yucel & Ozkan, 2014), the frequently repeated code in the environmental category is "pollution". For example, in the study conducted by Polat (2013), the word association test was applied to the students regarding the environment and as a result, it was concluded that the frequency of repetition of the pollution code was between medium and low levels. This situation may be related to the fact that the individuals to whom the research was applied may have been affected by local problems, and that the participants have different age levels and different levels of field knowledge. In the codes created within the scope of the environmental category, teacher candidates stated that man-made products, machines create a serious pollution and that high costs are required to solve this pollution. In other words, the impact of socioscientific issues on human, economy and nature has been revealed clearly in this part of the research. In the literature, it can be said that there are similar studies (Taspinar, 2011; Ture, 2018) expressing the effects of socioscientific issues on humans.

When the arguments formed by the teacher candidates about nuclear energy in their observation records were examined, it was thought that it would be more correct to evaluate the frequently repeated words in the "energy" category. When the codes created under this category were examined, it was observed that the opinions of the

teacher candidates and the content of the discussions on nuclear energy were generally negative. In the argumentation process, it was stated by the participants that the geography they are in and the people of the region will be exposed to more risks in case of a possible danger. It was thought that the region where the research was conducted could be effective in obtaining this result. As a matter of fact, it was seen in the classroom discussions that the participants had advanced knowledge about the nuclear power plant being built in the Akkuyu region of Mersin and so they offered various solutions. In some studies in the literature (Tonus, 2012; Ozturk & Leblebicioglu, 2015; Simmons & Zeidler, 2003; Walker & Zeidler, 2007), it has been stated that individuals are affected by environmental factors in their decision-making and argument-making processes. The mentioned environmental factors are listed in a more descriptive manner by Wiyarsi and Calik (2019). It was stated by the researchers that the geography, context and interaction with the participants in the socioscientific issues studies can affect the results of the study. In the studies of Kılinc, Boyes, and Stanisstreet (2012), there were results supporting this view. In the related study, data about nuclear power plants was collected from teacher candidates in Sinop, Mersin and Kırşehir. In the findings obtained from Sinop and Mersin, it was seen that the participants expressed more negative opinions against the nuclear power plant. This situation can be explained by the effect of environmental factors on research findings. In this category, it has been determined that repetitive codes are generally "risks, accidents" codes in the arguments formed by pre-service teachers. In the study conducted by Iseri (2012) with prospective teachers, it was aimed to measure the risk and benefit values in nuclear energy. As a result of the mentioned research, it was stated that the damage that nuclear power plants can cause to living life carries a very high risk. On the other hand, it has been stated that nuclear energy accidents cannot be compensated and in this case there is a high risk. Similarly, in the study conducted by Tekgoz and Ercan Yalman (2020), codes such as environment, health, risks and threats emerged while examining the opinions of science teachers about the nuclear power plant. In this context, it can be said that the codes emerging in the study are compatible with the literature. In addition, it is thought that the reason why the code that the teacher candidates often repeat is the "risks" in the study may be due to the accidents experienced in the past and the very high damage to the environment. Also, the teacher candidates offered solutions such as "safe waste storage" and "turning to alternative energy sources" despite the problems related to nuclear energy.

Different socioscientific issues were dealt with in the classroom for nine weeks in this study. However, although the topics differ every week, it has been observed that some codes and themes are similar and repeated (Figure, 1, 2, 3). For example, in the biotechnology category, the "test organisms" code is specified under four subjects (GMO, pandemic vaccine, cloning, and stem cell). Another example is that the "empathy" code in the health category is common in both euthanasia and organ transplantation. Based on this, it can be said that some socioscientific issues are related to each other. Socioscientific issues are open-ended situations, both scientific and social which include dilemmas. (Sadler, 2003). For this reason, it can be thought that it is a natural situation for the subjects to be interconnected. In the study conducted by Sadler (2003), it was stated that some socioscientific issues were related to the conceptual structure of science and technology.

After the findings regarding the argumentation process were discussed in terms of quantity, they were also examined qualitatively (Table 3 and Graphic 1). It was observed that the pre-service teachers could not form an argument by paying attention to all components. It has been observed that pre-service teachers are partially more successful in forming claims, evidence and finding support, but they are not very successful in the rebuttal part. In the relevant studies in the literature, it was stated that most individuals had difficulties in the refutational part in the argumentation process and could not complete all the components (Cirit Gul, & Apaydın, 2021; Erduran, Simon, & Osborne, 2004; Jimenez Aleixandre, Rodriguez, & Duschl, 2000; Kortland, 1996; Sahin Kalyon, & Tasar, 2020). In the study conducted by Kortland (1996), it was stated that the students directly supported the situations claimed about the current problems, and the participants were limited in presenting opposing claims and rebuttal. The researcher stated that this situation may stem from inexperience in forming arguments and their lacking of knowledge about socioscientific situations. Fakhriyad and Masfuah (2021) reported that participants can create scientific knowledge thanks to data and evidence in daily life and emphasized that the participants can be successful in argument components such as the claim, data, justification and supporting points for this reason. The findings of Fakhriyad and Masfuah (2021) can be used to explain the finding in this study that the participants were partially successful in the argumentation process in creating claims, evidence and finding supporting points. Similarly, inadequacies in presenting rebuttals can be explained by Kortland's (1996) aforementioned findings.

When the qualitative results about the argumentation process are handled in the context of the subject, striking results have been reached (Graphic 1). The components of the arguments created for the socioscientific issues which were selected according to the results provided by the teacher candidates are different from each other. It was concluded that teacher candidates formed better arguments on socioscientific issues such as global climate change, genetically modified organisms, nuclear energy, organ donation and stem cells, medicine-alternative medicine while they formed lower arguments on socioscientific issues such as space pollution, cloning, pandemic vaccination and euthanasia. Socioscientific issues are universal, scientific, social and current issues (Dawson & Venville, 2009). For this reason, it has been observed that in the face of socioscientific situations and problems that are more visible, in social media, news sources, and daily life, pre-service teachers produce more and more qualified arguments and can present more logical components. For example, while global climate change is a frequent issue in the media, space pollution is a socioscientific issue that is rarely covered. In addition, these research data were collected before the Covid-19 outbreak. For this reason, pandemic and pandemic vaccines did not appear in the media as much as today when the data were collected. Similarly, since euthanasia is prohibited in our country, it is possible that it does not take place in the media much. Participants' weak arguments on this issue can be attributed to the fact that these issues are less on the agenda. Therefore, it can be thought that there may be less knowledge about a topic which is less discussed on the agenda. There are no quantitative results that show the level of knowledge in a comparative way for each socioscientific issue in this study. As a result of the observations, it is, however, possible to observe that the participants have different level of field knowledge in different socioscientific issue. At this point, it seems reasonable to associate field knowledge with socioscientific issues with the level of argumentation. In other words, the level of argumentation can be shaped according to the field knowledge, and the field knowledge can be shaped according to the coverage of the subject in the media. In this direction, when the literature is examined, there are studies that support the above argument and conclude that argumentation levels vary according to socioscientific issues (Isbilir, 2010; Kutluca, 2012; Lee & Grace, 2012; Topcu, 2008; Walker & Zeidler, 2007). For example, in the study conducted by Evren Yapicioglu (2016), the opinions of the teacher candidates on socioscientific issues were evaluated. In the results, it was determined that teacher candidates benefited from the field knowledge in order to make decision in the face of a socioscientific problem. In the related study, it was stated that they should have knowledge in order to deal with such issues in the classroom discussion process. In another study, it was determined by Jimenez-Aleixandre and Preiro-Munoz (2002) that more in-depth knowledge content rather than superficial knowledge is needed when making decisions within the scope of the argumentation process in the face of a socioscientific issue. Similarly, in the studies conducted by Maloney and Simon (2006), Roychoudhury and Rice (2009), Clark and Sampson (2008), Sampson and Clark (2011) and Acar (2008), it was stated that field knowledge was an important factor in the argument formation process. Osborne, Erduran and Simon (2004) and Demiral and Turkmenoğlu (2018) emphasized that having a good level of field knowledge supports the argument quality. Similarly, the study conducted by Cirit Gul and Apaydin (2021) concluded that the quality of the arguments and the skills of defining, explaining, analyzing and evaluating the arguments increase when the pre-service teachers have knowledge about the relevant argumentation process.

In general, no significant change was observed in pre-service teachers' argument levels over time. However, a qualitative difference was observed in the level of argument based on the context of the subject. Lack of a training process in this study in regards to argumentation may be the reason why pre-service teachers' argument levels had no significant change over time. According to the results of the data obtained from the research, suggestions for socioscientific issue practitioners and researchers are presented below.

- It can be said that education faculties have important responsibilities in order to train prospective teachers on socioscientific issues. In this context, it may be suggested to open specific field courses with socioscientific issues in relevant undergraduate departments of universities.
- Organizations such as panels, congresses, workshops can be organized to increase the field knowledge of teacher candidates.
- Data were collected from qualitative research approaches through observation in this study. Conducting studies with mixed methods in order to achieve stronger results may contribute to the literature.

- This study was carried out with 8 teacher candidates. Studies can be designed by changing the number of participants and collecting data from different samples.
- Only the observation technique was used as data collection tool in this study. Studies can be done using different data collection tools.

STATEMENTS OF PUBLICATION ETHICS

This research was reviewed by the Mersin University Social and Humanities Ethics Committee and it was decided that the research was ethically appropriate. Meeting date and ethical decision number: 26/08/2020-36.

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RESEARCHERS' CONTRIBUTION RATE

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Aybike Gökçehan CENK	☒	☒	☒	☒	☒	☒
Feride ERCAN YALMAN	☒	☒	☒	☒	☐	☒

CONFLICT OF INTEREST

There is no conflict of interest in the study.

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ANNEX 1.

Argumentation Quality Rubric (Sadler *vs* Fowler, 2006)

Score	Explanation
0	Invalid claim
1	Groundless reasoning
2	Simple reasoning
3	Detailed reasoning
4	Detailed reasoning and counter argument



A Situated Approach to the Understanding of Elusive Foreign Language Classroom Anxiety

Erdi Şimşek *

* Asst. Prof. Dr., Bartın University, <https://orcid.org/0000-0003-1465-565X> esimsek@bartin.edu.tr

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ABSTRACT

Although foreign language anxiety, considered as one of the most important negative factors affecting students' foreign language performance, has been receiving interest from researchers for decades, the literature suggests only limited number of studies which are grounded on dynamic approaches to explore the elusive nature of anxiety. Mainly focusing on the effects of error correction, native/non-native teacher instruction and presence of a video camera on students' language anxiety in four different lessons, this mixed-method study aims to investigate the elusive foreign language classroom anxiety in as many different ways as possible in order to inspire a follow-up study. During these four lessons, On-line Anxiety and Liking Meter was used so as to observe participants' levels of anxiety and liking in every 10 minutes, and Overall Anxiety and Liking Questionnaire was administered after each session. Additionally, retrospective interviews were conducted with the participants after each lesson. As it was difficult to have a fully coherent view due to the scope of the study and limited number of participants, several different situations resulting in certain insights were presented. The results suggested that error correction, speaking activities, video recording, low self-esteem and some exogenous factors caused anxiety arousal while task-based activities, ice-breakers and familiarity with teacher helped to reduce the anxiety. The findings revealed a significantly negative correlation between the anxiety and liking, and there was no difference between native and non-native teachers in terms of their effects on anxiety.

Keywords: anxiety, dynamic approaches, error correction, communicative approach, foreign language education

Anlaşılması Zor Yabancı Dil Sınıfı Kaygısını Anlamak İçin Durumlu Bir Yaklaşım

Öz

Öğrencilerin yabancı dil performansını etkileyen en önemli olumsuz faktörlerden biri olarak kabul edilen yabancı dil kaygısı, onlarca yıldır araştırmacıların ilgisini çekse de, kaygının anlaşılması zor doğasını keşfetmeye yönelik dinamik yaklaşımları benimseyen çalışmalar sınırlı sayıdadır. Temelde dört farklı derste hata düzeltme, ana dili İngilizce olan ve olmayan bir öğretmen tarafından yapılan öğretim ve video kamera varlığının öğrencilerin dil kaygısı üzerindeki etkilerine odaklanan bu karma yöntemli çalışma, bir devam çalışmasına ilham vermek için, anlaşılması zor yabancı dil sınıfı kaygısını mümkün olduğunca çok farklı yönden araştırmayı amaçlamaktadır. Bu dört ders boyunca her 10 dakikada bir öğrencilerin kaygı ve beğeni düzeylerindeki değişimi gözlemlemek için Bağlantılı Kaygı ve Beğeni Ölçer; her oturumdan sonra ise Genel Kaygı ve Beğeni Anketi uygulanmıştır. Ayrıca katılımcılarla her dersten sonra geriye dönük nitel görüşmeler yapılmıştır. Çalışmanın kapsamı ve katılımcı sayısının sınırlı olması nedeniyle tam tutarlı bir görüşe sahip olmak zor olduğundan, belirli iç görümlere yol açan birkaç farklı durum sunulmuştur. Sonuçlar, hata düzeltme, konuşma etkinlikleri, video kaydı, düşük benlik saygısı ve bazı dış faktörlerin kaygıya yol açabildiğini gösterirken; görev temelli etkinliklerin, buz kırıcıların ve öğretmene aşına olma durumunun kaygıyı azaltmaya yardımcı olabileceğini göstermiştir. Bulgular, kaygı ve hoşlanma arasında anlamlı derecede negatif bir ilişki olduğunu ortaya koymuş ve anadili İngilizce olan ve olmayan öğretmenler arasında, öğrencilerin kaygı seviyelerine etkileri açısından temel bir fark gözlemlenmemiştir.

Anahtar kelimeler: kaygı, dinamik yaklaşımlar, hata düzeltimi, iletişimsel yaklaşım, yabancı dil eğitimi

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1 | INTRODUCTION

Second language scholars have long been aware of the fact that many students are facing with a kind of anxiety which is only specific for foreign language classrooms: foreign language anxiety (e.g. Dörnyei & Ryan, 2015). Foreign language anxiety differs from other types of anxiety as learners are introduced a culture-imposing and constant-communication-requiring environment through the language, which learners might perceive as a threat. As a result, many language learners, even if they are successful in other areas, experience anxiety specifically in a language classroom. Both teachers and students should identify foreign language anxiety and optimise the learning conditions accordingly. However, how do the activities and variations in English classes affect the level of anxiety? To be able to gain various insights into situated classroom anxiety by investigating the effects of error correction, native/non-native teacher instruction and video recordings, this research aims to explore the relationship between foreign language anxiety and some activities and variations in English classes.

FOREIGN LANGUAGE ANXIETY

'I think my English level is not good, so I am shy to talk English'.

(Tsui, 1996, p.145)

'I am bothered a little about my errors because I get nervous, and I think that the other person thinks that I don't know how to speak'.

(Gregersen & Horwitz, 2002, p.567)

Foreign language anxiety, one of the major reasons for such expressions from the students, is described by MacIntyre and Gardner (1994a) as 'the feeling of tension and apprehension specifically associated with second language contexts, including speaking, listening and learning' (p. 284). On the other hand, according to Horwitz et al. (1986) foreign language anxiety is 'a distinct complex of self-perceptions, beliefs, feelings and behaviours related to classroom language learning arising from the uniqueness of the language learning process' (p. 128). Foreign language anxiety has many physiological, emotional, cognitive, academic and social effects. Anxious students can be 'complaining about a headache, experiencing tight muscles, feeling unexplained pain or tension in any part of the body' (Oxford, 1999, p. 66). Blushing, trembling, squirming, fidgeting, sweating, stuttering, stammering, or heart palpitations are some of the well-known physiological symptoms of anxiety (Blackmore et al., 2009; Oxford, 1999). Fear of not understanding the teacher, insecurity about speaking, worrying about feeling left behind, confusion or embarrassment in volunteering responses and procrastination are some of the emotional effects (Gregersen & Horwitz, 2002; Gregersen & MacIntyre, 2014). Investigating students' oral exam performances with accuracy and comprehensibility, Phillips (1992) finds that anxious students receive lower grades compared to the other students. Anxious students also use shorter sentences and consider the oral examination as an unpleasant activity. Furthermore, these students are not as willing to communicate as their classmates and some of them may experience traumatic reactions (MacIntyre, 1999).

For many years, the relationship between anxiety and language learning has not provided consistent results. Such an inconsistency could be arising from misleading perceptions towards anxiety and from the fact that anxiety could be conceptualised at various levels of abstraction (e.g. Şimşek & Dörnyei, 2017). MacIntyre (2017) classifies foreign anxiety research trends in three broad phases: cofounded phase, the specialised phase and the dynamic phase. Coming into prominence with Scovel's (1978) novel review of language anxiety literature, the main issue of the cofounded phase was to try to measure and define anxiety as well as to include some elements of language acquisition. The problem then was that not every type of anxiety could be directly associated with a foreign language. Two other focal points that dominated the cofounded phase were the arguments on state - trait anxiety (Kleinmann, 1977; Spielberger, 1966) and facilitating - debilitating anxiety (Alpert & Haber, 1960; Chastain, 1975) discriminations (for a detailed review, see Gkonou, Daubney and Dewaele, 2017).

The specialised phase was pioneered by the study of Horwitz et al. (1986). They developed their concept of foreign language anxiety grounded in anxiety experiences of learners seeking assistance from teachers. Horwitz et al. (1986) developed the most famous language anxiety scale, the Foreign Language Classroom Anxiety Scale (FLCAS) which has been used by many researchers ever since. This 33-item, five-point Likert-scale type instrument, focus on communication apprehension, test anxiety and fear of negative evaluation aspects. However,

Horwitz (2017) states that anxiety is not just a combination of these elements, that it is a unified structure. Consistently high reliability of the FLCAS as well as labelling foreign language anxiety as a situation-specific construct was a turning point in the literature (Dewaele, 2002). Researchers started to develop more situation-specific scales to examine the correlation between different anxiety measures (MacIntyre & Gardner, 1989). Researchers also began to explore language anxiety in as many aspects as possible. For example, some research studies focused on performance (MacIntyre & Gardner, 1994a; Onwuegbuzie et al., 1999), some on personality factors (Dewaele, 2002; Gregersen & Horwitz, 2002; Thompson & Khawaja, 2015), and finally some others on different language skills (Cheng et al., 1999; Elkhafaifi, 2005; Jee, 2015; Mak, 2011; Saito et al., 1999).

The third phase in MacIntyre's (2017) classification, the dynamic phase refers to the recent tradition which situates the anxiety among multiple continuously-interacting factors (such as other learner characteristics, situational factors, interpersonal relationships, topics or linguistic abilities). Anxiety emerges as a constantly fluctuating phenomenon that needs to be measured in minutes or even seconds; therefore, the dynamic and situated approaches and innovative measures in analysing student, learning and environment dynamics are of great importance nowadays (e.g. Gregersen et al., 2014; MacIntyre, 2012; MacIntyre & Serroul, 2015).

COMMUNICATIVE LANGUAGE TEACHING AND ANXIETY

No doubt, the grammar translation method dominated the language teaching until the first half of the 19th century. Even later, it was difficult to change some of the habits caused by this method such as rule explanations, vocabulary lists or translations. In addition to these, another result of the grammar translation method was that students had difficulty in speaking in the target language (Richards & Rodgers, 2018). As one of the primary goals of second language learning is to discover how to interact with people effectively in the target language, researchers tried to find new ways of transferring the skills which students learned in the classroom to real life situations since 1970's. Today, it is believed that there is no single method which meets all the demands but communicative language teaching approach is considered as one of the most popular methods. The main principle of the communicative language teaching is to put the language in action; in other words, to enhance the communicative competence. Furthermore, Hedge (2000) identifies linguistic competence, pragmatic competence, discourse competence, strategic competence and fluency as the components of communicative language ability.

The communicative approach highlights the importance of student-centred instruction. The role of the students is defined as 'communicators' trying to understand the others and to be understood by them. When it comes to teachers' role, communicative approach suggests that they should act as 'advisers' and 'facilitators' who answer students' questions as well as engage in the activities with them (Larsen-Freeman, 2018). Several studies reveal that many of the students remain reticent during some classroom activities (Tsui, 1996; White & Lightbown, 1984; Yashima et al., 2004), but it is evident that students tend to experience less anxiety in non-threatening contexts (Tercan & Dikilitaş, 2015). Wu (2010) claims that students encounter with anxiety in communicative classes although they like communicative activities in general. This might also revive the communication apprehension because one may easily argue that communication apprehension is likely to occur in communicative classes as students are always asked to speak. Indeed, it seems fairly relevant. Especially 'people who typically have trouble speaking in groups are likely to experience even greater difficulty speaking in a foreign language class where they have little control of the communicative situation and their performance is constantly monitored' (Horwitz et al., 1986, p. 127). On the other hand, Johnson et al. (1998) suggest that cooperative learning, one of the approaches that communicative framework presents, can improve students' cooperation in the class, can help to create an ideal atmosphere as students are independent, supportive and goal-oriented and facilitate their contribution to each other's learning. Student-centred, communicative classes help students use the language effectively in real life. However, the research suggests that students can still suffer from foreign language anxiety in such classes, which makes it necessary to put more focus on foreign language anxiety in communicative classrooms.

ERROR CORRECTION IN LANGUAGE CLASSROOMS

In Linguistics, error is defined as 'production of a linguistic form which deviates from the correct form', in other words the native speaker form (Allwright & Bailey, 1991, p. 84). Indicating students' developmental stages in the foreign language, the errors can occur due to inaccuracy in phonology, lexis, morphosyntax and semantics

(Mackey et al., 2000). On the other hand, Tsui (1995) argues that sometimes, even when students use the correct form, something rejected by the teacher is also treated as an error in the classroom.

So, how should teachers correct students' errors? By applying the behaviourist view making students write the correct form at least three times until error-free forms are obtained? Of course, that would not be an acceptable technique since the errors can cause a sense of failure among students and inhibit their participation easily. Carrying out a study examining corrective feedback and learner uptake by analysing the transcripts of about 18 hours of classroom interaction, Lyster and Ranta (1997) identify 6 different types of feedback: explicit correction, recasts, clarification requests, metalinguistic feedback, elicitation and repetition. However, the most effective way of correcting the errors remains questionable. Ancker's (2000) study indicate the differences between students' and teachers' preferences for error correction. In his study, Ancker asks teachers and students from 15 different countries if the teachers should correct every error students make while using English. Only 25% of the teachers state that they would prefer this kind of an error correction. However, interestingly, the students show a great support by 76% reporting that teachers should correct every error. Students also report that the reason why they prefer error correction is that it helps them speak English correctly. On the other hand, the other students who disagree with the question regarding error correction report that error correction is negatively affecting their self-confidence and motivation. Tsui (1995) suggests that the necessity of error correction depends on students' language competence and their characters. If the learners have low language proficiency then obviously they are likely to produce erroneous expressions and if the learners are very shy, establishing a relaxing atmosphere is more essential than correcting the errors because correcting the errors in a harsh manner, is one of the factors which could provoke anxiety. Sato (2003), aiming to reduce anxiety levels in the classroom by ensuring meaningful interaction, suggests selective error correction as this type of error correction does not affect the fluency and the flow of communication. It is also recommended that group work help students to participate in classroom communication more (ibid.) As the literature suggests, it is crucial for teachers to reconsider their interactions with the students. Teachers should inform the learners about the developmental stages in language learning so that the learners could set realistic and achievable goals and be aware of their own process.

NATIVE VS. NON-NATIVE TEACHERS

One of the typical questions a learner, who has just decided to learn a foreign language- let's assume English-, has in their minds is whether native teachers of English are superior to the non-native teachers of English. This question becomes more gripping at present times due to easier access to online language instructors.

Medgyes (1994) says that, by their nature, non-natives are norm-dependent because their use of English consists of imitations of the original. As a result, he claims that it is very difficult to say that non-natives can be as creative and original as the native ones. However, he also defines advantages of being a non-native teacher. According to Medgyes, non-native teachers can be a good model, teach language strategies, provide more information, understand the needs of students, understand the difficulties in learning the target language and sometimes make use of the native language. One may assume that non-natives are not likely to produce language forms in rich linguistic contexts and that they cannot be ideal language teachers since their knowledge of English is limited but the research suggests opposite results. Modiano (1999) argues that non-native teachers of English can communicate more effectively in international contexts. Canagarajah (1999) agrees with Modiano stating that non-natives will perform better in ESL contexts as a result of their multicultural knowledge. In addition, a very positive side of being a non-native teacher comes from Cook (2005) as she points out that 'non-native speaker teachers provide models of proficient L2 users in action in the classroom' and 'non-native speaker teachers present examples of people who have become successful L2 users' (p. 57). Investigating US school host teachers' opinions about non-native student teachers assigned to teaching practice, Nemtchinova (2005) finds out that non-native trainees are well-prepared, that they use correct and fluent expressions in English and that they communicate well with their students. They also seem to be knowledgeable about the target culture. All in all, Medgyes (1992) suggests that effectiveness of language teachers does not rely on whether they are natives or non-natives. According to him, 'the ideal native speaking EFL teacher is the one who has achieved a high degree of proficiency in the learners' mother tongue' while 'the ideal non-native speaking EFL teacher is the one who has achieved near-native proficiency in English' (pp. 348-349).

SITUATED APPROACH

'Language learning is a dynamic process in which affective variable influences language achievement and achievement and experiences in language learning can influence some affective variables' (Gardner et al., 2004, p. 1). In this regard, Crombach et al. (2003) put emphasis on two situation-specific judgements during learning: appraisals and attributions. Since this kind of a dynamic and complex process is of a great importance, there have been a number of attempts in order to deal with it in more effective ways. For example, Boekaerts (1986) formed the On-line Motivation Questionnaire, one of the most inspirational questionnaires in the field. The questionnaire consisted of several five-point-scale items questioning the participants' eagerness, anxiety, enthusiasm, assessment of their own competence and other judgements on the difficulty of the task and its relevance to real life. What makes this questionnaire different from the traditional ones was that the questionnaire was designed to measure the above-mentioned items at the on-set and off-set of a task during the usual planned time in the classroom. The rationale behind the On-line Motivation Questionnaire is that students can forget their specific ideas about a certain situation as the time elapses. So, eliciting the responses in a fraction of a second can lead to a better interpretation of that certain situation. Julkunen (1989) used a similar on-line motivation questionnaire based on Boekaerts'. He included 12 pre-task and 10 post-task statements using a five-point-scale. The pre-task items intended to measure the state motivation. Different from that, the post-task items were prepared to indicate the persistence with the task, concentration, satisfaction and interest. In addition to pre-task and post-task statements, there were some other items to indicate students' emotional states in both such as anxiety, stress, sadness and anger. Gardner et al. (2004) wanted to emphasize five variables in one study: motivation, language anxiety, integrativeness, attitudes towards the learning situation and instrumental orientation. In their study, Gardner and his friends used two innovative measurements. The first one was a measure called anxometer, by which the participants were introduced a thermometer shape that was labelled 'high' at the top and 'low' at the bottom. Participants were asked to consider various feelings such as apprehension, nervousness and worry they had in class that day and to mark their level of anxiety by drawing a horizontal line on the anxometer. The second measure was named as motometer which was used to investigate the motivational changes in a one-year intermediate French course. This measure was the same as the anxometer. Yet, the only difference was the way it was instructed as the participants were asked to take several motivational factors into consideration. Later on, the motometer was used in another study by Waninge (2010). She asked her students to fill out this thermometer shaped motometer in every five minutes during the class. To make it easier, Waninge used a kind of an automated sound to remind the students of determining their level of motivation.

There might be two main criticisms about this approach due to lack of reliability and validity. Because of its nature, it is almost impossible to calculate the internal consistency. Yet, some meaningful relations can be found between appraisals and consequent variables. In that way, it does not mean that the results are totally unreliable. Second, appraisals are not easy to be validated because they can change depending on one particular situation to another (Crombach et al., 2003).

Nowadays, psycho-educational research becomes more and more important as 'it explores the mechanisms linking the pupils actual learning resources and various actual learning conditions to the pupil's perception and appraisal of these conditions and resources as well as to his intended and perceived reactions' (Boekaerts, 1987, p. 208). Therefore, it is necessary to place greater importance on situated approach and the new measures it provides even though they might be criticised for a few aspects.

2 | METHOD

PARTICIPANTS

This study was carried out with the voluntary participation of eight Turkish individuals (six males and two females) enrolling in a private language school. They ranged from 18 to 28 (mean age 23.25). The participants were selected in accordance with convenience sampling method; however, to be able to minimize language-proficiency-related adaptations of foreign language anxiety, the only criterion was that the participants were all intermediate-level English language learners. It should also be noted here that five of the participants were the teachers' previous students.

MATERIALS

ON-LINE ANXIETY AND LIKING METER

An innovative on-line instrument, which was inspired by Boekaerts' (1986) On-line Motivation Questionnaire and adapted from Gardner et al.'s (2004) anxometer, was used for measuring situation-specific anxiety (Figure 1).

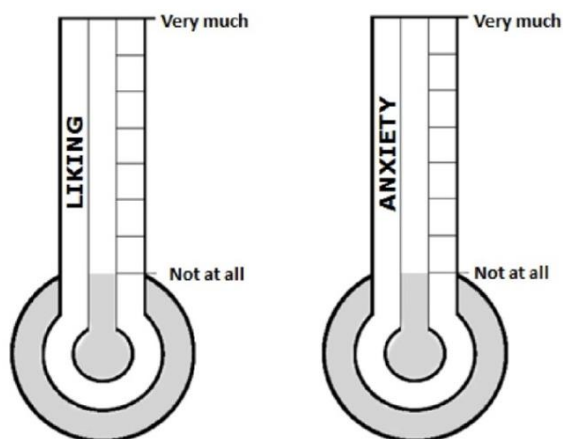


Figure 1. *On-line anxiety and liking meter*

This is a two thermometer-shaped seven-point semantic differential scale items by which participants indicate their levels of anxiety and liking separately by crossing a box between the two extremes. In this case the extremes are 'not at all' at the bottom and 'very much' at the top.

Participants were asked to consider their levels of anxiety and liking at a specific moment triggered by a 'beep' sound played by the teacher at certain times and to cross the relevant boxes in the thermometers immediately.

It is necessary to mention that, if an on-line instrument is involved in a research design, researchers usually give up one of the main criteria of reliable questionnaire theory: the multiple measurements. In this study, only two items were used so as not to disrupt the natural flow of the class to fill in a proper questionnaire. This is also the reason why it is mainly single item measures. This situation can be considered a weakness which, more or less, researchers employing this measurement has to take on board. Once taking this root, the options are fairly limited. Although theoretically it is questionable to some extent, it is very interesting that some really valued scholars decided that the trade-off was worth it. R.C. Gardner, Professor of Psychometrics, and M. Boekaerts, one of the greatest educational psychologists both decided to try on-line measures since these measures let the researcher gain more than he/she loses.

OVERALL ANXIETY AND LIKING QUESTIONNAIRE

The second instrument in this study was designed to measure students' post-session anxiety and liking states. The overall anxiety and liking questionnaire consists of six 7-point semantic differential scale items. On a white A4 paper, the participations were introduced six adjectives which were meant to measure the two intended variables (nervous, confident, enthusiastic, stressed, happy, and comfortable). 'Nervous,' confident' and 'stressed' were given in order to measure the level of anxiety evaluating the preceding session. It should be note that 'confident' is a negatively worded item. The adjectives given to inquire the liking were 'enthusiastic', 'happy' and 'comfortable'. In this traditionally designed semantic differential scale items students, as usual, were asked to cross a box between the two extremes: 'not at all' on one side and 'very much' on the other side.

PROCEDURES

For this study, four different lessons were scheduled. Each lesson aimed to change one variable in the classroom. First lesson was a neutral, student-centred class where communicative language teaching took place. In the second class, immediate correction was made when students made errors during the tasks. The third one was taught by a native teacher (A United States-born male with more than 10 years of English language teaching

experience in different higher education institutions in Turkey). The final one was a task-based class at the last part of which students were recorded with a video camera and watched these recordings in the classroom.

Each lesson consisted of two 40-minute long sessions with a 10-minute break between them. In addition, preceding those sessions, an informative session was organised to inform the students about the research project and the ethical procedures as well as to hold a 40-minutes long demo session to break the ice.

Participants were asked to fill in one anxiety meter and one liking meter at a time in every 10 minutes in each session following a beep sound. To make it easier, three separate tables were placed on a white A4 paper. Each of the tables contained one anxiety meter and one liking meter. Next to these tables, time indicators (as 10', 20' and 30') were written. Students were similarly asked to fill in Overall Anxiety and Liking Questionnaire after each session (that is, at the break and at the end). In addition, at the end of each lesson, both of the measurements which all the students filled in were examined and according to their responses a few students were asked to participate in short retrospective interviews.

The lessons were taught in a big classroom equipped with a computer, a projector, a sound system as well as a white board. Semi-circular seating structure was preferred for all the lessons so that the students would have visual contact with each other and with the teacher as well. Besides, due to mobile specifications of the chairs and the desks used students could be divided into small groups easily. Also, all the lessons were recorded as a .wav file in order to track the possible specific situations and the automated beep sound was tested before each lesson.

During the planning phase of the lessons, communicative language teaching was preferred since all the lessons had to be as similar as possible and different grammatical themes might be contributing to foreign language anxiety.

ANALYSIS

The purpose of this study was to use an innovative methodology to test the terrain in various ways to raise as many possible issues as possible for a follow up-study. Instead of inferential statistics, descriptive statistics and their qualitative analyses supported with the interview data will take place in this study due to the low number of the possible cases and small size of the sample. Inferential statistics was only used to conduct correlation analysis between overall anxiety and liking. In this sense, this is a mixed method study where the quantitative data is turned into qualitative profiles. Actually even the descriptive statistics in this study might be questionable in terms of whether group based or individual based measures are more relevant. Therefore, it has limitations. This study introduces visual displays of the quantitative data and then qualitative data to explicate some of the anxiety-related concerns.

After collecting the data, each student was given an anonymous code ranging from S1 to S8. Each questionnaire was also labelled and coded in IBM SPSS Statistics. The negatively worded item, 'confident' was transcoded. Frequency analysis was carried out in order to spot any possible spelling mistakes, missing data or miscoded items. New variables indicating mean scores of each of the two sub-scales, overall liking and overall anxiety, were computed for both individual based and group based analysis. Having done that, correlation analysis was carried out for overall anxiety and overall liking scores in order to examine the relationship between the two.

The next step was to paste the data in a Microsoft Excel spreadsheet. Several individual and group-based line and bar charts were prepared to give meaning to the scores. In addition, a well-being index was generated. This index shows the how the discrepancy between anxiety and liking varies between the activities as anxiety and liking are always parallel but not going hand in hand. Simply put, the bigger the index means the higher the liking and the lower the anxiety. Finally, nine retrospective interviews, which had been recorded in Turkish, were translated into English. Since the purpose of this study was to inspire a follow-up study, the qualitative interview data were collected to elicit students' general views on why they felt well or unwell at certain moments in language classes. For this reason, specific coding procedures (e.g Creswell & Creswell, 2018) were not followed.

RESEARCH ETHICS

The participants were informed about the study and they were given informed consent forms prior to the data collection phase. The participants were also given an opportunity to ask questions regarding the study and they were made aware that they could freely withdraw from the project at any time without risk or prejudice. The data

collected were treated in the strictest confidence and were only reported in anonymised form. This paper does not require an ethics approval document as the data were collected before 2020.

3 | RESULTS AND DISCUSSION

As mentioned previously, this is an innovative study which can also be perceived as a pilot study. Therefore the aims are slightly different from a more traditional research project. Neither the scope of the study nor the number of participants was really enough to have a fully coherent view. What this research study went for was a diversity presenting a lot of different situations rather than having one research question or hypothesis. As a result, certain insights came out and some of seem to be particularly salient.

NEGATIVE CORRELATION BETWEEN ANXIETY AND LIKING

A significant negative correlation was found between the levels of liking and the levels of anxiety in general ($r = -.77, p < .01$). Anxiety in the classroom, if experienced, has a down-spiralling effect (Arnold & Brown, 1999). That is, the anxious students feel so nervous and insecure that they show poor performance. Inevitably, these poor performances can lead to more anxiety and to even poorer performances. Naturally, these kinds of feelings that anxiety causes in the classroom directly influence students' attitudes towards language instruction. With this regard, students' feeling uncomfortable in the class can lead students to consider the language learning as an unpleasant activity. One might also claim that such a down-spiralling effect could even result in drop-outs. Therefore, teachers should be aware of the downsides of language anxiety in order to take the necessary measures.

SPEAKING ACTIVITIES INCREASE ANXIETY

While preparing the activities for each lesson, presenting similar tasks in similar minutes was paid importance. Once the figures were created, one of the most prominent patterns was observed after 60th minutes. It showed that, apart from the 3rd lesson, the anxiety decreased dramatically 20 minutes before the end; in other words, during speaking tasks (see Figure 2). In language classrooms anxiety is often associated with oral tasks. There could be several reasons causing this, such as inadequate vocabulary knowledge, low English proficiency or lack of communication strategies. Yet, no matter what reasons are given for the anxiety during speaking tasks, there is clearly one thing this study suggests: the students do not feel comfortable during speaking activities (see Figure 3).

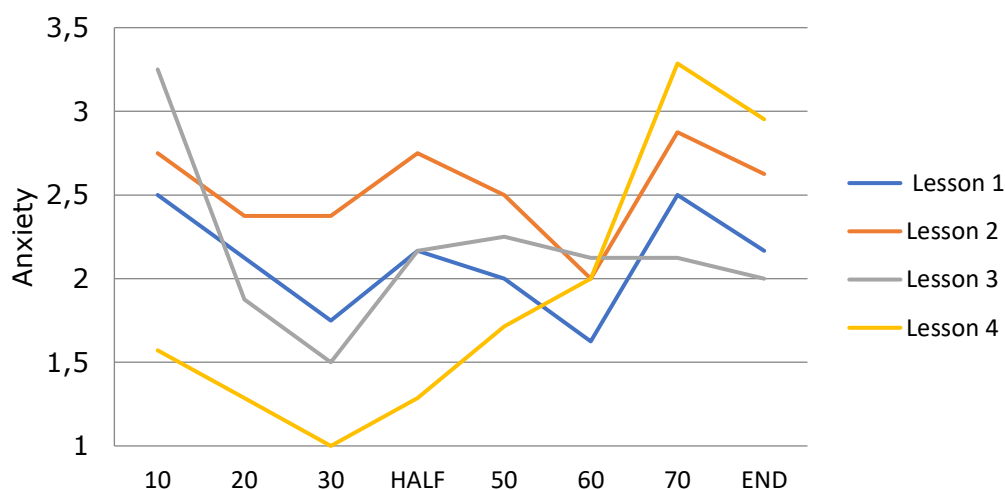


Figure 2. On-line anxiety scores for each lesson

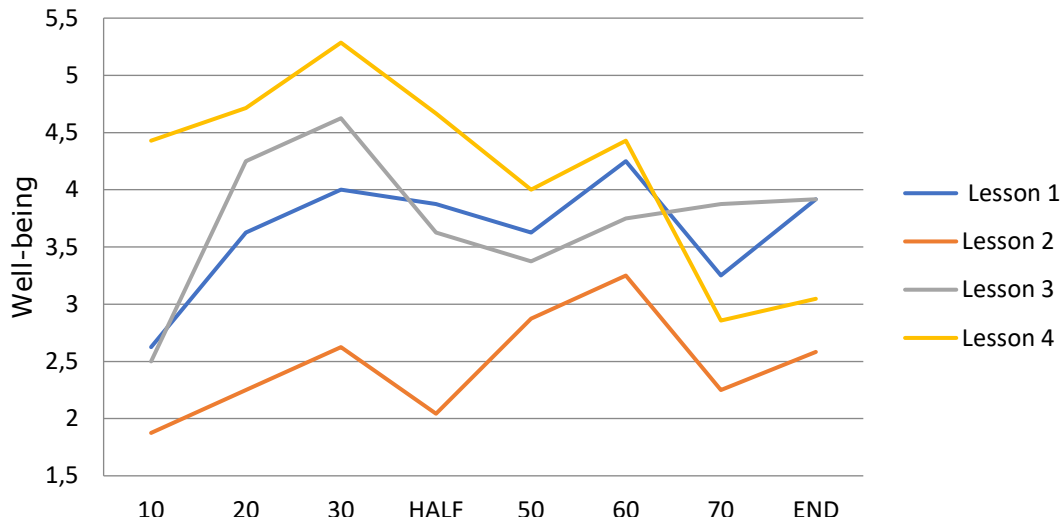


Figure 3. On-line well-being index for each lesson

Indeed, the findings reveal that oral production is one of the top factors causing foreign language anxiety. S7 expressed that she had difficulty in speaking in English:

It was nice, activities were fun. There was no problem for me. The only problem and the reason why my anxiety raised was because I wasn't able to speak English, towards the end I had problems... I understand you and the person speaking but I have difficulty in responding... ..Because I am afraid I won't be able to give the correct answer... I couldn't translate what I thought. (S7)

The interview data showed that S7 had negative thoughts about producing the language. She was afraid of making mistakes and, apparently, she had the idea that speaking a foreign language only consisted of translations.

'LEARNED HELPLESSNESS' IN THE CLASSROOM

S7 was the most anxious student by far both in the speaking task and in the whole lesson in general. However, surprisingly, her anxiety had a dramatic decrease in the next lessons (see Figure 4).

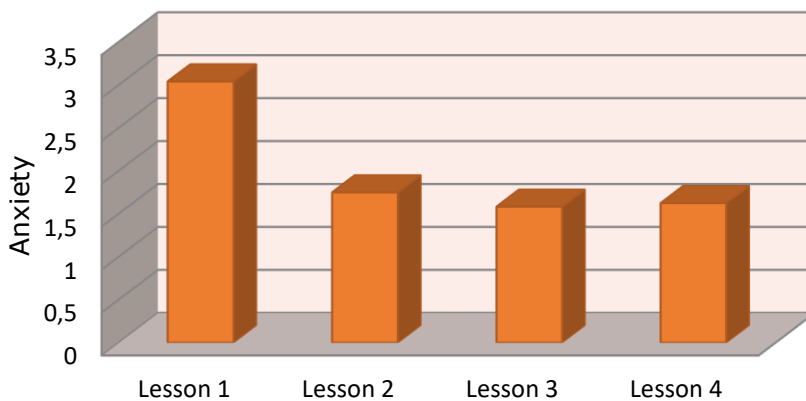


Figure 4. Mean anxiety scores of Student 7

When asked about the reasons for such a dramatic change in the interview after the second lesson, she said that she would never be successful in English no matter how hard she tried, so she gave up trying.

Today I was more relaxed because I thought I couldn't learn at all. So why would I worry? I didn't really care. Yesterday I felt very nervous because I couldn't speak. However, today I thought there was no need to worry. I planned to be relaxed and so I was relaxed. (S7)

When students are anxious in any circumstance, they start developing negative self-cognition. This cognition can be in three forms (MacIntyre & Gardner, 1994b): failure (e.g. I can never finish this task), avoidance (e.g. I

wish the teacher did not arrive) and self-depreciation (e.g. I am not good at languages). These 3 forms can inhibit the cognitive processing and lead to failure which can also create further negative cognitions. This could also be linked to one of the reaction styles Şimşek and Dörnyei (2017) suggested in their conceptualisation of anxiety as the anxious self: quitters.

PRIMARY ANXIETY DECREASES AFTER ICE-BREAKER ACTIVITIES.

Modern approaches in language teaching emphasize the importance of first impression and the initial steps which the teachers should be following. It has been agreed that teacher should start the lesson in a way that students will engage with it easier. Keeping that in mind, another pattern to come across easily while examining the figures takes place at the beginning of each lesson. The pattern shows that the initial anxiety in the classroom decreases after introducing the ice-breaker activities (see Figure 2). So, it can be claimed that ice-breakers could make students feel confident and comfortable before the introduction of upcoming tasks (see Figure 3).

Dörnyei and Malderez (1999) highlight the importance of ice breakers and warmers at the beginning of a new lesson. Ice breaker activities enhance students' learning about each other and lead to a more comfortable atmosphere. Warmers, on the other hand, can be a good tool to establish good relationships in the group, to recall the goals and to make students start articulating the target language.

NATIVE TEACHER OF ENGLISH CREATES A CONFIDENTIAL ENVIRONMENT.

It was interesting to notice that the speaking activity in the 3rd lesson, unlike the other lessons, did not seem to be contributing to anxiety (see Figure 2) and students' level of well-being was at its highest during the speaking activity in the 3rd lesson compared to the others (see Figure 3). The findings reveal that the answer lies behind the native teacher as the third lesson was taught by him.

To begin with, in the previous finding it was clear that students' initial thoughts about the lesson could trigger the anxiety at the beginning because students were newly arrived and they had either no or little idea regarding the activities they were to face with. However, the on-line anxiety and liking scores for the 3rd lesson suggest more than that (see Figure 5).

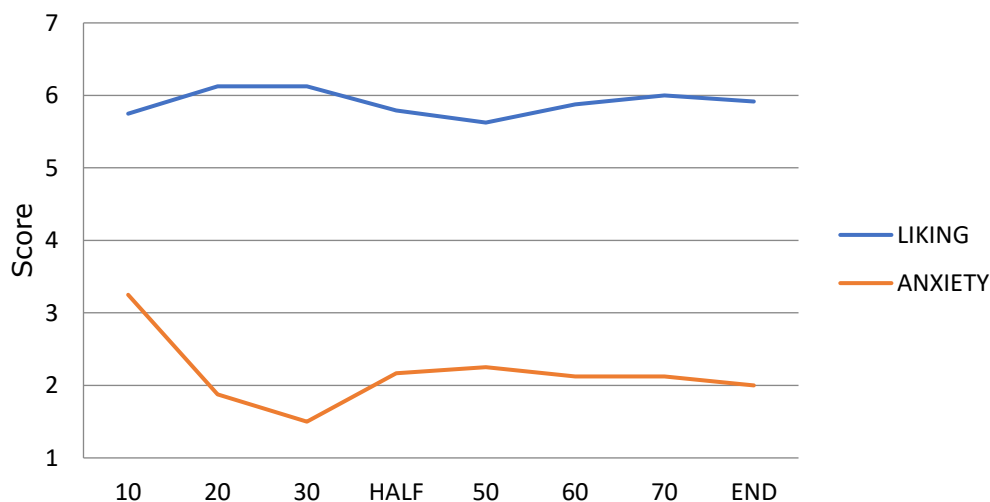


Figure 5. On-line anxiety and liking scores for lesson 3

Several reasons for this kind of a sharp decrease could be discussed. The most influential one would probably be the characteristics of the teacher. He is an experienced teacher who knows how to engage with the students in an unthreatening way. Additionally, he has been living in Turkey for a long time; therefore, he is also familiar with Turkish culture. Some of the students reported that the teacher used some funny Turkish vocabulary in the classroom to make the students laugh when they got stuck. Therefore, that the teacher knows a bit of the local language might be another way to make students feel comfortable. As students got to know the teacher, they started

getting rid of their primary negative or skeptical ideas. Thus, their anxiety decreased and almost stood still until the end:

I had a bit of anxiety because there was a different teacher, after 2 days of studying with a non-native one. The teacher was from a different country, so a different culture. I experienced difficulty in catching up with the teacher. However, as I get acquainted with the teacher and as the activities moved on, I became relaxed. (S5)

Comparing the two similar, neutral and communicative lessons, it can be suggested that there is almost no difference between the non-native and native teacher instructions in terms of their contribution to students' level of anxiety. Yet, there is a small difference during the speaking task. (see Figures 6 and 7). It might be depending on the context of the presented task or that the native teacher always made students talk throughout the course. On the other hand, S7 reported that it was a great experience for her and she liked the lesson:

I also had good communication with the teacher. I could understand his speech. It wasn't difficult to understand what he said and he was speaking in an understandable way. I enjoyed it. (S7)

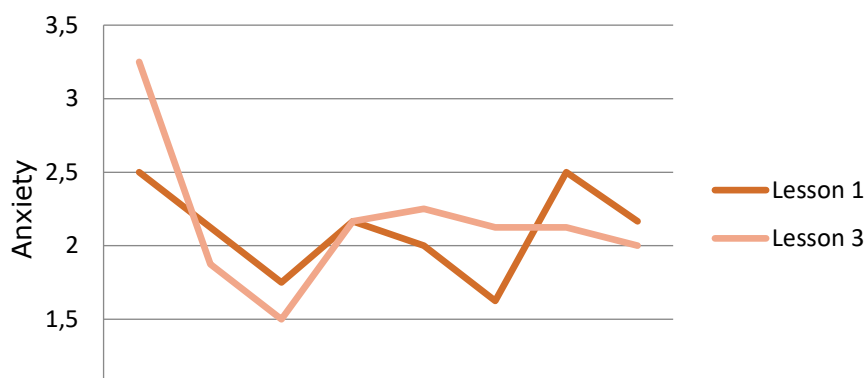


Figure 6. On-line scores for lesson 1 and lesson 3

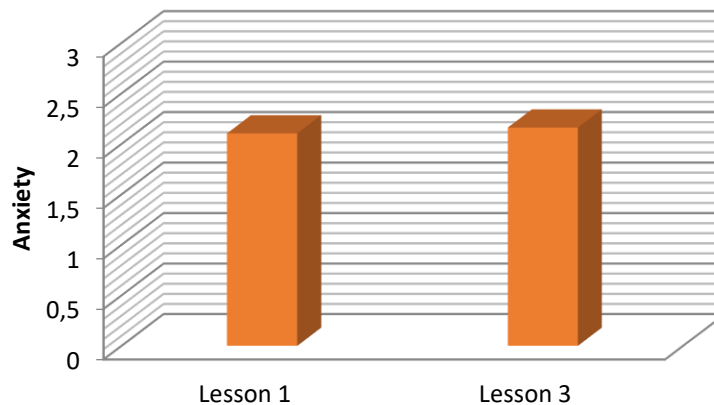


Figure 7. Mean anxiety scores for lesson 1 and lesson 3

The results indicate students' level of anxiety does not depend on their teacher's being a native or non-native speaker of English. Professionalism and experience of the teacher as well as the context of the selected activities might have been the possible sources if there had been a difference between the two.

FAMILIARITY WITH TEACHER HAS AN INTERESTING RELATIONSHIP WITH ANXIETY

The data suggests that teachers' behaving in a different way which students are not used to, or more specifically, changing his/her way of teaching may be a contributing factor on students' level of anxiety. Comparing the first lesson (see Figure 9) to the second one (see Figure 10), it can be concluded that teachers' correcting the errors immediately in a way that students are not used to increases the level of anxiety; whereas, the

non-familiar students are always the most anxious group (see Figure 8) considering all the lessons from which the 3rd one has been excluded due to native teacher instruction. One reason for familiar students' high anxiety can be worrying about disappointing the teacher.

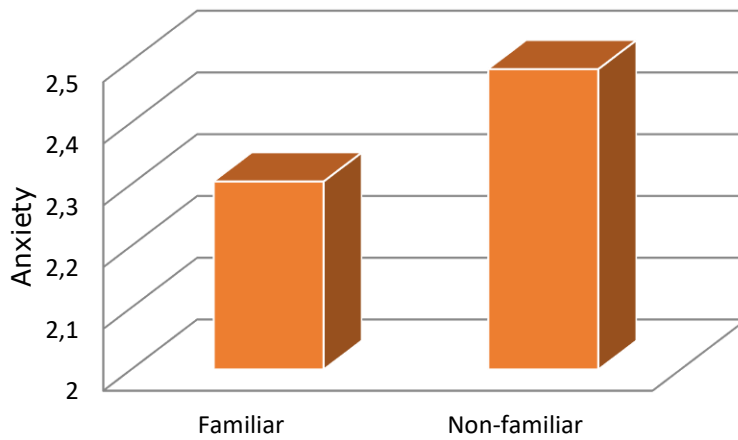


Figure 8. Mean anxiety scores of the students in terms of teacher familiarity

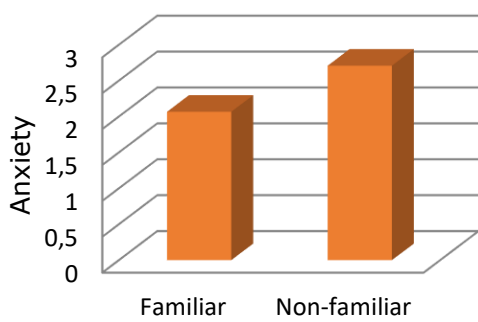


Figure 9. Mean anxiety scores of the students in terms of teacher familiarity for lesson 2

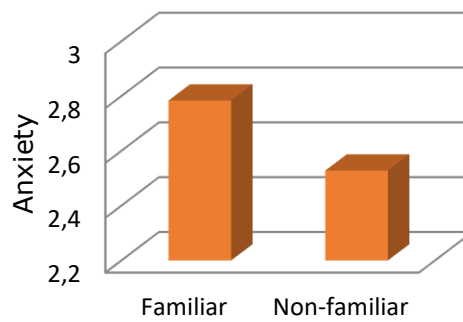


Figure 10. Mean anxiety scores of the students in terms of teacher familiarity for lesson 1

TASK BASED ACTIVITIES COULD HELP TO CREATE CONFIDENCE IN THE CLASSROOM

Horwitz (2008) asserts that tasks lead to more realistic communication, make students use authentic sources and combine reading, writing, speaking and listening skills properly. Indeed, when the liking scores are taken into consideration, lesson 4 is noted as the lesson which students liked the most (see Figures 11 and 12).

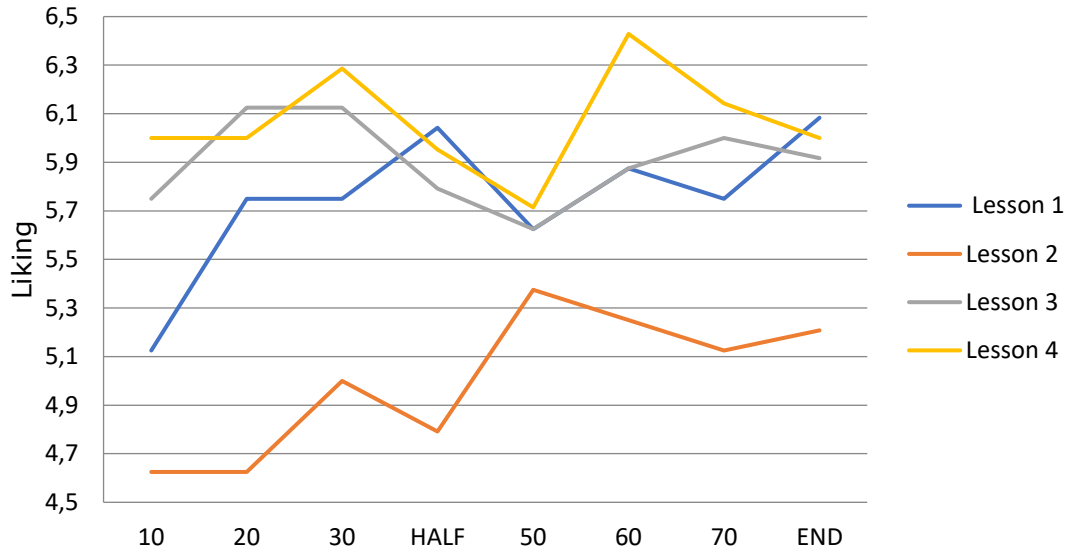


Figure 11. On-line liking scores for each lesson

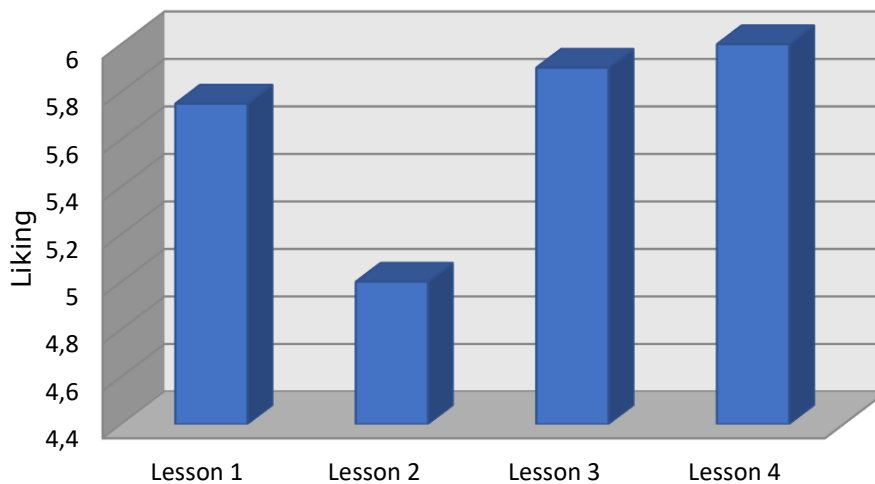


Figure 12. Mean liking scores for each lesson

As mentioned before, particularly the second half of the lesson 4 was based on a task-based activity which students were asked to prepare a poster. The results show that students enjoy task-based activities as they work in groups and share information to achieve a common goal. Even during the presentation of their posters, student tend to be less anxious compared to the speaking activities in the other lessons, which indicates that speaking in groups can be more comfortable than speaking individually. On the other hand, the 4th lesson was the last lesson of this study. Hence, there is the possibility that it might also affect students' level of liking because students built good relationships among each other during the formerly held three lessons and they got used to the class as time moved on.

Moreover, due to the cooperative nature of the activity, students' level of liking increased in the second part of the 4th lesson and S1 and S8 reported that they enjoyed a lot:

Today was more like a project. When we study like this, our self-confidence increases. Besides this, it was more enjoyable. Also it was better in terms of communication as we needed to

cooperate with each other. In group works, you exchange ideas with the friends; therefore, it brings good opportunities to improve your knowledge, vocabulary and so on. (S1)

Today the lesson was enjoyable because we carried out a project. It was different. At the beginning, the lesson was of course a bit usual. However, as we carried out the project in the second lesson, it started to become enjoyable... (S8)

Furthermore, mean anxiety scores showed that the 4th class was the least anxiety provoking one even though a video camera was used to record students' oral performances (see Figure 16).

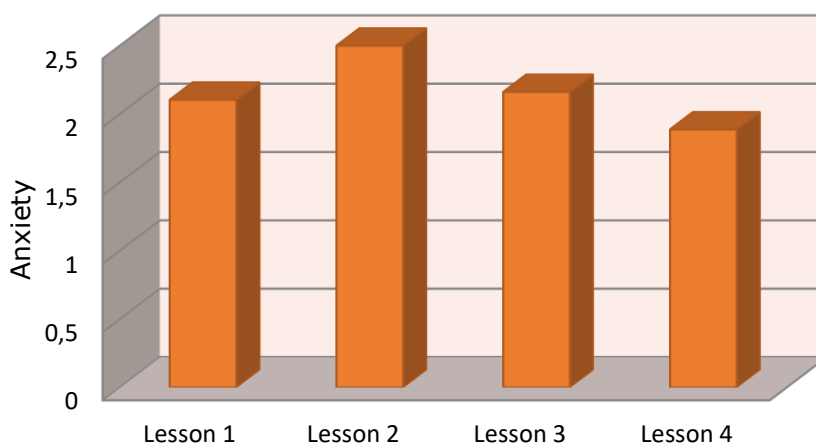


Figure 13. Mean anxiety scores for each lesson

ERROR CORRECTION HAS A GREAT CONTRIBUTION TO ANXIETY.

When both liking and anxiety scores are concerned, it can easily be noticed that one of the lessons differs from the others. Lesson 2, in other words the class with immediate error correction, was chosen to be the most anxiety provoking class as well as the least enjoyable one (see Figures 2, 3, 11,12). S5 complains about the constant intervention by the teacher:

...today was a bit problematic, because I started to feel nervous. Being corrected continuously or not being sure of myself led me to feel anxious... (S5)

The interview data indicate that immediate error correction, especially grammatical corrections, can provoke anxiety. In addition, as students follow teacher as a model, they do what the teacher does. In other words, students start correcting each other's errors, which can cause the classroom atmosphere to be both more anxious and chaotic.

...we had good communication (with friends) before but today we started to correct each other today. I felt that the class was getting a bit tense, because we were correcting each other along with you... (S8)

Language learning is a long-running process which involves making errors even while using simple structures. How to treat these errors in the classroom and outcomes of this treatment have always been investigated in many academic studies (e.g. Pawlak, 2014). However, there is one thing almost for sure: errors should be handled by the teachers carefully. As Horwitz (2008) recommends language teachers should be selective in error correction and deal with the errors in a friendly manner.

VIDEO RECORDINGS AFFECT STUDENTS' EMOTIONAL STATES IN THE CLASSROOM

One of the major findings of this study is derived from the 4th lesson. While everything was positive by means of cooperative language teaching and students' building better relationships in time, the level of anxiety was exposed to a sudden increase (see Figure 14). Of course, that the increase occurred right after the introduction of video camera should not be a coincidence.

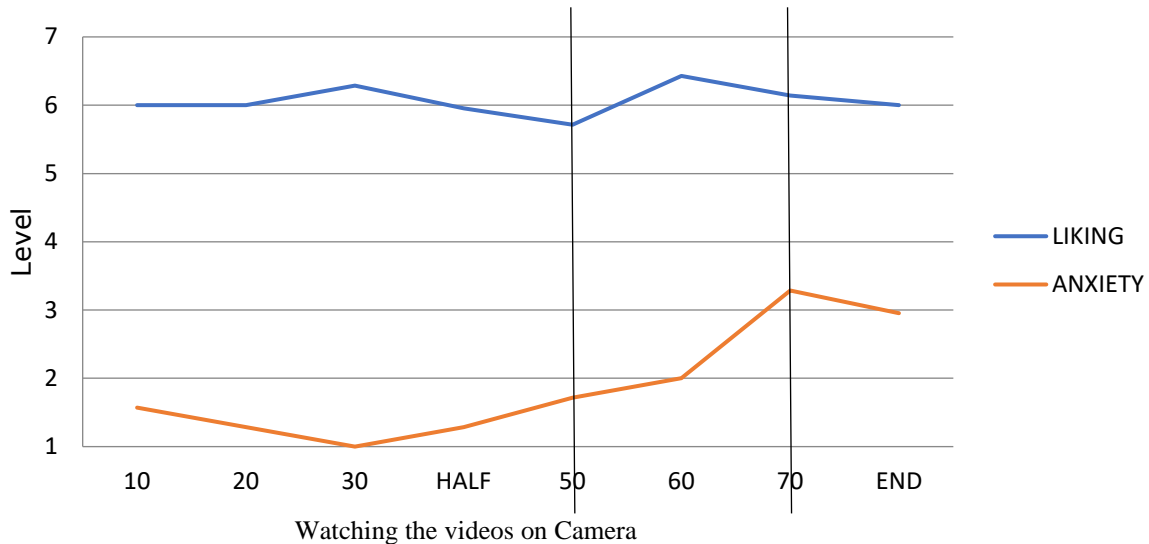


Figure 14. On-line anxiety and liking scores for lesson 4

In the second finding it has been mentioned that students face with anxiety during their oral performances. Therefore, combination of the speech anxiety with the video recordings can cause the anxiety arousal to reach even more serious levels. S1 explained how nervous he was during the recording.

Indeed, in the activity at the end of the lesson we were asked to speak. Also the recording contributed to the anxiety. Because of these, I started feeling nervous. Additionally, we started being not sure of what we were going to say, so it might be because of lack of ability to speak English fluently... (S1)

Moreover, anxiety rating was at its highest while students were watching themselves in the classroom. The interview data indicate that this behaviour emerges from students' worrying about their physical appearance on the video and their mistakes.

While we were carrying out an enjoyable project, the video-recording made us nervous. Actually, not when the video was being recorded but while watching it in the classroom our anxiety increased. We could not be sure whether we looked silly on the screen or if we made any mistakes (S6)

All in all, video camera has visible effects on students' level of anxiety and it seems that video recordings in the classroom will be paid more attention in the future as cameras are being used almost in every stage of life.

EXOGENOUS FACTORS MIGHT BE ANXIETY BOOSTERS

2 students, S4 and S5, were going to attend their university's graduation ball after lesson 2. S5 reported that he could not give up thinking the graduation ball he was going to participate.

Actually, today is a special day for me and this was also making me anxious, too... I have graduation ball. That is the reason. So I'm already anxious, I don't know how it will be. (S5)

The statement of S5 could suggest that students' personal or social concerns could serve as an anxiety boosting factor. Students can encounter with several downfalls or worries stemming from their extra scholastic experiences. It would not be rational to say that these students could overcome their exogenous challenges in a short period of time. As emotional preparation is the first requirement for mental preparation, some of the students might still be under the effect of these challenges in the classroom which could be increasing their foreign language anxiety.

4 | CONCLUSION

It is essential to look for new ways of dealing with the problems that learners come across while learning a foreign language. Probably the most frequent one of these problems is foreign language anxiety. Many studies

suggest that language anxiety is a complex issue which should be well understood and carefully treated (see Gkonou et al, 2017). Therefore, this study investigated the foreign language anxiety in the classroom in various ways using an innovative methodology, which revealed several issues. Students showed that they did not like the lesson if they were anxious. Additionally, high levels of anxiety occurred during speaking activities. Similarly, error correction was shown to be anxiety provoking. The lesson in which immediate error correction was made was the lesson that students did not like the most; whereas, it was vice versa for the task-based lesson. On the other hand, it was indicated that recording students during a speaking activity increased their level of anxiety and the highest anxiety was obtained while students were watching their own performances in the classroom. The findings revealed that there was no difference between native and non-native teacher instruction on anxiety. Last but not least, students' self-esteem and the experiences they had outside of the school could contribute to anxiety they had in language classes. In terms of its small scope and limited number of students, this study can be considered as a pilot study to investigate foreign language anxiety in as many in-class aspects as possible, which can lead to a future research. A larger number of participants with a broader scope could provide more precise results and probably make it possible to retrieve inferential statistics.

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STATEMENTS OF PUBLICATION ETHICS

The author of this article declares that this research has does not have any ethical conflicts or problems that may limit the publication of the article.

RESEARCHERS' CONTRIBUTION RATE

The study was conducted and reported by the corresponding author.

CONFLICT OF INTEREST

The author of this article declares that there is no conflict of interest in this study.

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The Effect of Activities Designed According to the Incremental Self-theory on Students' Self-confidence and Their Views About Their Growth Mindset in 7th Grade Science Lesson

Sema İrem Orhan^{a*}, Abdullah Aydın^b

a* Dr., Kastamonu University, Turkey (<https://orcid.org/0000-0002-4554-1439>), *iorhan@kastamonu.edu.tr

b Prof. Dr., Faculty of Education, Kastamonu University, Turkey (<https://orcid.org/0000-0003-2805-9314>)

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ABSTRACT

The aim of this study was to determine the effect of the activities prepared in line with the incremental self-theory on 7th grade students' self-confidence and their views about their growth mindset in the cell and divisions unit in science. In accordance with this purpose, the research was conducted with 54 seventh grade students who are studying in two classes in a public secondary school in Kastamonu Province, Turkey. With simple random sampling, one of these classes was determined as the experimental group (N=27) and the other as the control group (N=27). While the lessons of the experimental group were taught with the activities developed in accordance with the incremental self-theory, the lessons of the control group were taught in compliance with the 2018 Science Course Curriculum. In this study, in which both quantitative and qualitative data were collected, a quasi-experimental design with a pre-test post-test control group was used. The quantitative data were collected through the Self-confidence Scale (SS), and the qualitative data were collected through the Feedback Forms (FF). SPSS package program was used in the analysis of quantitative data, and the descriptive analysis was used in the analysis of qualitative data. As a result of this study, it was determined that the instruction designed according to the incremental self-theory had a positive effect on the increase in the self-confidence of the students in the experimental group and their views on their growth mindset. In line with these results, it is suggested that science teachers should design and teach science subjects according to incremental self-theory.

Keywords: Growth mindset, self-confidence, incremental self-theory, science education

7. Sınıf Fen Bilimleri Dersinde Gelişim Öz-teorisine Göre Tasarlanan Etkinliklerin Öğrencilerin Özgüvenlerine ve Gelişime Açık Düşünce Tarzlarıyla İlgili Görüşlerine Etkisi

Öz

Bu araştırmanın amacı, 7. sınıf fen bilimleri dersi hücre ve bölünmeler ünitesine yönelik olarak gelişim öz-teorisi doğrultusunda hazırlanan etkinliklerin, öğrencilerin özgüvenlerine ve gelişime açık düşünce tarzı ile ilgili görüşlerine olan etkisini belirlemektir. Bu amaç doğrultusunda, Kastamonu İl merkezindeki bir devlet ortaokulunun iki şubesinde öğrenim gören 54 yedinci sınıf öğrencisi ile araştırma yapılmıştır. Basit rastgele örneklem seçimi ile bu şubelerden biri deney (N=27), diğeri ise kontrol grubu (N=27) olarak belirlenmiştir. Hücre ve bölünmeler ünitesi kontrol grubundaki öğrencilere 2018 Fen Bilimleri Dersi Öğretim Programı'na göre anlatılırken, deney grubundaki öğrencilere ise mevcut öğretim programına ilaveten gelişim öz-teorisi doğrultusunda hazırlanan etkinliklerle desteklenerek anlatılmıştır. Hem nicel hem de nitel verilerin toplandığı bu çalışmada, ön-test son-test kontrol gruplu yarı deneysel desen kullanılmıştır. Nicel veriler Özgüven Ölçeği (ÖÖ), nitel veriler ise Geri Dönüt Formları (GDF) aracılığı ile toplanmıştır. Nicel verilerin analizinde SPSS paket programı, nitel verilerin analizinde ise betimsel analiz kullanılmıştır. Araştırmanın sonucunda, gelişim öz-teorisine göre tasarlanan öğretimin deney grubunda bulunan öğrencilerin özgüvenlerinin artmasında ve onların gelişime açık düşünce tarzı ile ilgili görüşlerine olumlu yönde etki ettiği tespit edilmiştir. Bu sonuçlar doğrultusunda, fen bilimleri dersi öğretmenlerine fen konularını gelişim öz-teorisine göre tasarlayarak öğretmeleri önerilmektedir.

Anahtar kelimeler: Gelişime açık düşünce tarzı, özgüven, gelişim öz teorisi, fen eğitimi

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1 | INTRODUCTION

One of the concepts that has emerged together with humanity is belief. Humans have a tendency to develop behaviors in line with the beliefs they adopted. The mindsets, which have been structured parallel to the belief adopted, directly or indirectly affect behaviors (Dweck, 2006). Studies have shown that beliefs, behaviors and feelings of people in the social environment, as well as one's own beliefs, are also effective on the person (Christakis & Fowler, 2013). It is inevitable that the beliefs supported by the research results that have a great impact on our lives have reflections on educational life.

According to Dweck (2006) from the Psychology Department of Stanford University, who has become popular with her studies on the effect of the mindsets developed according to the adopted belief, especially motivation and achievement, the mindset is one of the most important elements that affect a person's character and potential, and people's way of thinking are defined under two intelligence mindsets as fixed mindset and growth mindset (Dweck, 2006; Dweck & Leggett, 1988). According to the growth mindset, intelligence is a characteristic that could be improved in time (Dweck, 2006; Keenan, 2018; Orosz et al., 2017). Contrary to this view, fixed mindset theory argues that intelligence and skills are innate characteristics, and thus they could not be improved (Dweck, 2006; Dweck & Leggett, 1988; Walters, 2014). Therefore, people who believe in the existentialism theory supporting the opinion that intelligence and skills are innate and cannot be improved are defined as people with fixed mindset while individuals who believe in the self-development theory supporting the idea that the skills and intelligence can be improved with effort are defined as people with growth mindset (Dweck, 2006; 2015).

Individuals with a growth mindset believe that their abilities can be developed with the right directed work and effort, so they are under the control of their own learning (Stec, 2015), and researches provide evidence that students with this style of thinking increase their learning and academic achievement and increase their self-efficacy (Keenan, 2018).

Another concept affecting human behavior is self-confidence. Self-confidence is defined as the belief of the individual that he or she could control the situation he/she is in or the events they encounter (Eldeleklioğlu, 2004), and the confidence in self to be achievement in this process (Akagündüz, 2006). Put it differently, the concept of self-confidence expresses the value judgement the individual attributed to himself or herself (Bandura, 1997). According to Dweck (2006), individuals with a mindset open to development do not get frustrated in face of a failure they experience, and they define these failures as a part of the learning process. Accordingly, individuals with a mindset open to development are expected to have high self-confidence levels.

Within the scope of the researches, it has been determined that students' mindset is related to their academic achievement, motivation and efforts towards learning, and ways of dealing with failure and difficulties (Aditomo, 2015; Blackwell, Trzesniewski & Dweck, 2007; Costa & Faria, 2018; Hong et al., 1999). So, it is extremely important to consider the growth mindset in the concept of education and to carry out researches aimed at obtaining the highest level of benefit within the means. In this context, it is necessary to include elements that improve growth mindset in the process of designing effective and efficient learning systems and appropriate learning environments in order to help students, teacher candidates and teachers to be individuals with a growth mindset.

When the national literature on this subjects was reviewed, no studies could be found on mindset in science education field. Three of the five thesis studies reached in this context are on psychology (Aral, 2019; Bilir, 2017; Yalın, 2014), and two are on grammar education (Altunel, 2019; Delibalta, 2020). The international literature, on the other hand, numerous studies were found on this very popular subject. In the studies in the international literature were in fields such as fine arts, personal training and mathematics training mostly, and they generally focused on the effects of mindset on achievement and motivation. Despite the scarcity of studies on self-confidence, Masters (2013) defined three basic approaches to evaluate learning outcomes and provide feedback. In his study, he found that the achievement and motivation of the students increased, as their efforts and struggles had been praised. In a similar fashion, Vealey, Chase and Cooley (2017) found that the mindsets of young sportspeople about the skills they had developed had a powerful impact on their self-confidence. In other studies, O'Brien & Lomas (2017), in their study investigating the effects of mindset developing activities in an open-air personal development course, found that there is no significant difference between the self-sufficiency scores of the experimental and the control group. However, they found a significant increase in the resistance (struggling

strength) in the students in the experimental group, whose growth mindset score increased. Seals (2018) found that online activities designed to support the growth mindset, and administered to teachers, affected the interest in the course, and their orientation for mastership. King (2020) in his study investigating the relationship between the mindsets of the students themselves and the mindset of their friends found that the mindsets interacted with each other between peers. Similarly, Sheffler and Cheung (2020), in their study observing the effects of peer mindsets on the learning outcomes of the students, concluded that peer mindset could affect the meaning an individual attribute to a task he or she assumed.

Although there are studies investigating self-confidence's relationship with age, gender, academic achievement, locus of control, test anxiety and body perception (Bilgin, 2001; Çakmak, Şahin & Akıncı-Demirbaş, 2017; Çankaya, 1997; Dorak, 2011), evaluating the efficiency of self-confidence development programs based on various approaches (Aksaray, 2003; Güloğlu, 1999; Sezer, 2001) and investigating the efficacy of a self-confidence development program based on bibliocounselling (Karacan-Özdemir, 2016), there is no study investigating the effects of activities designed in accordance with growth mindset on the students' self-confidence.

In this study, the 7th grade cell and divisions unit was selected. Because, when the literature is examined, it is seen that the subjects related to the cell and divisions unit and genetic unit are among the subjects that students frequently experience learning problems (DeHoff, 2010; El-Hani, 2014; Erdoğan, Özsevgeç & Özsevgeç, 2014; Vlckova, Kubiak & Uşak, 2016). In addition, it was thought that this unit subjects were suitable for doing activities with the incremental self-theory.

THE AIM OF THE STUDY

The aim of this study was to determine the effect of the activities prepared in line with the incremental self-theory on 7th grade students' self-confidence and their views about their growth mindset in the cell and divisions unit in science lesson. The findings of the study are expected to contribute to the literature on growth mindset and self-confidence. Within the scope of this study, the following research questions were tried to be responded:

1. The activities designed according to the incremental self-theory used in the teaching of the 7th grade cell and divisions unit impact on students' self-confidence?
2. What are the students' views about their growth mindset?

2 | METHOD

RESEARCH DESIGN

The study was conducted with a mixed research approach, in which both the qualitative and quantitative approaches were used. The use of qualitative and quantitative data collection tools together in the mixed approach enables the researcher to eliminate the weak points of one approach with the strong points of the other, and this diversity enriches the study. Therefore, the results obtained could be interpreted more accurately (Creswell & Clark, 2007). In the study, a quasi-experimental design with a pre-test post-test control group was preferred among experimental research methods.

The questionnaire technique (self-confidence scale) was used within the framework of the quantitative dimension of the study, in which pre- and post-implementation self-confidence levels were examined. Within the scope of the qualitative dimension that examines the views of students about the growth mindset during the applied education, the feedback forms applied on a weekly basis were used. The pattern used in the research is given in Figure 1.

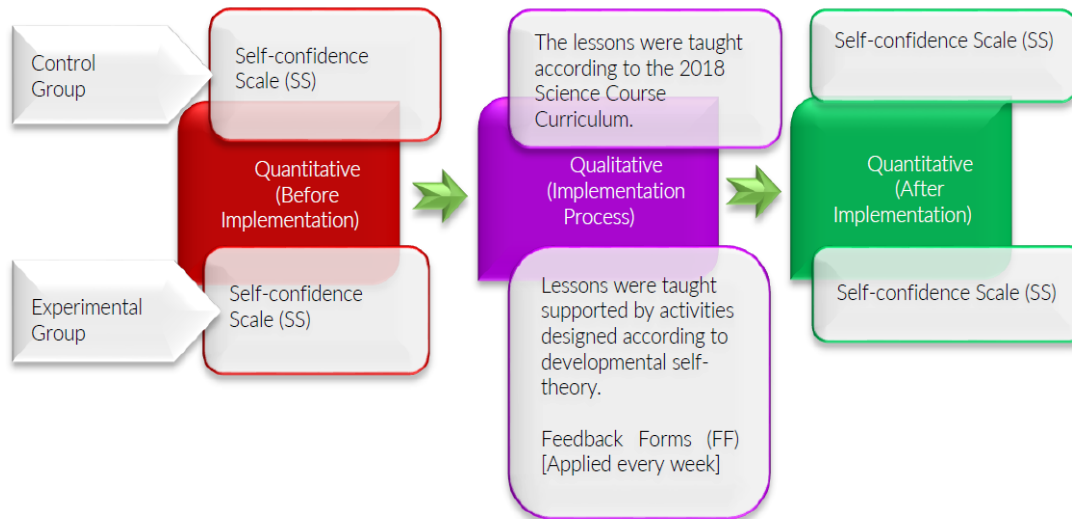


Figure 1. *Experimental Design Used in the Study*

STUDY GROUP

The study was conducted, after obtaining the approval of Kastamonu Provincial Directorate for National Education, with 54 seventh grade students who are studying in a public secondary school in Kastamonu Province, Turkey. The Self-confidence Scale, was used to determine whether the determined groups were equivalent to each other in terms of their self-confidence levels, and the results obtained are presented in Table 1.

Table 1. Self-confidence Scale Scores of Students in the Control and Experimental Groups

Group	N	Mean of Ranks	Sum of Ranks	U	<i>p</i>
Control	27	25.74	695.00	317.00	.411
Experimental	27	29.26	790.00		

As seen in Table 1, the students in both groups were close with regard to their self-confidence scale scores ($U=317.00$; $p>.05$). This indicates that the groups selected fit the aim of the study. The students in 7-E and 7-F classes, who were found to have close scores in the self-confidence scale, comprised the study group of the study. From these classes 7-E ($N=27$) were randomly determined as the control group and 7-F ($N=27$) as the experimental group. The demographic characteristics of the study group are given in Table 2.

Table 2. Demographic Characteristics of the Study Group

Group	Gender			
	Female		Male	
	N	%	N	%
Control	13	48.15	14	51.85
Experimental	14	51.85	13	48.15
Total	27	100	27	100

As seen in Table 2, 48.15% of the students in the control group were female, 51.85% were male, and in the experimental group, 51.85% were female and 48.15% were male.

DATA COLLECTION TOOLS

Quantitative data was collected using the self-confidence scale, and the qualitative data was collected with the feedback forms administered every week.

SELF-CONFIDENCE SCALE (SS)

The Self-confidence scale, developed by Akın (2007), is comprised of 33 five-point Likert type (1=Never, 2=Rarely, 3=Sometimes, 4=Often, 5=Always) items 17 of which are related to internal confidence and 16 related

to external confidence. A minimum of 33 and a maximum of 165 points can be obtained from the SS. However, in order to interpret these obtained scores more easily, the data obtained from the SS were adapted to the 100-point system (Comba, 2018; Doğan et al., 2016). Accordingly, a minimum of 20 and a maximum of 100 points can be obtained from the SS. Akin (2007) found the reliability coefficient Cronbach's alpha value of the scale as 0.91. In this study, this scale was administered to 185 eighth grade students, who did not participate in the study, and the reliability value was calculated as 0.95.

FEEDBACK FORM (FF)

The feedback form (FF) developed to determine the effects of activities developed according to developmental self-theory on students' current mindsets. This form consists of two open-ended questions (Figure 2). The questions were administered in line with the cartoons in the Class Dojo platform, which was designed to develop a growth mindset, and the views of a science education expert.

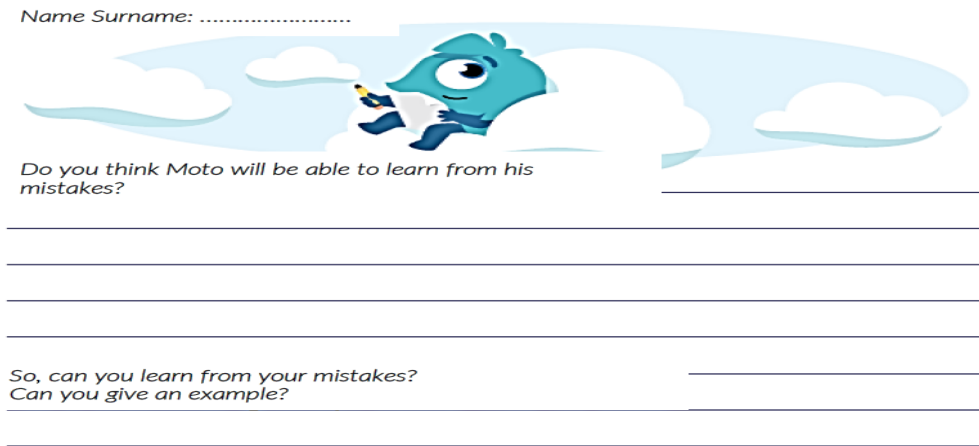


Figure 2. Feedback Form Sample

The answers the students gave to questions in the feedback form were cleansed of daily spoken language without losing its sense. Two people, one of whom was a researcher, coded collected qualitative data and another expert in the field, and the coding was repeated in two separate times in order to increase the reliability based on time. The results of the assessment were compared, consensus and disagreement were calculated and the percentage of reliability was found via the formula proposed by Miles and Huberman (1994):

$$\text{Percentage of Consistency (P)} = \frac{Na (\text{Consensus})}{Na (\text{Consensus}) + Nd (\text{Dissensus})} \times 100$$

The studies in the literature recommended this value be greater than 85% to describe this value as reliable (Miles, Huberman & Saldana, 2014). The agreement of two coders was found 91% and it was seen that this value is acknowledged reliable in the literature.

TEACHING INTERVENTION

The procedure of the implementation including the cell and divisions unit activities designed in accordance with incremental self-theory, considering the unit acquisitions at the same time, is presented in Table 3.

Table 3. Implementation Procedure

Group	Pre-test	Implementation	Post-test
Control	Self-confidence Scale	2018 Science Curriculum	Self-confidence Scale
Experimental	Self-confidence Scale	Activities designed in accordance with incremental self-theory in addition to the current curriculum	Self-confidence Scale and Feedback Form

Dweck (2006) examined the effects of activities that support the growth mindset development on students' mathematics achievement, and the research was completed in 8 sessions and according to the results obtained, it was determined that the thinking styles of the students changed during the said period. In this direction, the research was carried out in 5 weeks and 4 lessons per week, in total 20 lesson hours.

TEACHING IN THE CONTROL GROUP

The self-confidence scale was administered as a pre-test to students in the control group one week before the unit. Later, the subjects in the cell and divisions unit were taught by the teacher in line with the present curriculum. After the completion of five-week teaching, the self-confidence scale, which had been administered as pre-test before, was administered as post-test.

TEACHING IN THE EXPERIMENTAL GROUP

The self-confidence scale was administered as a pre-test to students in the experimental group one week before the unit. After the unit was finished, the self-confidence scale, which were previously applied as a pre-test, were applied to the students again as a post-test. The materials and activities used in the experimental group different from the control group during the implementation phase are given below.

1. FEEDBACK SENTENCES

Studies have shown that students whose intelligence is praised tend to develop a fixed thinking style, while students whose effort is praised have a tendency to develop a growth mindset (Cimpian, Arce, Markman & Dweck, 2007; Mueller & Dweck, 1998; Truax, 2017). Accordingly, while feedback sentences that praise the effort, instead of intelligence, of the students were provided during teaching the cell and divisions unit in the experimental group, feedback sentences praising their intelligence instead of efforts, that would motivate them to develop fixed mindset were not used. Examples to the feedback sentences used and not used are presented in Table 4.

Table 4. Sample Feedback Sentences

Sentences supporting the development of growth mindset	Sentences supporting the development of fixed mindset
You work very hard, well done.	A very intelligent answer,
I can see that he has improved himself in this regard.	You are the most intelligent in the class,
It is good for you not to give up when you fail,	.. is very intelligent,
Where could you be making a mistake?	... is very intelligent, only he/she could solve this problem,
It's a difficult question but you can deal with it.	If you try constantly you can find the correct answer (it is possible to experience a loss of self-confidence when failed to find the
It is very nice that you come to the lesson prepared in advance.	answer in many tries (Dweck, 2006),
This is a very good answer, you should be studying hard,	...
You know you can ask for help if you can't figure it out	
...	

2. ANIMATED CARTOONS

The "Class Dojo" platform was used to support students' development of growth mindset. This platform is a communication portal that enables the students to share the things they have learned in the lesson with their classmates via pictures, videos and text messages. Class Dojo includes animated cartoons, designed to support growth mindset. The original sound track of these cartoons are English, but in this study these were translated into Turkish (Figure 3) using subtitles and speech balloons added to the videos, and they were presented to the students in the experimental group every week at the end of the lesson (Figure 4). The students were asked to express their opinions and views about the episode they watched.



Figure 3. A Screen Shot from Class Dojo Episode Two



Figure 4. Example Image of Experimental Group Watching Class Dojo

To increase the growth mindsets and therefore increasing their self-confidence, personal notebooks and stickers using the Class Dojo characters the students selected, were distributed to the students (Figure 5).



Figure 5. Example Material-1 (Personal Notebook and Sticker)

3. ADDITIONAL MATERIALS

Bookmark (Figure 6) and mini poster (Figure 7) containing persons that the students could take as role models were distributed to the students in the experimental group as materials supporting their self-confidence development process.

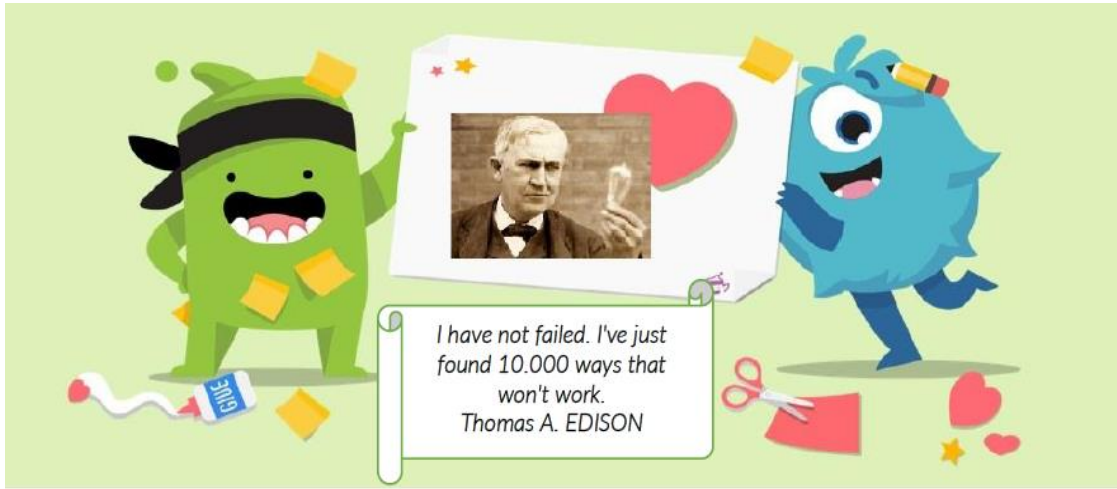


Figure 6. Material-2 (Bookmark)

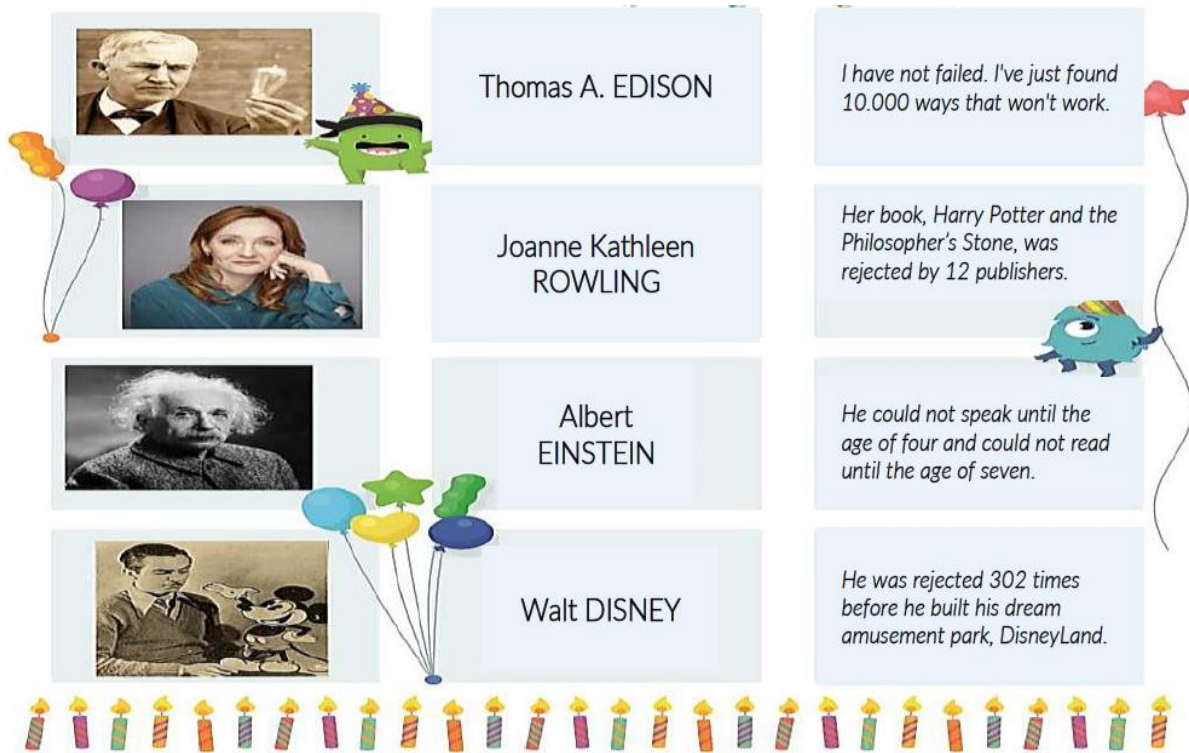


Figure 7. Material-3 (Mini Poster)

As mentioned during the implementation process, the subjects in the unit of cell and divisions are quite abstract and difficult for students to understand. Before starting the teaching of these subjects, activities were organized to help students develop a growth mindset, to attract their attention and to encourage them.

ANALYSIS OF THE DATA

ANALYSIS OF THE QUANTITATIVE DATA

In order to use the parametric tests in the analysis of data collected in the studies, the data should be normally distributed, interval/ratio variable, and have equal group variance (Kalaycı, 2010). Accordingly, to determine the appropriate tests for the analysis of the data obtained from the self-confidence test, the SPSS software package was used. It was first checked whether the data collected on which tests to use showed a normal distribution or not. Since the number of participants was less than 35, Shapiro and Wilk (1965) test was used. The findings are presented in Table 5.

Table 5. Normality Test Results of the SS

Scale	Implementation	Groups	N	\bar{X}	SD	p
Internal Self-confidence (SS _{int})	Pre-test	Control	27	85.93	10.97	.013*
		Experimental	27	88.50	7.63	.040*
	Post-test	Control	27	77.30	13.15	.155
		Experimental	27	87.35	14.67	.000*
External Self-confidence (SS _{ext})	Pre-test	Control	27	86.16	12.12	.004*
		Experimental	27	89.44	9.65	.006*
	Post-test	Control	27	78.01	15.74	.040*
		Experimental	27	87.78	14.82	.000*
Total Self-confidence (SS _{total})	Pre-test	Control	27	86.04	10.75	.015*
		Experimental	27	88.96	8.17	.046*
	Post-test	Control	27	77.64	13.90	.092
		Experimental	27	87.55	14.61	.000*

* $p < .05$

As seen in Table 5, within the scope of items related to internal self-confidence, it is seen that the pre-test scores and post-test experimental group scores do not comply with the normal distribution ($p < .05$), while the post-test control group scores comply with the normal distribution ($p > .05$). Within the scope of the items related to external self-confidence, it is seen that the pre-test and post-test scores do not comply with the normal distribution ($p < .05$). Within the scope of total self-confidence items, it is seen that the pre-test scores and post-test experimental group scores do not comply with the normal distribution ($p < .05$), while the post-test control group scores comply with the normal distribution ($p > .05$).

The data obtained from SS were tested in terms of the homogeneity of variances, which is a prerequisite for parametric tests, and the data obtained are presented in Table 6.

Table 6. Variance Homogeneity Results for the SS

Scale	Test	Levene	SD1	SD2	p
Internal Self-confidence (SS _{int})	Pre-test	2.06	1	52	.322
	Post-test	0.08	1	52	.011*
External Self-confidence (SS _{ext})	Pre-test	0.89	1	52	.275
	Post-test	0.35	1	52	.023*
Total Self-confidence (SS)	Pre-test	1.14	1	52	.290
	Post-test	0.01	1	52	.941

* $p < .05$

As seen in Table 6, within the scope of items related to internal self-confidence and items related to external self-confidence, it is observed that the variances of the pre-test scores show a homogeneous distribution ($p > .05$), while the variances of the post-test scores do not show a homogeneous distribution. Within the scope of total SS items, it is seen that the variances in terms of pre-test and post-test scores are homogeneous ($p > .05$).

When Table 5 and Table 6 are analyzed together within the scope of SS; due to the fact that the data obtained from the SS is not normally distributed in all subgroups and is not homogeneous in all groups within the framework

of internal and external self-confidence items, it was found appropriate to use the Mann-Whitney U Test, one of the non-parametric tests, in the analysis of the data. The findings obtained from the analyzes conducted within this scope were interpreted at a significance level of .05.

ANALYSIS OF THE QUALITATIVE DATA

The data obtained from the feedback forms, administered to the students every week, were handled using descriptive analysis. The collected qualitative data were coded in line with the determined themes by a total of two people, one of them a researcher and a field expert, and the coding was repeated in two separate times in order to increase the reliability based on time. In its final form, the percentage of agreement between researchers was found to be 91, and the findings obtained in this direction are presented under the heading of findings.

ASSUMPTIONS AND LIMITATIONS

The research was conducted based on the assumption that the students answered the items in the scales sincerely and truly. In addition, the data of the research is limited to the data collected by using Self-confidence Scale and Feedback Forms from 54 students studying in the seventh grade in Kastamonu Province in Turkey.

RESEARCH ETHICS

As authors of the research, we declare that the study has no unethical problem and we observed research and publication ethics. Ethical principles and rules were followed during the planning, data collection, analysis and reporting of the research. Before starting the study, the necessary permission was obtained from the Kastamonu Provincial Directorate of National Education for the school to be researched, with the letter dated 16.09.2019 and numbered E.17120287. Ethical compliance approval was obtained for this research in accordance with the decision of Kastamonu University Social and Human Sciences Research and Publication Ethics Committee dated 12.10.2020 and numbered 3/14.

3 | FINDINGS

FINDINGS OBTAINED FROM THE QUANTITATIVE DATA

The self-confidence scale scores, internal self-confidence and external self-confidence scores for the pre-test and post-test implementations were subjected to Mann Whitney-U test to determine whether the activities implemented were effective on students' self-confidence. The data are presented in Table 7.

Table 7. Inter-group Pre-test Post-test Results of the SS

Scale	Test	Group	N	Mean of Ranks	Sum of Ranks	U	<i>p</i>
Total Self-confidence (SS _{total})	Pre-test	Control	27	25.74	695.00	317.00	.411
		Experimental	27	29.26	790.00		
	Post-test	Control	27	21.00	567.00	189.00	.002*
		Experimental	27	34.00	918.00		
Internal Self-confidence (SS _{ini})	Pre-test	Control	27	26.00	702.00	324.00	.483
		Experimental	27	29.00	783.00		
	Post-test	Control	27	21.07	569.00	191.00	.003*
		Experimental	27	33.93	916.00		
External Self-confidence (SS _{ext})	Pre-test	Control	27	25.20	680.50	302.50	.281
		Experimental	27	29.80	804.50		
	Post-test	Control	27	21.74	587.00	209.00	.007*
		Experimental	27	33.26	898.00		

**p* < .05

When Table 7 is examined, it is seen that while there was no statistically significant difference between the groups regarding self-confidence before the implementation ($U=317.00$; $p > .05$), a statistically significant difference emerged in favor of the experimental group after the implementation ($U=189.00$; $p < .05$). This indicates

that self-confidence of the students in the experimental group, in which the activities designed in accordance with incremental self-theory, when compared to the students in the control group.

In order to scrutinize the change in internal self-confidence and external self-confidence of the students, the internal self-confidence and external self-confidence scores were also examined. The results obtained revealed that there was no significant difference, for both internal and external self-confidence, between groups before the implementation ($U_{\text{internal self-confidence}}=324.00; p> .05$, $U_{\text{external self-confidence}}=302.50; p> .05$); however, a significant difference in favor of the experimental group students arose for both internal and external self-confidence ($U_{\text{internal self-confidence}}=191.00; p< .05$, $U_{\text{external self-confidence}}=209.00; p< .05$).

FINDINGS OBTAINED FROM THE QUANTITATIVE DATA

The data obtained via the feedback forms administered every week were analyzed using descriptive analysis. The themes and code are presented below as titles with their percentage and frequency values.

Week 1: Codes Obtained Under the Theme Improvability of Intelligence

The codes and associated codes obtained from the feedback form administered in the first week under the theme improvability of intelligence are presented in Table 8.

Table 8. Descriptive Analysis Result for the FF Under Improvability of Intelligence Theme

Week	Theme	Student	Code	Associated Code
Week 1	Improvability of intelligence	S1	Intelligence is improvable	Studying, Achievement
		S2	Intelligence is improvable	Studying
		S3	Intelligence is improvable	Make an effort
		S4	Intelligence is improvable	Studying, Achievement
		S5	Intelligence is improvable	Studying
		S6	Intelligence is improvable	Studying
		S7	Intelligence is improvable	Studying, Make an effort
		S8	Intelligence is improvable	Make an effort, Not giving up, Studying
		S9	Intelligence is improvable	The reason is not specified
		S10	Intelligence is improvable	Studying, Repetition
		S11	Intelligence is improvable	Studying, Repetition
		S12	Intelligence is improvable	Studying, Make an effort
		S13	Intelligence is improvable	Studying, Achievement
		S14	Intelligence is improvable	The reason is not specified
		S15	Intelligence is improvable	Studying
		S16	Intelligence is improvable	Studying, Achievement
		S17	Intelligence is improvable	Studying, Achievement
		S18	Intelligence is improvable	Studying, Achievement
		S19	Intelligence is improvable	Studying, Repetition
		S20	Intelligence is improvable	The reason is not specified
		S21	Intelligence is improvable	The reason is not specified
		S22	Intelligence is not improvable	I am intelligent
		S23	Intelligence is not improvable	I am not intelligence, even when I study
		S24	Intelligence is improvable	Not giving up, Studying, Make an effort
		S25	Intelligence is improvable	The reason is not specified
		S26	Intelligence is improvable	Studying
		S27	Intelligence is improvable	Studying

As seen in Table 8, the codes and associated codes under the improvability of intelligence theme could be seen, which were obtained from the feedback form administered to the students in the first week. The percentage and frequency distributions of these codes are presented in Table 9.

Table 9. f and % Values for the Codes Obtained Under Improvability of Intelligence Theme

Code	f	%	Associated Code	f	%
Intelligence is improvable	25	92.59	Without reason	5	20
			Studying	19	76
			Achievement	6	24
			Making effort	5	20
			Not giving up	2	8
			Repetition	3	12
Intelligence is not improvable	2	7.41	intelligent	1	50
			Not intelligent even when study	1	50

Note: Some students did not attend the feedback form implementation in the following weeks.

When Table 9 is examined, it is seen that 92.59% of the students believed that intelligence could be improved, while 7.41% of them believed that it could not be improved. While 20% of the students that believe improvability of intelligence did not relate this to any term, other students stated that intelligence could be improved by studying (76%), making effort (20%), repetition (12%) and not giving up (8%). 24% of the students that believe intelligence is an improvable trait think that improved intelligence would increase their achievement.

Sample expressions from the answers given by the students to the questions in FF are given in the follow:

S1: *"I think Moto can be smarter because everyone can work and be successful. And if I work hard, I can be successful in many things."*

S8: *"Moto does not struggle with difficulties and gives up, but I don't think it should be like that. Because life is full of challenges. I think it works, it should work. I think I can improve my brain too. The secret is to work."*

Week 2: Codes Obtained Under Instructiveness of the Mistakes Theme

The codes and associated codes obtained from the feedback form administered in the second week under the theme instructiveness of mistakes are presented in Table 10.

Table 10. Descriptive Analysis Result for the FF Under Instructive of Mistakes Theme

Week	Theme	Student	Code	Associated Code
Week 2	Instructive of mistakes	S1	Mistakes are instructive	Not giving up, Better results
		S2	Mistakes are instructive	Not giving up, Better results
		S3	Mistakes are instructive	Not doing the same mistake again, Better results
		S4	Mistakes are instructive	Studying harder
		S5	Mistakes are instructive	Studying harder
		S6	Mistakes are instructive	Not doing the same mistake again, Better results
		S7	Mistakes are instructive	Not doing the same mistake again, Better results
		S8	Mistakes are instructive	Permanent learning
		S9	Mistakes are sometimes instructive	The reason is not specified
		S10	Mistakes are instructive	Not doing the same mistake again, Better results
		S11	Mistakes are instructive	Not doing the same mistake again, Better results
		S12	Mistakes are instructive	Studying harder
		S13	Mistakes are instructive	The reason is not specified
		S14	Mistakes are instructive	Permanent learning
		S15	Mistakes are instructive	The reason is not specified
		S16	Mistakes are instructive	Peer support
		S17	Mistakes are instructive	The reason is not specified
		S18	Mistakes are instructive	Not giving up, Better results
		S19	Mistakes are instructive	Peer support
		S20	Mistakes are instructive	Not doing the same mistake again, Better results
		S21	Mistakes are instructive	Studying harder
		S22	Mistakes are instructive	Not doing the same mistake again, Better results

	S23	Mistakes are instructive	results Not doing the same mistake again, Better results
	S24	Mistakes are instructive	Not doing the same mistake again, Better results

As seen in Table 10, the codes and associated codes under the instructiveness of mistakes theme could be seen, which were obtained from the feedback form administered to the students in the second week. The percentage and frequency distributions of these codes are presented in Table 11.

Table 11. f and % Values for the Codes Obtained Under Instructive of Mistakes Theme

Code	f	%	Associated Code	f	%
Mistakes are instructive	23	95.83	Without reason	3	13.04
			Not giving up-better results	3	13.04
			Not making the same mistake again-better results	9	39.13
			Studying harder	4	17.39
			Permanent learning	2	8.69
Mistakes are sometimes instructive	1	4.17	Peer Support	2	8.69
			The reason is not specified	1	100

When Table 11 is examined, it is seen that 95.83% of the students believed that mistakes are instructive, while 4.17% of them believed that mistakes are sometimes instructive. While 13.04% of the students that believe mistakes are instructive did not relate this to any term, other students stated that they got better results when they did not give up (13.04%), making mistakes prevented them doing mistakes again and therefore they got better results (39.13%). The student also state that they studied harder when they made a mistake (17.39%), they receive peer support (8.69%), and the making mistakes helped them in permanent learning (8.69%).

Sample expressions from the answers given by the students to the questions in FF are given in the follow:

S3: "Yes, he will be able to. Yes, I wrote a bad story. I tried to fix the bad parts. It was very nice."

S7: "I think he will be able to succeed because he can realize his mistakes and make a robot without making those mistakes again. I can learn from my mistakes. For example, when I should have dribbled with my left hand in a basketball game, I dribbled with my right hand and lost the ball to my opponent. But in the next game, I dribbled the ball with my left hand and scored a basket."

Week 3: Codes Obtained Under Seeking Help Theme

The codes and associated codes obtained from the feedback form administered in the third week under the theme seeking help in case of failure are presented in Table 12.

Table 12. Descriptive Analysis Result for the FF Under Seeking Help Theme

Week	Theme	Student	Code	Associated Code
Week 3	Seeking help	S1	Getting help from peer in case of failure	The reason is not specified
		S2	Getting help from peer in case of failure	Helps learning, nothing to be embarrassed of
		S3	Getting help from peer in case of failure	Not a bad thing
		S4	Getting help from peer in case of failure	nothing to be embarrassed of
		S5	Getting help from peer in case of failure	Helps learning
		S6	Getting help from peer in case of failure	The reason is not specified
		S7	Getting help from peer in case of failure	The reason is not specified
		S8	Getting help from peer in case of failure	Helps learning nothing to be embarrassed of
		S9	Getting help from peer in case of failure	Not a bad thing

S10	Getting help from peer in case of failure	Helps learning
S11	Getting help from peer in case of failure	Better results
S12	Getting help from peer in case of failure	Helps learning
S13	Getting help from peer in case of failure	nothing to be embarrassed of
S14	Getting help from peer in case of failure	Helps learning
S15	Getting help from peer in case of failure	Nothing to be embarrassed of
S16	Not getting help from peer in case of failure	Trying to access more information
S17	Getting help from peer in case of failure	Not a bad thing
S18	Getting help from peer in case of failure	Helps learning
S19	Getting help from peer in case of failure	Helps learning
S20	Getting help from peer in case of failure	The reason is not specified
S21	Not getting help from peer in case of failure	Seeking teacher's help
S22	Getting help from peer in case of failure	The reason is not specified

As seen in Table 12, the codes and associated codes under the seeking help in case of a failure theme could be seen, which were obtained from the feedback form administered to the students in the third week. The percentage and frequency distributions of these codes are presented in Table 13.

Table 13. f and % Values for the Codes Obtained Under Seeking Help Theme

Code	f	%	Associated Code	f	%
Getting help from peer in case of failure	20	90.91	Without reason	5	25
			Helps learning	8	40
			Nothing to be embarrassed of	5	25
			Not a bad thing	3	15
			Better results	1	5
Not getting help from peer in case of failure	2	9.09	Trying to access more information	1	50
			Seeking teacher's help	1	50

As seen in Table 13, While 90.91% of the students stated that they could seek help from their peers when they were unachievement, 9.09% of them emphasized that they would not ask for help from their peers when they were unachievement. Half of the students (50%) who stated that they would not seek peer help would try to access more information in this case, while the other half would seek help from their teacher. While 25% of the students who stated that they could request peer help in case of failure did not associate it with any term, other students stated that it helped them learn (40%), there were nothing to be embarrassed of (25%) and a bad thing (15%).

Sample expressions from the answers given by the students to the questions in FF are given in the follow:

S4: *"I used to do it like Mojo. Because I would learn that I did not know. Why should I be ashamed!"*

S17: *"Like Mojo, I would ask Brus for help. Because helping others and getting help is good."*

Week 4: Codes Obtained Under Competing Against Failure Theme

The codes and associated codes obtained from the feedback form administered in the fourth week under the theme competing against failure are presented in Table 14.

Table 14. Descriptive Analysis Result for the FF Under Competing Against Failure Theme

Week	Theme	Student	Code	Associated Code
Week 4	Competing against failure	S1	I compete against failure	Studying harder, Not giving up
		S2	I compete against failure	Studying harder, Not giving way to despair
		S3	I compete against failure	Studying harder, Not giving up
		S4	I compete against failure	Not giving up
		S5	I compete against failure	Studying harder, Not giving up
		S6	I compete against failure	Studying harder, Seeking help
		S7	I compete against failure	Studying harder, Not giving up
		S8	I compete against failure	Studying harder
		S9	I compete against failure	Studying harder
		S10	I compete against failure	Studying harder
		S11	I compete against failure	Not giving up
		S12	I compete against failure	Not giving up
		S13	I compete against failure	Studying harder
		S14	I compete against failure	Learning lessons from mistakes
		S15	I compete against failure	Studying harder, Seeking help
		S16	I compete against failure	Studying harder, Not giving up
		S17	I compete against failure	Studying harder, Not giving up
		S18	I compete against failure	Studying harder, Not giving up
		S19	I compete against failure	Studying harder
		S20	I compete against failure	Not giving up
		S21	I compete against failure	Not giving up
		S22	I compete against failure	Studying harder, Not giving up
		S23	I compete against failure	Studying harder, Seeking help
		S24	I compete against failure	Studying harder, Believing in achievement

As seen in Table 14, the codes and associated codes under the competing against failure theme could be seen, which were obtained from the feedback form administered to the students in the fourth week. The percentage and frequency distributions of these codes are presented in Table 15.

Table 15. f and % Values for the Codes Obtained Under Competing Against Failure Theme

Code	f	%	Associated Code	f	%
Compete against failure	24	100	Studying harder	18	75.00
			Not giving up	13	54.17
			Seeking help	3	12.50
			Not giving way to despair	1	4.17
			Learning lessons from mistakes	1	4.17
			Believing in achievement	1	4.17

When Table 15 is examined, it is seen that all of the students (100%) stated that they knew what to do when they failed. In this respect, the students stated that they would study harder (75%), not give up (54.17%), seek help (12.5%), not give way to despair (4.17%), learn lessons from their mistakes (4.17%), and believe in themselves to be achievement (4.17%).

Sample expressions from the answers given by the students to the questions in FF are given in the follow:

S1: *"I work harder. I won't give up right away. Because our brain develops as it works."*

S16: *"I work and struggle to be better."*

4 | DISCUSSION & CONCLUSION

In the study, it is found, based on the finding obtained from the self-confidence scale, that the activities designed in accordance with incremental self-theory increased the self-confidence levels of the students. These activities affected positively both the inner and outer confidence of the students, and therefore contributed to the increase in the total level of self-confidence. The findings obtained from the feedback forms administered every week to determine the changes in the students' mindsets confirm this result.

Despite the scarcity of studies on the effect of activities designed in accordance with incremental self-theory on self-confidence, Vealey, Chase and Cooley (2017) found that the mindsets of young sportspeople about the skills they had developed had a significant impact on their self-confidence and motivation. Similarly, Masters (2013), in his study that defined three basic approaches to evaluate learning outcomes and provide feedback, found that the achievement and motivation of the students increased, as their efforts and struggles had been praised. These results support the finding of this study that activities for developing incremental self-theory has a self-confidence enhancing effect.

According to Dweck (2006), the self-confidence of people with a fixed mindset is more fragile due to the way of thinking they adopt in the face of the problems and difficulties they experience. In this context, it has been determined that students with a growth mindset have more positive relationships with their social environment and react less aggressively to the achievements of others compared to students with fixed mindset.

When the findings obtained from the feedback forms in the study were examined, it was seen that the students in the experimental group developed a combative attitude, which is one of the general characteristics of individuals with a growth mindset. These results correspond to the results of O'Brien and Lomas (2017), who investigated the effects of mindset developing activities in an open-air personal development course. In addition, some studies on this subject show that students with fixed thinking styles can exhibit behaviors such as weak self-esteem, anxiety, and timidity (Pueschel & Tucker, 2018).

According to the data obtained from the feedback forms applied to the students in the first week, 25 of the 27 students who participated in the study stated that "intelligence is improvable" through study, achievement, effort and repetition. Two students stated that "intelligence is not improvable" even if you study. In the second week, feedback forms were applied to 24 students. According to the data obtained this week, 23 of the students mentioned that "mistakes are instructive". They stated the reasons for this situation as "not giving up", "better results", "studying harder", "permanent learning", "not doing the same mistake again" and such that. One student mentioned that "mistakes are sometimes instructive". In the third week, feedback forms were applied to 22 students. According to the data obtained this week, 20 of the students stated that "getting help from peers in case of failure. They state the reasons for this as "helps learning", "nothing to be embarrassed of", "helps learning", "the reason is not specified", better results and such that. Two students stated that "not getting help from peers in case of failure". They stated the reason for this as "trying to access more information" and seeking teacher's help". In the fourth week, feedback forms were applied to 24 students. According to the data obtained this week, all students stated that "I compete against failure". They state the reasons for this as "studying harder, not giving way to despair", "studying harder", "studying harder, believing in achievement" and such that.

According to the results obtained from the feedback forms, it was determined that the majority of the students participating in the study had positive a growth mindset and they were trying to develop their growth mindset further with the activities designed according to the incremental self-theory. Studies conducted in this context have found that students with a growth mindset have more positive relationships with their social environment and less aggressive reactions to the achievement of others than students with a fixed mindset (Verberg, Helmond & Overbeek, 2018; Yeager et al., 2014). Nussbaum and Dweck (2008) found that individuals with a fixed mindset tend to develop stress, anxiety and depression in the face of failure. In this context, it is stated that practices that support the development of growth mindset have an effect on reducing the level of anxiety and stress in the classroom (Schleider & Weisz, 2018; Schroder et al., 2017). In this context, a recent study shows that interventions that support growth mindset in nurse education have a positive effect on increasing students' self-confidence (Warren, 2021).

SUGGESTIONS

Within the scope of the research, it is thought that it would be beneficial to integrate the teaching, which is designed in line with the incremental self-theory, whose implementation process is very easy and does not interfere with the curriculum of any course, by integrating it with other courses and subjects where students have low self-confidence. In this study, it was seen that developmental self-theory had a positive effect on students' self-confidence in the cell and divisions unit. The more studies that have been done, the better insights can be gained into the pervasive impact of this theory. Since the researches provide evidence that the way of thinking of teachers

affects the way of thinking of their students, teachers can contribute to the development of their students' growth mindset by improving their current growth mindset.

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STATEMENTS OF PUBLICATION ETHICS

As authors of the research, we declare that the study has no unethical problem and we observed research and publication ethics. Ethical principles and rules were followed during the planning, data collection, analysis and reporting of the research. Ethical compliance approval was obtained for this research in accordance with the decision of Kastamonu University Social and Human Sciences Research and Publication Ethics Committee dated 12.10.2020 and numbered 3/14.

RESEARCHERS' CONTRIBUTION RATE

The study was conducted and reported with equal collaboration of the researchers.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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Determination of In-Class Trust Levels of Secondary Education Students

Serdar ÖZÇETİN^{a*}

^{a*} Assist. Prof. Dr., Akdeniz University, Antalya/Turkey, ORCID ID: 0000-0003-0797-5268 *serdarozcetin@akdeniz.edu.tr

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ABSTRACT

The purpose of this research is to determine students' in-class trust levels and compare them according to some variables. In the research, survey, one of the quantitative research methods, was adopted. The population of the research consists of the secondary school students participating in the central districts of Antalya in the 2019-2020 academic year. The sample consists of 271 secondary school students determined by simple random (probabilistic) sampling method. In the study, the "In-Class Confidence Scale" was used as a data collection tool. The data collection tool is a 5-point Likert-type scale consisting of 3 sub-dimensions and 34 items [Basic Trust (25 items), Freedom of Expression (5 items) and Threat Perception (4 items)]. In this study, the Cronbach alpha reliability coefficient was found to be .80 for the whole in-class confidence scale. Frequency, percentage, arithmetic mean, standard deviation, t-test for independent samples and One-Way ANOVA analyses were used to analyze the data. As a result of the research, it was found that the students' in-class confidence levels were at medium levels. As a result of the comparison made according to gender, a significant difference was found in all dimensions of in-class confidence, and it is seen that the averages of males are higher than females in all dimensions. In the comparison made according to the classes of the students, it was observed that the sense of basic trust of the 11th grades is higher than the other classes; the freedom of expression was higher in the 9th graders compared to the 10th graders, and the 10th graders compared to the 11th grades. It has been determined that the threat perceptions of 11th grade students are higher than 9th and 10th grade students.

Keywords: In-class trust, secondary education, trust.

Ortaöğretim Öğrencilerinin Sınıf İçi Güven Düzeylerinin Belirlenmesi

ÖZ

Bu araştırmanın amacı; öğrencilerin sınıf içi güven düzeylerini belirlemek ve bazı değişkenlere göre karşılaştırmaktır. Araştırmada nicel araştırma yöntemlerinden tarama modeli benimsenmiştir. Araştırmanın evrenini 2019–2020 eğitim-öğretim yılında Antalya merkez ilçelerinde öğrenim gören ortaöğretim öğrencileri oluşturmaktadır. Örneklemi ise basit seçkisiz (olasılıklı) örnekleme yöntemiyle belirlenen 271 ortaöğretim öğrencisi oluşturmaktadır. Araştırmada, Akbaş (2005) tarafından geliştirilen "Sınıf İçi Güven Ölçeği" veri toplama aracı olarak kullanılmıştır. Veri toplama aracı, 3 alt boyutta [Temel Güven (25 madde), İfade Özgürlüğü (5 madde) ve Tehdit Algısı (4 madde)] 34 maddeden oluşan 5'li likert tipi bir ölçektir. Bu araştırmada sınıf içi güven ölçeğinin tümü için Cronbach alfa güvenirlilik katsayısı .80 olarak bulunmuştur. Verilerin analizinde frekans, yüzde, aritmetik ortalama, standart sapma, bağımsız örneklemler için t-testi ve tek faktörlü varyans (ANOVA) analizleri uygulanmıştır. Araştırmanın sonucunda; öğrencilerin sınıf içi güven düzeylerinin orta seviyelerde olduğuna ulaşılmıştır. Cinsiyete göre yapılan karşılaştırma sonucunda sınıf içi güven boyutlarının tamamında anlamlı fark tespit edilmiş ve tüm boyutlarda erkeklerin ortalamaları kadınlara göre daha yüksek olduğu görülmektedir. Öğrencilerin sınıflarına göre yapılan karşılaştırmada da 11.sınıfların temel güven duygusunun diğer sınıflara göre daha yüksek olduğu; 9. sınıfların 10. sınıflara göre, 10. sınıflarında 11. sınıflara göre ifade özgürlüğünün daha yüksek seviyede olduğu görülmüştür. 11.sınıf öğrencilerinin 9. ve 10. sınıf öğrencilerine göre tehdit algısının da daha yüksek seviyede olduğu sonucuna ulaşılmıştır.

Anahtar kelimeler: Sınıf içi güven, ortaöğretim, güven.

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1 | INTRODUCTION

Trust is one of important factors in maintaining human relations and organizational life (Omarov, 2009). Trust is generally perceived as a concept based on honesty and integrity (Demircan & Ceylan, 2003).

It is possible to see the key role of trust in every field from family life to friend relationships. For this reason, it has become one of the fields of study for educational psychologists. Maslow (1996) states that people have high-level needs such as security, belonging and respect that distinguish humans from animals, and that these needs can only be met in environments where the necessary cultural conditions are provided. Maslow stated that trust is the second basic need after physiological needs. According to him, the individual needs to feel safe immediately after physiological needs such as hunger, thirst and sexuality are met.

Erikson established a relationship between the individual's state of trusting other people and the experiences in the first years of their lives. The situation of meeting the needs of the baby after its coming to the world by their close environment creates trust or distrust in the baby against people (Can, 2002). In order for the child to gain a sense of confidence, there must be familiarity, consistency and continuity. For example, if the person caring for the child does not change frequently, if there is consistency and continuity in their behavior, it becomes easier for the child to gain a sense of trust (Bacanlı, 2003).

Trust can also be defined as a generalized expectation that we can be sure of people's words, written and verbal promises (Asunakutlu, 2007). According to Doney and Cannon (1997), trust occurs at both individual and organizational levels. Trust has an important place in the life of organizations and realization of their visions (Rosen, 1998), openness to improvement, quality communication and organizational effectiveness (Tschannen-Moran, 2001). There is a consensus that in environments where there is no interpersonal trust environment, people use their energy not to improve but to prevent others (Covey, 2002; Solomon & Flores, 2001; Fukuyama, 2000; Esmer, 1999; Caine & Caine, 2002).

Trust is very important in educational organizations as in all organizations. That schools are learning centers is very effective in this (Hoy & Tschannen-Moran, 2003). In this respect, students' relationships with each other can also cause distrust. According to Bilge (2002), the individual feels insecure in class environments where there is threat, ridicule and cruel criticism. In situations where needs and values are under threat, perception becomes difficult and appropriate behavioral change cannot be made. Caine and Caine (2002) state that derogatory messages can also pose a threat to students. Under threat, decrease in an individual's capacity to create meaning and perceive is seen. Students in such environments prefer processes verified by testing and thought patterns instead of using their creativity and imagination. In a safe environment, the individual is more successful in absorbing, reorganizing and demonstrating consistent behavior (Akbaş, 2005). In a safe classroom environment, fundamental behavioral changes are taking place. This safe environment has three essential qualities such as unconditional respect, empathy and honesty. In such classes, students are more successful in expressing their opinions freely, absorbing and reorganizing information (Bilge, 2002).

In a research conducted by Lee (2007), it was revealed that the relationship of trust is an important predictor of adolescents' school adjustment, academic motivation and performance. Goddard, Tschannen-Moran and Hoy (2001) state that trust is the foundation of strong relationships that help children learn, especially disadvantaged children. Bilgiç and Gümüşeli (2012) stated that schools are the most important organizations of the society; success and efficiency of schools mostly depends on trust among teachers, students and parents.

In order to build trust in the classroom, teachers must try to understand their students, show small, loving and kind behavior, and clarify their expectations from students. At the same time, they must keep their promises, behave honestly, and be able to apologize when necessary. When all these communication rules are implemented in teacher-student and student-student communication, it will be easier to build trust in the classroom (Akbaş, 2005). As a result, when there is trust in the classroom, students act sincerely, learn, and listen to each other's opinions. In such classroom settings, inspiration suddenly comes. The whole class is transformed with tactual but hard to explain new move, new idea or new direction (Covey, 2002).

Researching trust in educational institutions is seen important for students' personal and academic development. In this context, the aim of this study is to determine students' in-class confidence levels and compare

them according to some variables. In line with the purpose of the research, the following sub-problems were created.

Sub-problems:

1. What is the in-class trust level of students?
2. Is there a significant difference regarding the in-class trust level of students according to gender?
3. Is there a significant difference in terms of students' in-class trust level according to their grades?

2 | METHOD

RESEARCH MODEL

In the research, because of the description of a past or present situation as it is (Karasar, 2005), the scanning model was adopted as a quantitative research method. Descriptive models (Balçı, 2009) were used in the study as it was aimed to determine the relationships between the in-class trust levels of students in educational institutions and their gender and grade level variables.

POPULATION AND SAMPLE

The population of the research consists of secondary education students attending in the central districts of Antalya in the 2019-2020 academic year. Its sample consists of 271 secondary school students, determined by simple random (probabilistic) sampling method. Information about the general characteristics of the study group of the research is given in Table 1.

Table 1. General Characteristics of the Working Group

Variables	Variable Parameters	n	%
Gender	Female	186	68,6
	Male	85	31,4
Grade	9 th Grade	76	28,0
	10 th Grade	58	21,4
	11 th Grade	65	24,0
	12 th Grade	72	26,6
Total		271	100

When Table 1 is examined, it is seen that 186 (68.6%) of the students participating in the research are female, 85 (31.4%) are male, and 76 (28%) of the students are 9th grade, 58 (21.4%) are 10th grade, 65 (24%) are 11th grade, 72 (26.6%) are 12th grade.

DATA COLLECTION TOOLS

In this study, an in-class trust scale developed by Akbaş (2005) was used as a data collection tool. Factor analysis results for the construct validity study of the scale showed that the scale is three-dimensional. The data collection tool is a 5-point Likert-type scale consisting of 34 items in 3 sub-dimensions [Basic Trust (25 items), Freedom of Expression (5 items) and Threat Perception (4 items)] scored as “I totally agree”, “I agree”, “Undecided”, “Disagree”, “I totally disagree. The scale consists of the first part that includes preliminary information and variables (gender and grade), and the second part, which aims to determine students' in-class confidence levels. In the study by Akbaş (2005), the Cronbach alpha reliability coefficient was found to be .92. In this study, the Cronbach alpha reliability coefficient was found to be .80 for the whole in-class confidence scale, .77 for factor 1, .64 for factor 2, and .57 for factor 3 for sub-factors.

DATA ANALYSIS

In the research, demographic information and characteristics of the students were examined by frequency and percentage analysis. Descriptive statistics (arithmetic means and standard deviations) were calculated in order to reveal the situations related to the items that constitute the dimensions of the students' in-class confidence levels.

T-test for samples independent from parametric tests (Büyüköztürk, 2006), one-way variance analysis (One Way ANOVA) (Büyüköztürk, 200; Duncan, 2003) were used in order to determine the effect of demographic variables on in-class trust. In significance tests, $\alpha = 0.05$ level was sought.

Regarding the assumptions of the parametric tests, the following criteria were taken as a basis and the analyzes were carried out in this direction. The equality of the variances of the distribution of measurements in both groups was examined by Levene's test. In fact, it is stated that it is difficult to meet the assumption that the subgroups display a normal distribution in the universes they belong to in the measurements of the dependent variable in education and behavioral sciences; for this reason, if each of the subgroups formed according to the group variable consist 15 or more, neglecting this assumption will not have a significant effect on the results (Büyüköztürk, 2006; Muijs, 2004; Leech, Barrett & Morgan, 2005; Field, 2009). SPSS 20.0 statistical package programs were used to analyze the data.

3 | FINDINGS

In this section, findings and comments obtained in line with the purpose and sub-purposes of the research are included. Descriptive statistics regarding in-class trust dimensions are given in Table 2.

Table 2. Descriptive Statistics on In-Class Trust

	\bar{X}	<i>sd</i>
Basic Trust	3,38	,67
Freedom of Expression	3,88	,68
Threat Perception	3,48	,83
Total	3,45	,63

As seen in Table 2, students participating in the study showed the highest participation in freedom of expression dimension ($\bar{X} = 3.88$, $sd=0.68$). This dimension was followed by threat perception ($\bar{X} = 3.48$, $sd=0.83$) and basic trust ($\bar{X} = 3.38$, $sd=0.67$) followed by the dimensions. Looking at the average of the items of the whole scale ($\bar{X} = 3.45$, $sd=0.63$), it is seen that the in-class trust level of the students in the classroom is medium.

Table 3 includes the results of the t-test analysis carried out for the purpose of comparing the dimensions of in-class trust based on gender.

Table 3. Comparison of In-Class Trust Dimensions According to Gender

Dimensions	Gender	n	\bar{X}	<i>sd</i>	df	t	p
Basic Trust	Female	186	3,30	,67	269	-2,961	.003
	Male	85	3,56	,64			
Freedom of Speech	Female	186	3,81	,67	269	-2,582	.010
	Male	85	4,03	,67			
Threat Perception	Female	186	3,36	,84	269	-3,822	.000
	Male	85	3,76	,75			

As seen in Table 3, there is a statistically significant difference in all dimensions as a result of the analysis made to reveal whether there is a significant difference with the dimensions of the in-class trust scale according to the gender variable of secondary school students participating in the research. It is seen that in the basic trust dimension [$t(269) = -2,961$; $p < .01$] there are more positive views in favor of male students ($\bar{X} = 3.56$, $sd = 0.64$) than female students ($\bar{X} = 3.30$, $S = 0.67$). It is seen that in freedom of expression dimension [$t(269) = -2,582$; $p < .01$] there are more positive views in favor of male students ($\bar{X} = 4.03$, $sd = 0.67$) than female students ($\bar{X} = 3.81$, $sd = 0.67$). It is seen that in the threat perception dimension [$t(269) = -3,822$; $p < .01$] there are higher perception in favor of male students ($\bar{X} = 3.76$, $sd = 0.75$) than female students ($\bar{X} = 3.36$, $sd = 0.84$).

In Table 4, the results of ANOVA analysis conducted with the aim of comparing the in-class trust dimensions according to the grade level of the students are given.

Table 4. Comparison of In-Class Trust Dimensions According to Grades

Dimensions	Grades	n	\bar{X}	sd	df	F	p	Meaning Difference (Scheffe)
Basic Trust	A. 9 th	76	3,34	0,65	3-267	4,434	.005	B-C
	B. 10 th	58	3,19	0,66				
	C. 11 th	65	3,61	0,67				
	D. 12 th	72	3,37	0,65				
Freedom of Speech	A. 9 th	76	3,92	0,70	3-267	7,005	.000	A-B B-C
	B. 10 th	58	3,59	0,70				
	C. 11 th	65	4,13	0,62				
	D. 12 th	72	3,83	0,61				
Threat Perception	A. 9 th	76	3,38	0,83	3-267	4,091	.007	A-C B-C
	B. 10 th	58	3,35	0,87				
	C. 11 th	65	3,79	0,73				
	D. 12 th	72	3,44	0,84				

As seen in Table 4, there is a statistically meaningful difference in all dimensions as a result of the analysis made to reveal whether there is a meaningful difference according to the class variable of the secondary school students participating in the research. In the basic trust dimension [$F_{(3-267)} = 4,434; p < .01$], it is seen that there is a meaningful difference in favor of the 11th grade ($\bar{X} = 3.61, sd = 0.67$) compared to the 10th grade ($\bar{X} = 3.19, sd = 0.66$). In the freedom of expression dimension [$F_{(3-267)} = 7.005; p < .01$] It is seen that there is a significant difference in favor of the 9th grade ($\bar{X} = 3.92, sd = 0.70$), compared to the 10th grade ($\bar{X} = 3.59, sd = 0.70$); and in favor of the 11th grade ($\bar{X} = 3.92, sd = 0.70$) compared to the 10th grade ($\bar{X} = 3.59, sd = 0.70$). In threat perception dimension [$F_{(3-267)} = 4,091; p < .01$] It is seen that there is a significant difference in favor of the 11th grade ($\bar{X} = 3.79, sd = 0.83$), compared to the 9th grade ($\bar{X} = 3.38, sd = 0.87$); and in favor of the 11th grade ($\bar{X} = 3.79, sd = 0.73$) compared to the 10th grade ($\bar{X} = 3.35, sd = 0.87$).

4 | DISCUSSION & CONCLUSION

According to the results of the research, it was found that the students' in-class confidence levels were at medium levels. According to students' views, the dimension of freedom of expression is higher than other dimensions, followed by threat perception and basic trust dimensions, respectively. In the study conducted by Akbaş (2005), the in-class confidence level of high school students was found to be moderate and supports the result of the research. In the study conducted by Polat (2009) with primary school students, students stated that they were not comfortable in the classroom environment, not able to express themselves enough, hesitant, and afraid to talk.

As a result of the comparison made according to gender, a significant difference was found in all dimensions of in-class confidence, and it is seen that the averages of men are higher than women in all dimensions. Thus, it has been concluded that men have higher levels of trust in class than women. Yılmaz (2006) found a meaningful difference according to gender between primary school teachers' views on trust in administrators and determined that this difference was in favor of male teachers. Bökeoğlu and Yılmaz (2008) also found a situation in favor of male teachers in terms of trust in managers and colleagues in their research. When these results are taken into consideration, it can be said that men create a sense of trust more easily in their environment than women. Contrary to these results, according to the research findings of Özer, Atik, Şad and Kış, (2018), female students trust their instructors more than male students. Two other studies on trust (Maddux & Brewer, 2005; Spector & Jones, 2004) show that women have higher trust scores than men. In a study conducted by Özer, Dönmez and Atik (2016) on secondary and high school students, it was revealed that female students trust their teachers more than male students.

In the comparison made according to the grades of the students, a meaningful difference was found in all of the in-class trust dimensions. According to this, it was observed that the sense of basic trust of 11th grades is higher than other classes; the freedom of expression was higher in the 9th graders compared to the 10th graders and the 10th graders compared to the 11th grades. It was concluded that the threat perception of 11th grade students was higher than the 9th and 10th grade students. The thesis study of Dündar (2018) supports this result. Contrary to these results, in the research of Özer, Atik, Şad and Kış (2018), it was determined that as the grade level gets higher, the trust in the instructor gets lower. Trust decreases or increases as a result of shared life and relationships (Forsyth, Adams & Hoy, 2011; Robbins & Judge, 2013; Solomon & Flores, 2001). As a result of this research, it was concluded that students feel more confident and act accordingly as they move up to the upper grades depending on their experiences. However, there is a decrease in the level of trust of the students when they pass to the 12th grade, and this situation can be thought to be due to the effect of the stress caused by their preparation for exams and their graduation situations.

Recommendations in the context of the findings and results of this research are as follows:

- A sense of trust should be created among students, regardless of their gender.
- Games and activities can be made to build confidence in classroom activities.
- Democratic practices can be implemented to increase trust in the classroom.
- Counseling can be provided to students at all grade levels in line with the factors that reduce trust.
- Training can be given about situations such as exam stress and changes due to adolescence that may cause distrust in students.

STATEMENTS OF PUBLICATION ETHICS

Ethical declaration form has been given. Its description is indicated on the form.

RESEARCHERS' CONTRIBUTION RATE

The researcher's contribution rate is 100%.

CONFLICT OF INTEREST

There is no conflict of interest for this study.

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Data-driven vs. Deductive Learning of English L2 Collocations Using Online Resources: A Convergent Mixed Methods Study

Ahmet ÇEKİÇ^{a*}

a* Asst. Prof., Faculty of Education, Sivas Cumhuriyet University (<https://orcid.org/0000-0002-7292-3301>) * acekic@cumhuriyet.edu.tr

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ABSTRACT

This convergent mixed methods study aims to compare effectiveness of using three online consultation resources entailing deductive vs. data-driven learning on learning and retention of 18 verb-noun collocations by EFL learners. The participants ($N=45$) randomly assigned to treatment conditions consulted three different online resources in different orders to complete the same online error correction tasks and gap-fill exercises in three sessions. The participants were given the Vocabulary Size Test (VST), and a productive collocation translation test (CTT) as the pretest, the posttest and the retention test. A sub-set of the participants also performed think aloud protocols during the treatment. After the treatment, the participants were given the CTT and responded a rating scale and an open-ended question. The results indicated that all of the resources led to significantly higher learning and retention rates with no significant differences among the resources. It was also found that the participants rate the resources differently and go through different cognitive processes when consulting resources. The VST scores positively correlated with the posttest scores, suggesting that participants' vocabulary sizes can be a moderating variable. The findings are discussed based on previous research and within the framework of data-driven learning.

Keywords: L2 collocations, online collocation dictionary, Google search, corpus, data-driven learning, convergent mixed methods design

Çevrimiçi Kaynakları Kullanarak İngilizce Eşdizimliliklerin Veri Güdümlü ve Tümdengelsel Öğrenimi: Yakınsak Karma Yöntemler Çalışması

Öz

Bu yakınsak karma yöntemler çalışma, veri güdümlü ve tümdengelsel öğrenme içeren üç farklı çevrimiçi İngilizce eşdizimlilik başvuru kaynağının, yabancı dil olarak İngilizce öğrenenlerince 18 adet İngilizce fiil-isim eşdizimlilik içeren etkinlikleri yapmak için kullanılmasının, hedef eşdizimliliklerin öğrenilmesine ve kalıcılık düzeylerine etkisini karşılaştırmayı amaçlar. Bu amaçla, katılımcılar, aynı çevrimiçi hata düzeltme görevlerini ve boşluk doldurma alıştırmalarını tamamlamak için farklı sırayla üç farklı çevrimiçi kaynağa başvurdu. Uygulamadan önce, katılımcılara Sözcük Dağarcığı Testi (SDT) ve ön test olarak eşdizimlilik çeviri testi (EÇT) verildi. Uygulamadan hemen sonra ise, katılımcılar son test olarak aynı eşdizimlilik testini (EÇT) ve farklı kaynaklara yönelik yorumlarına yönelik açık uçlu bir soru da içeren derecelendirme ölçeğini yanıtladılar. EÇT'nin sonuçları, kullanılan üç kaynağın da, kaynaklar arasında önemli bir farklılık olmaksızın ön teste kıyasla anlamlı seviyede yüksek öğrenme ve kalıcılık oranları sağladığını göstermiştir. Sonuçlar katılımcıların kaynakları farklı derecelendirdiklerini ve farklı bilişsel süreçlerden geçtiklerini göstermiştir. SDT puanları, son test puanları ile pozitif bir korelasyon göstermiştir ve SDT puanının bir düzenleyici değişken olabileceğini düşündürmektedir. Nicel ve nitel bulgular, birbirlerine uyan ve farklılaşan noktalarıyla ve önceki araştırma sonuçlarıyla birlikte, veri güdümlü öğrenme çerçevesinde yorumlanmış ve tartışılmıştır.

Anahtar kelimeler: İngilizce Eşdizimlilik, Çevrimiçi Sözlük, Çevrimiçi Bütüncü, Google arama motoru, Veriye Güdümlü Öğrenme, Yakınsak Karma Yöntemler Araştırması.

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1 | INTRODUCTION

Although scholars underline the prominence of collocations for fluent, accurate and appropriate L2 production (Daskalovska, 2015; Li, 2017), even advanced L2 learners lack mastery in this respect (Nurmukhamedov, 2016). This is possibly because L2 collocations are not noticed as effortlessly as more idiomatic expressions (Nesselhauf & Tschichold, 2002) and finding an accurate collocation is an elusive and troublesome process for most EFL learners (Lew & Radłowska, 2010). Research suggests that resource consultation improved accuracy and variety of collocations used (Wu, 2015) and that L2 learners can substantially benefit from a variety of online consultation resources such as collocation dictionaries (Chen, 2017; Kim, 2017, 2018), digital corpus resources (Li, 2017; Rezaee et al., 2015), and search engines (Brezina, 2012; Han & Shin, 2017; Sha, 2010).

It has been revealed that using online or electronic collocation dictionaries, which can present increasing amount of data, increase L2 learners' ability to produce collocations (Nurmukhamedov, 2016) and autonomy when learners receive adequate dictionary consultation skill training (Chen, 2017; Kim, 2017, 2018; Laufer, 2011). However, few learners receive systematic dictionary consultation skill training (Kim, 2018). In addition to dictionaries, data-driven resources also become a part of L2 classes with the introduction of web-based corpora (Tsai, 2019). While using data-driven collocation consultation resources such as online corpus and Google search, which entail inductive learning with deeper processing (Craik & Lockhart, 1972) and greater learner involvement (Hulstijn & Laufer, 2001) in the construction (Cobb, 1999) of collocational knowledge and in converting input into intake through noticing of recurrent linguistic patterns (Flowerdew, 2015) represent an inductive approach, traditional exercises via dictionary look-ups represent a deductive approach in producing L2 collocations. Previous research indicates that data-driven learning via corpus resources increases accuracy of collocations (Daskalovska, 2015; Lee et al., 2019; Li, 2017; Mizumoto & Chujo, 2015; Sun & Wang, 2003; Wu, 2015), ensures active engagement of L2 learners and improves their self-editing skills (Han & Shin, 2017), increases linguistic awareness (Kotamjani et al., 2017), and leads to more learner autonomy (Boulton, 2010).

DATA-DRIVEN VS. DEDUCTIVE LEARNING OF L2 COLLOCATIONS

Previous research on DDL (Data Driven Learning) resources (corpus-based resources) also examined their effectiveness in comparison with deductive learning (Başal, 2019; Daskalovska, 2015; Frankenberg-Garcia, 2012; Huang, 2014; Li, 2017; Sun & Wang, 2003; Tsai, 2019) and few studies compared different consultation resources (Kotamjani et al., 2017; Nurmukhamedov, 2016). According to Tsai (2019), research overwhelmingly suggests that while deductive methods and inductive methods are equally conducive to the improvement of receptive word knowledge, inductive methods surpass deductive methods in converting this knowledge into productive knowledge, which is also longer lasting. Sun and Wang (2003), who used four different corpus tools to teach easy and difficult collocations via deductive vs. inductive learning, found that inductive learning was significantly more conducive to the learning of easy collocation, while both methods did not lead to any significant difference in the learning of difficult collocations. Huang (2014), who compared learning of five abstract nouns via using concordance lines and dictionary, showed that the corpus group produced language with higher variation in collocations and colligations and used the target nouns more accurately while also producing more accurate and complex language on average. Kartal and Yangın Ekşi (2018) investigated learning of verb+noun collocations via using corpus vs. completing traditional exercises such as matching, gap-fill using a dictionary, reported significant difference between the groups' collocation production in an essay writing task but not in the collocation knowledge test. Tsai (2019), who compared deductive vs. inductive learning of vocabulary knowledge via using dictionary and corpora in combination in different orders, found that the inductive approach (i.e. when the corpora is used first) was more conducive in collocation recall than the deductive approach but not in collocation recognition.

In another study, Li (2017), who compared the effects of BNC (British National Corpus) and COCA (Corpus of Contemporary American English) based instruction with teacher-led rule based traditional teaching (with access to dictionaries) in a linguistic course by 30 Chinese postgraduates over 15 weeks, found that the corpus group significantly showed better performance in the posttest (essay writing task) in terms of naturalness, the number of academic collocations and fixed phraseological patterns. Daskalovska (2015) found that learning verb+adverb collocations using an online concordancer yielded better results as compared to learning with traditional exercises. Similarly, Başal (2019) investigated collocations learning via traditional exercises such as multiple-choice and matching as compared to learning collocations using online collaborative collocation dictionary entries,

concordance and the Web, found that online resource yielded significantly better learning and retention scores. However, Nurmukhamedov (2016), who compared the Macmillan Collocation Dictionary (MCD, paper-based), the Longman Dictionary of Contemporary English (LDOCE, online) and www.wordandphrase.info (WPI, an online corpus tool) in essay-format error correction tasks, reported that the LDOCE (a deductive learning resource) and WPI (an inductive consultation resource) yielded similar results and both led to better performance than the MCD. In spite of such contradictory findings, previous research comparing the effects of deductive vs. inductive learning of lexical knowledge suggests that while both approaches are favorable to acquisition and retention of receptive vocabulary knowledge, inductive learning is more conducive to transforming receptive knowledge into productive knowledge and retention of such knowledge (Tsai, 2019). Likewise, recent meta-analysis research also indicates the superiority of data-driven inductive learning via using corpus as compared to the deductive approach (Boulton & Cobb, 2017; Lee et al., 2019) with the proficiency of learners being a moderating variable (Lew & Radłowska, 2010; Wu, 2015).

GOOGLE AS CORPUS

Recent research has also revealed that as an extension to data-driven language learning, Google Assisted Language Learning (GALL) (Chinnery, 2008) can transform the Web, which is referred as ‘dirty corpus’ (Robb, 2003), into an effective inductive consultation resource for L2 collocation production. Sha (2010) pointed out the possibility of using GS (Google Search) as corpus since conventional corpora can attest ineffective in the face of diverse writing needs L2. Han and Shin (2017) found that although teaching Google search techniques (GSTs) had positive effects on article use, it did not lead to improved collocation use, which was attributed to the lack of grammar and lexical knowledge of the participants. Emphasizing the comprehensiveness and potential of GS, Shei (2008) states that “No currently well-known corpus seems large enough to provide adequate instances of prefabricated chunks like this for closer investigation” (p. 67). Sha (2010) argues that web-based corpus can appeal to diverse needs in L2 writing, where traditional corpus often proves ineffective. Overall, research suggests that GS can be an effective collocation consultation resource. However, limited research compared GS with traditional corpus. Brezina (2012), who compared Google Scholar with the COCA academic sub-corpus, pointed out that Google Scholar better represented written academic language and register variation. In an empirical DDL study, Sha (2010), who compared GS with the BNC, found GS to be superior because of its promptness, usability, variety of solutions it offers and most importantly preference investigation, i.e. the possibility to check alternative collocations. Further, in a case study that examined the use of corpus tools including COCA, GS in combination with traditional consultation resources, i.e. online dictionary in by a postgraduate EFL student in academic writing tasks, it was revealed that all corpus resources used contributed to proofreading and editing and increased the learner’s linguistic awareness (Kotamjani et al., 2017). Studies also underscore that with adequate training GS can enhance naturalness of learner writing (Acar et al., 2011; Geluso, 2013; Shei, 2008) and improve error correction (Geiller, 2014; Kvashnina & Sumtsova, 2018).

In spite of different affordances of various L2 collocation consultation resources, few studies compared them (Brezina, 2012; Kotamjani et al., 2017; Nurmukhamedov, 2016). In addition, there is no research that investigates how different online inductive consultation resources (i.e. online corpora vs. search engines) and a deductive online consultation resource (i.e. online dictionaries) compare in terms of learning and retention of L2 collocations and how each resource is comparatively rated by L2 learners. Besides, there is little research (Tsai, 2019) on how L2 learners actually construct word knowledge via deductive vs. inductive methods. To fill in these gaps, the current study compares how the employment of three different online resources, viz. SKELL, GS, which entail inductive learning (with different types and amount of information presented, though), and the LCDT, which involves deductive learning, in terms of producing, learning and retention of L2 collocation by completing error correction and gap-fill exercises. In addition, the study investigated how learners actually availed themselves of these resources through screencast recording of search process with each resource and how learners comparatively rate and comment on these consultation resources. The study also examined if the participants’ English vocabulary size scores correlated with their overall collocation gains regardless of the digital resource used. Accordingly, the study has four one-sided alternative hypotheses:

1. The resources will not yield significant differences in error correction.

2. Different consultation resources will lead to significantly different performances in learning and retention of L2 collocations in productive measures.
3. There will be significant differences in the participants' ratings of the resources.
4. The participants' vocabulary size will positively correlate with their collocation production, learning and retention test scores.

In addition to these hypotheses, the study seeks to answer the following research question:

1. What are the comments of EFL learners on the three consultation resources?

2 | METHOD

Among the three mixed methods designs Creswell and Plano Clark (2018) identify (explanatory sequential, exploratory sequential and convergent designs), the current study, in which the two data sets were collected concurrently and separately (i.e. neither depended on the other), suits the convergent design as it is the only design where data is collected concurrently and separately. However, it differs from their typological categorization of convergent design, which *typically* give equal priority to both datasets, in that the current study prioritizes quantitative data in line with its research purposes. In accordance with Creswell and Plano Clark (2018), both data sets were collected from the same individuals (open-ended question in the rating scale) and subset of individuals (only three students who accepted to complete think aloud) as the aim was to corroborate findings and have a deeper understanding. The quantitative data was collected using four measures; namely the VST (Vocabulary Size Test), the collocation translation test, error correction exercise, and rating scale. The qualitative one included think aloud protocols and an open-ended question given at the end of the scale. Data were collected separately and analyzed independently. However, the results were merged in a discussion and interpreted in the discussion section. See Figure 1 for an illustration of data collection, analysis and interpretation procedure.

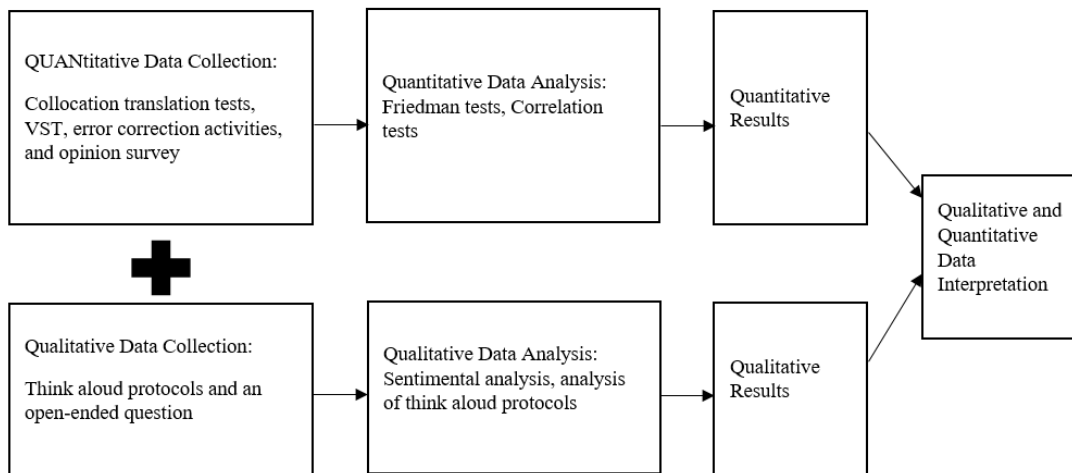


Figure 1. *Research Design*

PARTICIPANTS

The participants (N =48) in the study were from one intact class at an ELT (English Language Teaching) department at state university in Turkey. However, some of the participants missed a session or a test; therefore, data from a total of 45 participants (37 females and 8 males) were included in the analysis. They were all upper intermediate EFL learners and ELT majors and were randomly assigned to the groups.

MATERIALS

In this section, the digital collocation consultation resources, target collocations and instructional materials used in the study are described.

Digital resources. As the resource selection criteria, the researcher made sure that all these resources were free, accessible online, and all the target collocations were available in the resources. The first resource was the Longman Collocation Dictionary and Thesaurus (LCDT). 30-day trial version of the LCDT, which contains over 70.000 collocations including the Academic Collocation List, was used. The resource has a simple search bar and possible collocates for the searched collocate together with L2 definitions and example sentences. Moreover, the dictionary gives different meanings of the node; thus, students can evaluate the meaning of the collocation in the target context. In addition, the consultation resource provides collocation combinations, e.g., verb+ noun or adjective +noun collocations and the part of speech of possible collocates.

The second online resource used in the study is SKELL (Sketch Engine for Language Learning), which is a free online software corpus-based resource. It is based on over one billion words in 57 million sentences from various resources. The consultation resource allows its users to conduct part of speech sensitive search with the node word or the collocate as it displays patterns of collocation in different syntactical combinations with examples of real language use (Figure 2). The users are to deduce the meaning of collocations, distinguish between different senses of collocations to choose the collocation that fits the target context. The third resource was Google search (GS) engine, which can be accessed through the GS search interface with browser. The resource searches the indexes from billions of webpages. The users can choose to do simple or advanced search with specific search operators. The search term is displayed in bold type. Each page displays 10-100 results or more as set by the user. Examining the results of the search, users can find out whether certain collocations exist and deduce the meaning and suitability of a collocation for a given context. However, users of GS have to decide the part of speech information and deduce the meaning of the collocations from the search results.

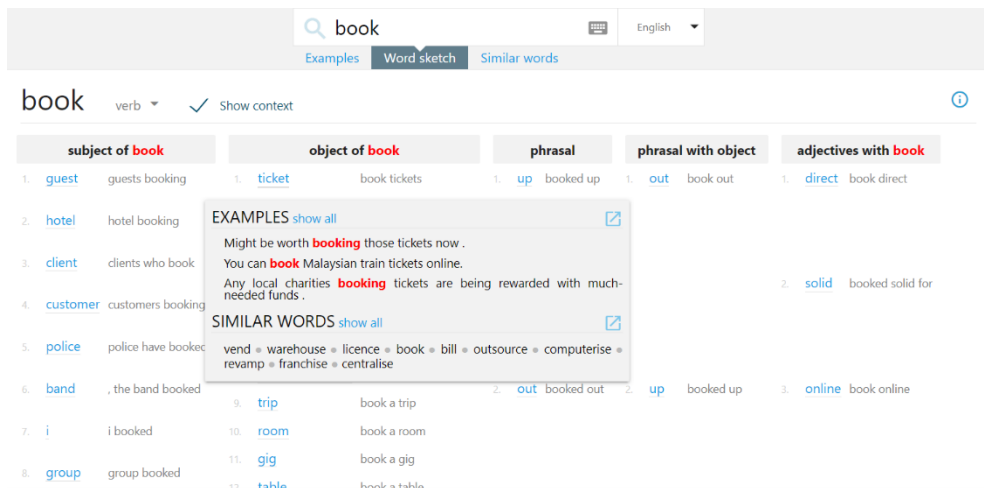


Figure 2. *The result screen from SKELL*

Target collocations and the CTT. The researcher used two main criteria to select the target collocations. First, to make sure that the participants already know the meaning of collocates and node words, the researcher included collocations with words that are within the frequency bands suitable for intermediate EFL learners, who know 3000 to 5000 word families as measured by the vocabulary size test. The collocates and the node words were submitted to Lextutor, a vocabulary profile analysis website (Cobb, n.d.), and all were in the first 3k word families according to the BNC-COCA corpus except for the words quench (10k) and headlines, (off-list). Next, as suggested by Peters (2016), the researcher did not choose the collocations with a higher level of congruency with L1 collocations to eliminate guesswork based on L1 collocation patterns.

Tutorial videos. The researcher and one of his colleagues teaching one of the sections that took part in the study prepared a screencast tutorial teaching for each consultation resource. The tutorials were in the L1 of the participants, i.e. Turkish. The tutorial for GS included the teaching of search operators asterisk, double quotation marks, “OR” and “AND”, and minus sign and took longer. The tutorial for SKELL showed how to access the

resource through the website, how to do search and what to look for in the search screen. As for the LCDT, the participants were shown how to register for 30-day trial version and how to do search and evaluate the search results. The participants watched each tutorial before using each resource. In addition, three participants who voluntarily agreed to take part in the think aloud protocol were provided with tutorial videos about the protocol.

Exercises. A set of exercises, namely error correction and gap-fill exercise, were transformed into online exercises using Google Forms. In the error correction exercise, the participants were given 10 verb-noun collocations in sentences and then asked to correct any incorrect use of verb-noun collocations, which were highlighted in bold. The participants were also required to provide correct collocations in the gap-fill exercises. The sentences were chosen from online version of the Longman Dictionary of Contemporary English. The gap-fill exercise was given after the error correction exercises and the participants were not allowed to see the next exercise unless they finished the previous one.

PROCEDURE

First of all, the participants completed the pretreatment measures online. After that, the participants watched a tutorial video about the importance of collocations. They also viewed a tutorial video for each resource and completed practice exercises before using each one of the resources in actual treatment exercises. Later, they studied the same set of collocations each session by completing the same types of exercises in the three treatment sessions over the upcoming three days. The treatment procedure was designed in a way to allow all the participants experience using the three resources by completing the same exercises. Thus, the procedure had a 3 x 3 Latin square design with three groups of EFL learners (which were subjected to the same treatment in different orders), three sessions (three sets of collocations) and three resources. The target collocations (N=18) were randomly assigned in three sets of six collocations. The order the participants studied the collocation sets, and the exercises were kept constant for each treatment session. However, each group employed different resources in order for each session. In other words, in the three treatment sessions, all the participants studied the same set of collocations in the same order by completing the same exercises using the same resources but in a different order (Table 1). After the exercises in the three sessions were completed, the researcher gave the immediate posttest and the rating scale. Two weeks after the posttest, the researcher also gave the participants the same test as the retention test. Meanwhile, three participants completed think aloud protocol during their search processes in the error correction task with each resource.

Table 1. The Treatment Procedure

	Session 1	Session 2	Session 3
Target collocations	catch fire; allocate resources; satisfy curiosity; follow an advice; achieve success; pose a risk	take a step; address an issue; make headlines; do a damage; quench thirst; make effort	set standards; draw conclusion; break the law; make distinction; follow instructions; make enemy
Group 1	LCDT	SKELL	GS
Group 2	GS	LCDT	SKELL
Group 3	SKELL	GS	LDCT

Note. Each session required studying a set of 6 collocations by completing error-correction and gap-fill exercises.

The researcher preferred a Latin square design rather than using a traditional within-subject design as the latter requires participants to go through the same treatment sessions (using the resources in this study) in the same order, which would have caused variances in terms of time gap between the treatment sessions and the posttest. This would most probably lead to increased rate of attrition for the first set of collocations, which would in turn render comparisons of the effects of resources doubtful. Alternatively, designing a between-subject study would lead to few participants in each group, which is not adequate for quantitative comparisons. Also, a between-subject design would not allow the participants to use different consultation resources and rate them comparatively. The

current design eliminates possible differences between the participants and the collocation sets while also ensuring that all the participants use the three resources. Thus, the scores received using the same consultation resource were brought together to create consultation resource performance scores (rather than those of the participants), so that the effects of digital resources, rather than those of groups, can be compared across the three testing points and in the error correction task.

DATA COLLECTION TOOLS

The data were collected via the collocation translation test (CTT), the vocabulary size test (VST), rating scale and think aloud protocol. The collocation translation test was developed by the researcher. As in active recall vocabulary tests, the meaning of the collocation was given in L1 and the participants were required to provide L2 verb collocate for the given L2 noun (see Appendix A). As a result of reliability analyses, 5 items with a discrimination index lower than .30 were omitted. These omissions amounted to 19 validated items, but to assign them to three groups with equal number of target collocations, one more item with the lowest index value was deleted. However, deleted items were included in the exercises and in the tests. The KR21 score of the remaining 18 items was .71, which means that the test had adequate reliability. Online version of VST (Nation & Beglar, 2007), which was adopted for the web by Cobb (n.d.), was given before the treatment and included the first five 1000 word levels the number of correct answers were multiplied by 100 to calculate the vocabulary size.

The rating scale was developed by the researcher to ascertain the participants' views regarding their experiences of the resources. It included questions about different aspects of the resource such as speed, ease, quality and comprehensiveness of search results, interface, and navigation. The scale was in L1 and it was checked for content and comprehensibility by two experts and necessary changes were made in content and wording. It included 10 questions, nine of which required the participants to rate each resource out of 10. The scale had a good internal reliability score (Cronbach's Alpha=.98), which was calculated after data collection as it was possible to find subjects who had used all the three consultation resources before. The last question in the scale was an open-ended question, which asked the participants to make overall comments on the resources. Their comments were subjected to sentimental analysis. The final data collection tool was screencasts of resource consultation. Three participants agreed to shot screencast videos of their own search processes with each resource while thinking aloud in their L1. They used Microsoft Teams to shoot their own screencast videos. The videos ranged between seven minutes and 30 min. depending on the participants and the resource used.

RESEARCH ETHICS

The researcher received endorsement of the ethics committee. The participants were informed about the stages and the purpose of the study. The participants volunteered to participate in the study were ensured that their data would be kept confidential and their names would be kept anonymous.

DATA ANALYSIS

Quantitative and qualitative data sets were analyzed separately. The CTT scores, which provided main quantitative data set, was scored by rewarding a point for each on the correct answer. The researcher marked the responses leniently, i.e. disregarding minor spelling or word formation mistakes. The pre-test, post-test and retention test scores were grouped according to the resource they used in each session. Global pre-test and post-test scores were also calculated by scoring each correct answer regardless of resource use. Thus, each participant had a GS score, a SKELL score and an LCDD score (each out of 6) and a global score out of 18. While the scores obtained with the same resource were added up and used to compare the resources, the global scores were used to see how they correlate with the participants VST scores.

As the data set from the CTT violated normality assumptions, a Friedman test was used to compare the participants' learning gains via using different resources. Wilcoxon signed ranks tests were conducted as post hoc tests. As for correlation analysis, since the datasets violated the assumption of normality a Spearman's rho test was conducted to see how the VST and pretest, posttest and retention test global scores correlated. Finally, the scale responses were compared using a Friedman test as the data set violated normality of distribution. Besides, the qualitative data from one open-ended question in the scale was submitted to sentimental analysis as there was only one question, which yielded limited qualitative data (Given, 2016, p. 13). Further, the researcher watched the

screencast videos of think aloud protocols during the error correction exercise and sought clues of how the participants availed themselves of different resources to construct collocation knowledge.

3 | FINDINGS

RESULTS FROM THE COLLOCATION TRANSLATION TEST

The results of the Friedman test were significant, $\chi^2(8) = 51.718$, $p < .001$. Dunn-Bonferroni post hoc test was conducted to locate significant differences. Pairwise comparisons (among the pretests, posttests and retention tests) at each testing point among the resources yielded no significant difference. As for the comparison between the pretests and posttests, there were significant differences between the LCDT pretest and LCDT posttest ($p < .001$), between GS pretest and GS posttest ($p = .003$), and between the SKELL pretest and the SKELL posttest ($p = .007$). Comparison between the pretests and retention tests revealed significant differences between GS pretest and GS retention test ($p = .004$), between the LCDT pretest and the LCDT retention test ($p < .001$), and between the SKELL pretest and the SKELL retention test ($p = .012$). Finally, there were no significant differences the posttest and retention tests.

ERROR CORRECTION

The results of the Friedman test indicated no significant differences in the median scores of the LCDT error correction, the SKELL error correction, and GS error correction $\chi^2(2) = 5.700$, $p = .058$.

CORRELATIONS WITH THE VST

The overall scores of the participants were used rather than categorizing the scores according to the resources. Furthermore, Cohen's standard was used to evaluate the strength of the relationships (Cohen, 1988). The results indicated medium significant positive correlations between total pretest scores and the VST scores of the participants ($r(43) = .37$, $p = .012$), and between total posttest scores and the VST ($r(43) = .32$, $p = .033$). There was a non-significant negative correlation between Error Correction rate and the VST scores ($r(43) = -.02$, $p = .922$).

RESULTS OF THE RATING SCALE

Answers of 32 participants were subjected to the rating scale analysis as some of the participants chose more than one rate for some of the questions. The results of the Friedman test indicated significant differences in the scores of the rating scale regarding resources, $\chi^2(2) = 23.870$, $p < .001$. Dunn-Bonferroni post hoc test was conducted to locate the direction of differences. The results indicated that scores of both SKELL and LCDT were significantly higher than the scores of GS ($p < .001$), however, there was no significant difference between the scores of LCDT and SKELL ($p = .617$). The results revealed that the LCDT received the highest scale scores than the other resources for all questions. While SKELL had similar scores as the LCDT, GS consistently lower scores for all questions.

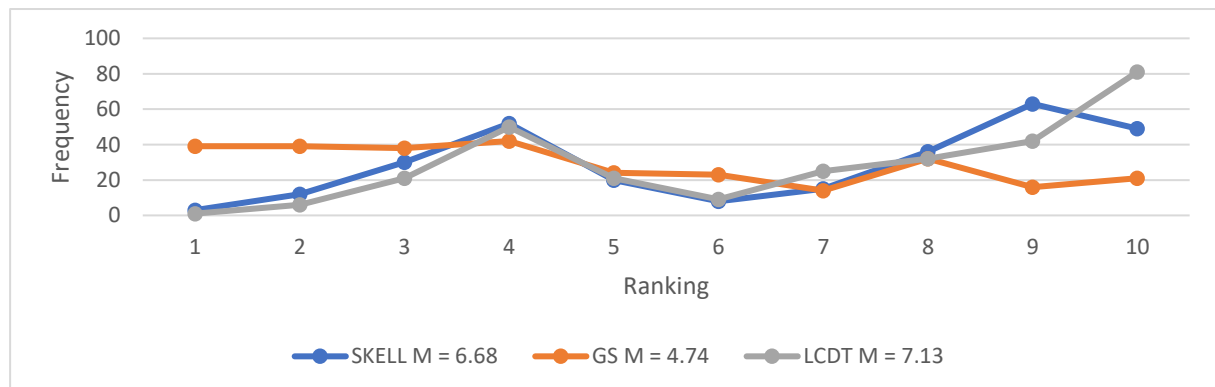


Figure 3. Distribution of responses for each resource across 10 rating points

As a total of 32 participants rated each resource for nine questions, so there were a total of 288 (9*32) responses for each resource. The distribution of the responses across ten rating points can be seen in Figure 3. For example, the LCDT was rated the highest rating (10) 81 times out of 288 responses, while SKELL was rated highest score 49 times out of 288 times, GS was rated the highest score 21 times out of 288 responses.

ANALYSIS OF QUALITATIVE DATA

As mentioned in the data analysis section, the qualitative data collected via the final open-ended question were subjected to sentimental analysis. 28 out of 32 participants provided data for the analysis as four of the participants did not answer the last question. Some participants made both positive and negative comments on resources. 21 participants made comments on SKELL, 19 of which were positive and 4 were negative ones. 21 participants made comments on LCDT and all comments were positive. Finally, 15 participants made comments on GS, and there were three positive comments and 12 negative ones. Some comments were inclusive of all of the resources; e.g. P5 stated that “Among the resources, SKELL and LCDT helped me a lot to find the collocation I’m looking for with a variety of examples they provided. But GS does not yield the same performance with unclear samples and inadequate explanations. I think I will use SKELL for my further search for collocations because I can find the collocation I am looking for easily and the search results are clear”. Some participants stated their willingness to use SKELL and the LCDT in their future studies especially in writing compositions. For example, P1 stated that “SKELL and the LCDT will definitely be the resources that I will use when writing my essays or for any other (language related) issue.” Views on resources generally included comments on the usefulness of the resources. In addition, P28 discussed the format of GS by stating “I had a hard time searching with Google because the font size, having more and different information than the information I was looking for distracted me and caused me to spend more time”.

ANALYSIS OF THE THINK ALOUD PROTOCOL

The researcher asked all the participants if they could think aloud and shoot screencast videos of their experiences while completing the error correction exercise. Only three participants agreed to do so. Given to the limited data, the researcher could not conduct any theme analysis; therefore, the think aloud was not transcribed. The researcher watched the screencast recordings and took notes on the participants’ search process. It was seen that they spent more time with GS, which was followed by SKELL and the LCDT. P1 spent 7 m. 45 s. with SKELL, 9 m 29 s. the LDCT, and 10 m.11 s. with GS, P2 spent 13 m 11 s., 11 m. 29 s., 32 m. 33 s., and P3 spend 19 m. 07 s., 9 m.18 s. and 19 m. 34 s, respectively. It was also seen that in some cases, the participants just read the sentences and their decisions aloud without giving any details about the underlying cognitive processes of how they constructed knowledge about the target collocations.

As the LCDT displayed all search results in one screen and categorized them according to the part of speech information, the participants could swiftly and easily locate the collocate verb they were looking for by scrolling down. The participants could quickly scan search screen as it was neatly designed thanks to bold characters, different coloring and highlighting (see Figure 4) Most of the time the P1 and P2 read the example sentence first and overlooked the L2 definition in the parenthesis if they could understand the meaning from the context. In some cases, P1 also eliminated other possible collocations by evaluating if the collocate verb’s meaning can fit into the context. However, it was seen that in some cases P2 failed to understand the context and thus find an appropriate collocation because of her low proficiency. It was also noticed that she probably misunderstood the instruction and tried to correct accurate cases of collocations even if she had found examples in LCDT that verify collocation accuracy.

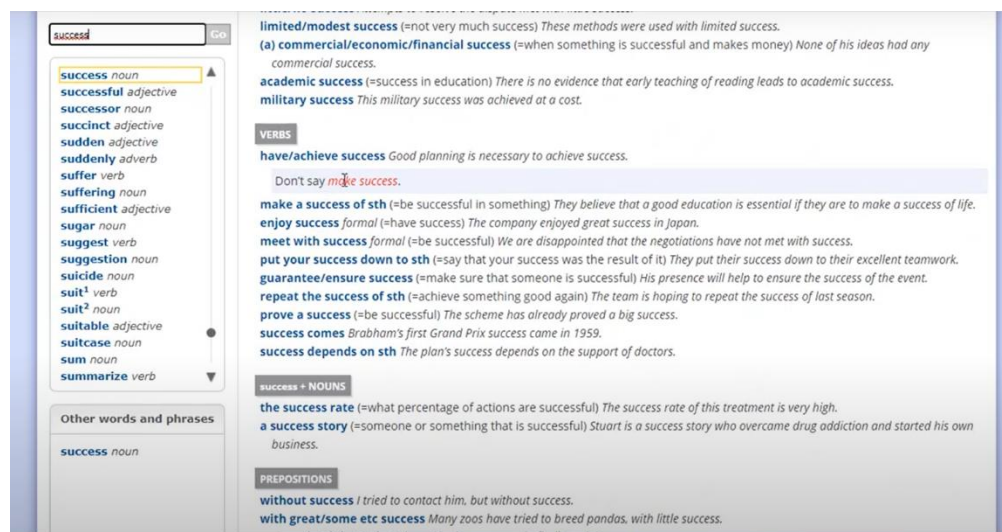


Figure 4. Search results displayed by LDCT

With SKELL, the participants quickly directed their attention to the appropriate part of speech and syntactical structure as the resource displayed the results categorized according to syntactical structures. The participants first translated the context and the meaning of the collocation into their L1. Then they checked if the collocation is correct by searching the node. Later on, if they found the collocation in SKELL search screen, they examined the examples if the collocation meets the intended meaning and also confirming its accuracy relying on their L1. They did not translate L2 collocations into L1 literally but used L1 to think about intended meaning and thus accurately translated them. Next, they evaluated if the collocation has the meaning required by the context by examining the examples provided by SKELL. If they think that it does not meet the intended meaning, they evaluated search results by examining examples provided for each collocation. They hovered their cursors on the most possibly correct collocations to see examples and examined the examples. In this respect, the participant's vocabulary knowledge helped them to evaluate the context and search result and thus better avail himself of the resource. On the other hand, even if P2 was able to filter the search results to fit the syntactic structure required by the context, she was not able to decide which collocation provided intended meaning. She was not able to understand the example sentences in some cases probably because of her lower proficiency. Further, she tried to correct every collocation even if the instruction asked them to correct the false ones. Yet, she was able to find the correct collocation in most of the cases as there were limited alternatives with examples. P3 also translated the L2 collocation and search for the collocate verb that can suit the context. He was able to evaluate search results syntactically and semantically. He spent more time with SKELL compared to the other participants because he has slower internet connection. He also evaluated more search results.

While using GS, the participants tend to pay attention to the explicit deductive resources such as dictionaries, which already provided meaning of the target collocation in L1 or L2 and sometimes an example sentence. P2 particularly took very long time to complete the error correction task with GS as she tried to correct collocations in spite of GS provided evidence for their accuracy, possibly because she misunderstood the instruction. In some cases, the participants failed to evaluate if any search result was a true collocation or just a coincidence. Further, they were not able to evaluate if the meaning of the collocation in the GS results meets the intended meaning in the sentence. P1 decided if she found the correct collocation just based on the frequency of collocation in search results. In addition, P1 and P2 translated collocations and searched for their L1 equivalent in GS, which directed them to bilingual dictionaries. In sum, the result of the think aloud protocol indicates that employing GS, a data-driven resource, does not necessarily guarantee that the participants are involved in data-driven learning. It was also seen that differences in proficiency and their level of attention played a determining role in the extent the participants availed themselves of the resources. In general, it was seen that while the participants could use the LDCT and SKELL in line with the tutorial video, they were not so good at using GS. It was also noted that lower collocation awareness and ability to evaluate the context of the sentences semantically caused them to perform

poorly with the resources especially with GS. In sum, it was seen that not only the quality of the resource used but also the individual participant's overall linguistic proficiency (and collocation awareness) determined the success in error correction.

4 | DISCUSSION

In this section, the results will be discussed for each hypothesis or research question one by one. For each hypothesis or research question, first, qualitative and quantitative results related to each research hypothesis will be merged in a discussion and then the interpretation will be elaborated on based on previous research and established theories. As for the first hypothesis, the analysis of the error correction rates (quantitative data) revealed no significant difference in terms of the resource used in the error correction task, so the first hypothesis is rejected. However, the results of the rating scale indicated that the learners rate them differently. The contradiction between these quantitative results can be explained by the analysis of think aloud protocols, which indicated that the participants could find correct collocations even if they had difficulty in using the resources and spent more time with GS. There is limited research that compared the performances yielded by different consultation resources and finding of a similar study (Nurmukhamedov, 2016), which found no significant difference between using an online dictionary (the LDOCE) and with an online corpus-based resource (WPI) in an error correction task, corroborates the current study. This finding can be attributed to the limited set of collocations studied in both studies and to the fact that all of target collocations were accessible via all of the resources used.

The second hypothesis argued that there will be significant learning gains and retention rates among the resources. It was based on the theoretical assumptions that the inductive resources (SKELL, GS), which entail more learner involvement, will yield better performance in collocation learning and/or at least in retention as compared to a deductive resource (the LCDT). However, there was not a significant difference in the posttest and the delayed posttest, so the second hypothesis was rejected. However, the results of the rating scale indicate that the participants rate LCDT and SKELL significantly better than GS, which is also supported by the qualitative analysis of the open-ended question. The contradiction between these quantitative measures can be interpreted to mean that positive ratings of resources does not always translate as superior performance. However, the results of the think aloud protocol revealed that in some cases, the participants used GS like a deductive resource. Thus, as has been argued in the analysis of the think aloud protocol, the employment of a data-driven resource does not necessarily mean that the participants will be involved in the data-driven learning process. This analysis raises the possibility that the lack of difference cannot be interpreted to mean that consulting data-driven resources does not lead to significantly better learning and retention of L2 collocation.

The results of the posttest and the retention tests are in conflict with theoretical underpinnings of DDL and body of empirical research. In line with the theoretical tenets of DDL, the participants using GS and SKELL were expected to inductively study language samples with greater involvement in the process, and thus notice recurrent patterns and construct more and longer lasting lexical, grammatical and semantic information about collocations. However, at first view the finding of the current study seems to contradict with these assumptions based on learning theories. This finding also conflicts with the findings of previous research (Başal, 2019; Boulton & Cobb, 2017; Daskalovska, 2015; Huang, 2014; Kartal & Yangın Ekşi, 2018; Lee et al., 2019; Li, 2017; Tsai, 2019) indicating the superiority of data-driven learning in learning collocations over traditional treatments.

The lack of significant difference in the current study contrary to research and learning theories behind DDL can be attributed to three main differences: measures, different methodological understandings of DDL and the length of the study. Although previous research which measured both collocation recognition and recall separately in comparison of the deductive approach vs. the inductive approach, found that the latter is particularly more conducive to collocation recall whilst being equally effective in collocation recognition (Cobb, 1997; Frankenberg-Garcia, 2012; Huang, 2014; Kartal & Yangın Ekşi, 2018; Tsai, 2019), different perceptions of productive collocation knowledge measures can make comparisons less straightforward.

The productive measures entailed error correction in ten grammatical collocations (prepositional colligations) in Frankenberg-Garcia (2012) and recall of nodes for target verbs (only five) in Tsai (2019). Therefore, the conflict between the two studies and the current study, which also used a productive measure of collocation knowledge (i.e. collocation translation test), can be attributed to different understandings of productive collocation knowledge

and also the number of test items. Some researchers used even more productive measures, which require the participants to apply collocation knowledge in new contexts, i.e. in writing. Kartal and Yangın Ekşi (2018) reported that inductive learning via using corpus as compared to deductive learning via completing traditional exercises with access to dictionary led to significantly more collocation production in writing but not in recognition of a specific set of collocations. Their finding suggests that deductive learning and inductive learning can be equally conducive in terms of the learning a specific set of collocations at receptive level but the inductive method (via. corpus-tools) is superior in the application of collocation knowledge in writing. Furthermore, Huang (2014) revealed that the participants in experimental group, who studied five abstract nouns via using concordance lines as compared to consulting dictionary, noticed more lexical collocations and showed significantly increased accuracy and variety in writing. Similarly, Cobb (1997) found that while vocabulary was learned via inductive and deductive methods, only learners in the inductive condition significantly improved their ability to apply vocabulary knowledge in new contexts. Thus the lack of significant difference in the current study can be explained with the lack of more productive measures which required learners to use their collocation knowledge in new context, viz. via writing.

Furthermore, methodological differences also make it difficult to compare results. In her rigorous and in-depth study of how learners avail themselves of different resources while constructing different dimensions of vocabulary knowledge, Tsai (2019) allowed the participants in both groups to consult the corpus and the dictionary (in reverse orders), which does not only lack ecological validity since L2 learners would consult either one of the resources based on their perceived practicality and/or usefulness but also casts doubts on her comparison. Their access to both types of resources makes it difficult to attribute the superiority of the inductive group in collocation recall to the nature (quality) of cognitive process underlying the inductive approach or to the different order in the implementation of both methods in combination.

Li (2017), who examined the improvement of productive vocabulary improvement over a term in an essay writing task, found that although both groups improved their writing, the corpus group outperformed the traditional group in collocation production. Thus, previous research indicates that superiority of corpus consultation can be particularly observed in the implementation of collocation knowledge in new contexts (i.e. via writing), which can at least partially explain the contradictory result of the current study, which measured a limited set of collocations in a collocation translation test. The lack of difference between the resources in the current study can also be attributed to the length of the study. The current study was conducted over a period of three weeks, including the training and the delayed posttest. However, Li (2017), who compared corpus-based activities with traditional teacher-led activities with access to dictionaries in a study over 15 weeks, found that the corpus group performed significantly better. This is also supported by Boulton and Cobb (2017), who argued that the effect of DDL could be seen in the long period of study. In sum, the outwardly contradictory finding of the current study can be attributed to different perceptions and measures of productive collocation knowledge, varying methodological understandings of how the inductive vs. deductive divide, and the length of treatment.

The lack of difference between GS and SKELL, both of which entail inductive learning, can be simply interpreted to mean that similar consultation resources yield similar results. However, the finding contradicts with the results of previous studies, which suggested the superiority of GS compared to other corpora such as COCA (Brezina, 2012) and the BNC (Sha, 2010). The discrepancy between the findings can be attributed to the limited number of collocations (which were all accessible in all resources) in the current study as compared to other studies. Furthermore, they (Brezina, 2012; Sha, 2010) did not compare the performances of the participants with difference resources but compared different characteristics of the resources. Brezina (2012) compared Google Scholar and with COCA-academic and found that the former encompasses larger amounts of academic language, better represent the shades of academic language and allows for comparison among different disciplines. He concluded that it is a better tool in corpus-driven English for Academic Purposes (EAP) research. Sha (2010) also found GS is superior than the BNC in terms of usability, speed, comprehensiveness and preference investigations. However, the current study compared GS with other resources in terms of learning and retention of a specific set of collocations. So although GS did not lead to better performance with the limited set of collocations in this study, it can be more effective with larger sets of collocations or when writers want to find answers during their writing tasks (Sha, 2010).

The contradiction of the finding with existing theories and research can be better explained via an analysis of the actual processes the participants had gone through in-depth via think aloud protocol. Think aloud protocol reveal the reason why GS did not lead to significant results, contrary to the expectation based on studies indicating its superiority over corpus resources (Brezina, 2012; Sha, 2010). As already pointed out, it has been revealed that the learners did not necessarily engage into data-drive learning and evaluation process with GS just because the resource displayed large amounts of search results. Think aloud protocol indicates that while the participants effectively used SKELL and the LCDT, they were not so good at using GS. When using GS for some collocations, all of the three participants turned to dictionary results with explicit meaning and examples in the same result screen, which cause GS to lose its advantage as a resource involving DDL. Furthermore, in some cases they failed to evaluate if the search result is a true collocation or a coincidence. They chose collocations based on their frequency without evaluating if its meaning fits the target context. Thus, think aloud protocol revealed that the lack of difference in favor of GS can be attributed to the inadequacy of training via screencast the tutorial video and the participants' low level of awareness about collocations. However, it must also be noted that although it took longer for the participants to correct mistakes with GS compared to SKELL and the LCDT, the participants were able to correct similar number of mistakes using GS. Based on the analysis of the think aloud protocols, the lack significant difference between SKELL, which is a resource that require DDL, and the LCDT, can be attributed to the fact that the participants were able to locate similar number of collocations in both resources and they were able to infer the meanings from SKELL as well.

The third hypothesis was accepted as the results of the rating scale indicated that the participants rated the LCDT and SKELL significantly more favorable than GS in all aspects. This is also corroborated by the analysis of the think aloud protocols, which showed that the participants spent more time to locate collocations in GS and had more challenging experiences. Sentimental analysis of the responds to the open-ended scale question also suggested the same. P14 stated that "Compared to the others, searching with GS was more tedious and it was more challenging to find the collocation that I was looking for." This difficulty can be attributed to inadequate grammar and lexical knowledge of the participants (Han & Shin, 2017) and their need for more rigorous GS training. Furthermore, searching with GS might have been a more tedious task for them because GS, which is not particularly developed for locating L2 collocations, displays huge numbers of search results in a number of pages without lexico-grammatical and semantic information and without filtering coincidental co-occurrences. Thus, it can also be argued that GS was rated by far the least favorable resource because the participants did not have enough collocation awareness to evaluate search results by GS and thus find it challenging to use (also indicated by think aloud protocols). In sum, the results of the rating scale indicate that L2 learners can rate a DDL consultation resources, i.e. SKELL as favorable as a payable deductive consultation resource, i.e. LCDT, unless it is too challenging for them to use (i.e. GS in this study). It is also interesting to note that in spite of the fact that think aloud protocols revealed that the participants had difficulty in using GS and rated it the least favorable resources in the rating scale, their performance with GS was not significantly worse than with the LCDT and SKELL. This finding can be interpreted to mean that although the participants availed themselves of these resources equally (as indicated by posttest, the retention test, error correction measures), they rated them differently. In spite of the fact that the participants consistently performed better (though not significantly better) with GS than SKELL in error correction, in the posttest and the retention test, they rated GS lower than the LCDT and SKELL in responds to all questions in the scale.

Finally, the fourth hypothesis was accepted as the VST scores positively correlated with the posttest and with the retention test. This finding suggests that learners with larger vocabulary size benefitted more from the resources, which is also supported by the analysis of the think aloud protocol. The participants with lower vocabulary size had difficulty to understand example sentences or evaluate the required context. This finding is compatible with the findings of previous studies, which indicated that level of proficiency can determine how much learners can benefit from consultation resources (Lew & Radłowska, 2010; Wu, 2015). The research question with regard to the participants' evaluation of the resources revealed that the learners made more positive comments on the LCDT and SKELL. This qualitative finding is corroborated by the results of the quantitative dataset from the rating scale, which indicated that the participants rated LCDT and SKELL higher than GS. In sum, although the quantitative measures of the participants' performances with each resources did reveal no significant difference in learning gains and retention, interpretation of the quantitative dataset from the scale and

qualitative data from the open-ended question in combination suggests that L2 users differ in the way they avail themselves of these resources depending on their linguistic proficiency and rate them differently.

5 | CONCLUSION

The findings in the current study indicate that online resources can be used to promote L2 more accurate collocation production and using them can lead to learning and retention of collocations. Their designs do matter at least from a qualitatively perspective. Therefore, resources that are particularly developed for language learning should use more user-friendly interfaces with more precise definitions, example sentences in search results so that learners can more swiftly locate the collocations and better understand their meanings. Furthermore, the example sentences or samples from real language use should be clear cut so that DDL can be facilitated. The study also points out the effectiveness of GS, a resource which is not intended for locating collocations, as a DDL resource for locating and learning collocations. Therefore, EFL practitioners should not disregard its potential as an L2 collocation consultation and learning resource. The results revealed that not only the resource consulted but also the collocation awareness level and overall proficiency level of the learners can determine success in locating and learning collocations. Another implication of the current study is that ELF practitioners should not suffice with introducing these resources but plan instructional activities that will give L2 learners hand-on-experience in effectively using these consultation resources. Furthermore, activities that will raise L2 learners' collocation awareness and lexico-grammatical awareness should be a part of L2 classes so that learners can better avail themselves of such resources.

This study is not free from limitations. First, the number of the participants was small, and several participants could not provide adequate data because of missing some of the sessions. Next, the tutorial on GS was not adequate as revealed by the think aloud protocols. Furthermore, the type (verb+noun) and number of collocations and the experimental period were also limited. In addition, it was not possible to collect think aloud data from more participants as only three participants agreed to so. Finally, the study employed productive collocation translation test as the only measure. Learning of different types of collocations such adjective+noun collocations via different corpus resources such the COCA, the BNC and GS can be compared. For a more robust quantitative evaluation, studies that employ more sensitive and multidimensional measures of L2 collocation knowledge can be conducted to capture improvement in receptive and productive L2 collocation knowledge through different resources. In addition, more versatile qualitative data via different methods such as interviews, focus groups and think aloud protocols from more participants can be collected to shed more light on affective and cognitive variables involved. Studies can also investigate user-friendliness and quality of interface, involvement loads of tasks and resources together with depth of processing they induce in locating and learning L2 collocation. The findings of the current study call for further studies with longer periods of treatment, more rigorous training of the participants in terms of resource consultation. Besides, higher number of participants with varying degrees of linguistic and collocation awareness and more dimensional and productive measures of collocation resources in more extended L2 tasks are warranted to gain a better insight into the affordances of DDL vs. deductive L2 collocation consultation resources.

STATEMENTS OF PUBLICATION ETHICS

Sivas Cumhuriyet University Ethics Committee issued an approval certificate for the current research with the decision no. 46 on 07 June 2021 (E-60263016-050.06.04-45651).

RESEARCHERS' CONTRIBUTION RATE

This manuscript is a single author manuscript.

CONFLICT OF INTEREST

The author of the current article declares that there is not conflict of interest.

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Appendix A

a. Sample Items from the Collocation Translation Test

Şaka kaldırmak: TAKE a joke (This was given as an example)

-
1. (birinin ya da kendinin) merakını gidermek: _____ one's curiosity
 2. Standartları belirlemek: _____ the standards
 3. Çaba göstermek: _____ an effort



The Effect of 21st Century Skills Training on Foreign Language Teachers' Perceptions Regarding Their Educational Technology and Materials Development Competencies

Gökçen YENİ^{a*}, Tuncer CAN^b

a* PhD Student, Hacettepe University, Ankara/Turkey, (<https://orcid.org/0000-0002-8660-4571>) *gyeni05@gmail.com

b Assoc. Prof. Dr., Istanbul University-Cerrahpasa, Istanbul/Turkey (<https://orcid.org/0000-0001-8145-0772>)

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ABSTRACT

This study aims to show whether 21st Century Skills Material Design Teacher Training and Professional Development Program enhance foreign language teachers' perceptions regarding their educational technology and material development competencies. It is worthy of recommendation that teachers should learn what 21st century skills are and how to bring these skills into classroom by creating their own foreign language teaching materials through digital technologies. To that end, an 8-week teacher-training program was held at Istanbul University. Thirty-three English teachers participated in the study. Application-based Educational Technology and Material Development Competencies Scale was conducted as pre-test and post-test before and after 8-week training in order to measure changes of the teachers' perceptions. In addition, teachers' opinions have been obtained through structured interview technique to deepen the parts that are not acquired from quantitative data. Results of the study indicate that this type of strategy training was found useful for developing teachers' perceptions regarding their educational technology and material development competencies on 21st century skills.

Keywords: 21st century skills, material design, foreign language teaching, teacher training

21. YY Becerileri Eğitiminin Yabancı Dil Öğretmenlerinin Eğitim Teknolojisi ve Materyal Geliştirme Yeterliklerine İlişkin Algılarına Etkisi

Öz

Bu çalışma 21. Yüzyıl Becerileri Materyal Tasarımı Öğretmen Eğitimi ve Profesyonel Gelişim Programının, yabancı dil öğretmenlerinin eğitim teknolojisi ve materyal geliştirme yeterliklerine ilişkin algılarını geliştirip geliştirmediğini göstermeyi amaçlamaktadır. Öğretmenlerin 21. yüzyıl becerilerinin neler olduğunu ve bu becerileri dijital teknolojiler aracılığıyla kendi yabancı dil öğretim materyallerini yaratarak nasıl sınıfa kazandıracaklarını öğrenmeleri gerektiği tavsiye edilebilir. Bu amaçla, İstanbul Üniversitesi'nde 8 haftalık bir öğretmen eğitim düzenlenmiştir. Otuz-üç İngilizce Öğretmeni çalışmada yer almıştır. Uygulamaya Dayalı Öğretim Teknolojileri ve Materyal Tasarımı Becerileri Ölçeği öğretmenlerin algılarındaki değişiklikleri ölçmek için, 8 haftalık eğitimden önce ve sonra ön test ve son test olarak uygulanmıştır. Ayrıca, nicel verilerden elde edilemeyen bölümleri derinleştirmek için Yapılandırılmış Görüşme Tekniği ile öğretmenlerin görüşleri alınmıştır. Çalışmanın sonuçları, bu çeşit strateji eğitiminin 21. yüzyıl becerileri üzerine öğretmenlerinin eğitim teknolojisi ve materyal geliştirme yeterliklerine ilişkin algılarını geliştirmede faydalı olduğunu göstermektedir.

Anahtar kelimeler: 21. yüzyıl becerileri, materyal tasarımı, yabancı dil öğretimi, öğretmen eğitimi

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1 | INTRODUCTION

21st century is a period in which digital technologies are rapidly developing, changing, and spreading (Brunn & Kehrein, 2020). Digital technologies have been positioned in many areas of our lives and have become an indispensable part of it. One of the greatest areas where 21st century digital skills take place is education and training (Waycott et al., 2010).

Learning is a lifelong process. Thus, there are some human skills that 21st-century individuals should possess in the lifelong learning process; creativity and innovation skill, critical thinking and problem solving skill, communication and collaboration, information literacy, media literacy, ICT literacy, flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, leadership and responsibility skills (Prensky, 2001; Dishon & Glied, 2021; Stanley, 2021). The acquisition of these skills includes not only the students but also other groups such as teachers, leaders, administrators. Therefore, especially teachers must closely follow 21st century skills and use these skills in language teaching (Ilhan, 2004). They should apply to information and communication technologies (ICT) in education (Deshpande & Shesh, 2021). 3D video, smart board, info graphic and presentations, and virtual reality and augmented reality are the most important examples of 21st century digital arts. These technologies provide many benefits such as enriching the education and facilitating the teaching. The use of technology in the classroom changes lesson dynamics (Tondeur et al., 2017). For this reason, 21st century digital skills must be used in the preparation of foreign language teaching materials (Tomlinson, 2012). One of the best ways to do this is to educate teachers on a lifelong basis and to renew themselves and their daily practice in this context.

By means of foreign language learning tools created through newly acquired skills, teachers can enable students to relate to current life and language more easily (Harwood, 2010). Students are exposed to different situations of language and language used in real life, and they may have to communicate verbally to fulfil their linguistic tasks. However, many teachers do not have the detailed knowledge of what these skills are and cannot use these current language-teaching materials in class (Demirel & Budak, 2003). In fact, potential of technology in the learning-teaching process is known by all educators. Yet, this hardly changes teachers' professional and personal lives. Teachers' technology competencies will directly affect the service they offer (Seferoğlu, 2004). For the teachers who are not digitally literate properly, it will be difficult to apply digital technology for learning (Mutohhari et al., 2021). Hence, firstly teachers should be helped to become technology literate, and, in this regard, their in-service training incompetence should be eliminated.

PURPOSE OF THE STUDY

Today, with the development of technology, there are significant changes in the economy, jobs, and businesses. These changes require some abilities and traits serving teenagers in a time that is changing and developing so rapidly. Thus, preparing a child for the world is not an easy task for any teacher. Students need to be able to think and work creatively in both digital and non-digital environments to survive and succeed. Enhancing their communication and collaboration skills with others are essential not only for their learning but also their mental and emotional health. It is a necessity for them to be able to think critically, find useful information quickly, and use technology effectively. These skills, called 21st century skills, ensure what students need to compete and succeed. Furthermore, many materials have been added to the training process with these skills. Technologies such as smart board, presentation and internet-enabled applications, virtual reality and augmented reality provide a great contribution to the learning process. The use of these current technologies facilitates language teaching. However, foreign language teachers do not have enough knowledge about what 21st century digital skills are and how to use them in language teaching (Ananiadou & Claro, 2009).

Herewith, this research aims to provide foreign language teachers an in-service training involving 21st century skills, to investigate the influence of this teacher training on teachers' perceptions regarding their educational technology and material development competencies on 21st century digital skills.

LITERATURE REVIEW

How Has the World Changed, and What Does This Mean for Education?

The world has changed significantly in the last few decades. Fundamental changes have affected economy, jobs, and businesses. They have started to reshape workplaces and the nature of work. Industrial economy has transformed a service economy, which is driven by knowledge, innovation, and creativity (Madsen & Bowen, 1978; Voogt & Roblin, 2010). Many jobs in the service sector need high-wage, high-growth, and high-skilled occupations. Technology has helped companies as they have renewed the way they do business. These fundamental changes in the economy, businesses, and jobs call some new, different skills for individuals. Alterations in society and economic growth demand that young people should be equipped with new skills and competencies, which allow them to actively make a major contribution to economic development (Ananiadou & Claro, 2009). These skills and competencies are called 21st century skills and competencies (Geisinger, 2016). They are more related to the needs of social and economic progress. They also help young people to experience the new forms of socialization. Young people must be able to perform creative tasks to succeed.

According to P21 (Partnership for 21st Century Skills), for a young learner whose plan is to attend a university, or enter the workforce directly, it is a requirement to be able to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology effectively (Greenhill, 2010). These are today's survival skills what learners need to succeed and compete.

What are the 21st Century Skills?

21st century skills are what students need for life today. They are a series of concepts that use technology safely and effectively. They provide what students need to compete and succeed. Aim of the 21st Century Skills is to make students to be better problem solvers and innovators.

1. Learning and Innovation Skills: Learning to Create Together

Learning and innovation skills increasingly are so essential that they prepare students for the future (Erten, 2020). They encourage students to think about outside of the box and focus on creativity, critical thinking, communication, and collaboration.

1.1. Critical Thinking and Problem Solving

Critical Thinking is a form of thinking that consists of intellectual processes such as reasoning, analysis, and evaluation. Problem solving is a cognitive process for transforming a given situation into a result situation when there is no explicit solution for the problem solver. It is goal-oriented behavior (Richards, 2021). Problem solving and critical thinking are a kind of ability that both can use knowledge, beliefs, and arguments to effectively solve problems. They solve many kinds of non-familiar problems in both conventional and innovative ways. They support individuals to make decisions and evaluate the effect that personal actions have on others (Koehler et al., 2011). They are quite significant to all aspects of life, school, and work. Furthermore, these skills are integrated with many other 21st century skills. All 21st century skills complement each other. In an attempt to acquire the skill of critical thinking and problem solving, students should be able to:

Reason Effectively

The concept of critical thinking and problem solving requires using several types of reasoning such as comparative reasoning, cause-and-effect reasoning, deductive reasoning, or inductive reasoning (Trilling & Fadel, 2009). Selecting the appropriate type of reasoning depends on the situation.

Use Systems Thinking

Students should analyze how parts of a whole interact with each other in complex situation. They can apply to systems thinking which increases choices to solve a problem by widening learners' thinking and helping learners to utter problems in new and different ways.

Make Judgments and Decisions

Students should follow some phases to make judgement and decisions. First, they should analyze knowledge, beliefs, data, and evaluate alternative points of view. Learners should make connections between information they

obtain and use old concepts to create new ideas (Larson & Miller, 2011). Assessing theories and comparison of ideas help them to interpret information. Conclusion depends on the best analysis.

Solve Problems

As Trilling and Fadel (2009) state, to achieve more advanced solutions, non-familiar problems must be solved in both conventional and innovative ways; significant questions must be specified and asked; various opinions must be evaluated.

1.2. Communication and Collaboration

While communication articulates thoughts and ideas effectively using oral and written communication skills in a variety of forms and contexts, collaboration demonstrates ability to work effectively and respectfully with diverse teams. They are the ability of individuals to use effectively digital tools to discuss and come to conclusion together (Koehler et al., 2011). They help students' communication and cooperative learning skills.

Communicate Clearly

Individuals should be able to express their thoughts and ideas effectively by applying to oral, written, and nonverbal communication skills in diverse settings. It is important to listen efficiently to sort out meaning, involving information, beliefs, and attitudes. Learners should use communication for a variety of purposes in order that enlighten, teach, motivate, and encourage. Multiple media and technologies should be utilized, and it is essential to communicate effectively in diverse environments.

Collaborate with Others

Diverse teams mean different ideas and attitudes. Individuals should have an ability to work respectfully with others in a diverse team (Care et al., 2015). They must be enthusiastic and helpful in making necessary negotiations to achieve a common goal. Collaborative work indicates taking responsibility and showing value the individual contributions made by each team member.

1.3. Creativity and Innovation

Creativity and innovation are to think outside the box. They use a large variety of idea creation techniques to create new and worthwhile ideas and gather information to find innovative solutions to problems and overcome challenging situations (Piiro, 2011). Students should be able to:

Think Creatively

Creative thinking refers to finding, analyzing, and evaluating different and useful ideas (Erdoğan, 2020). Using idea creation techniques such as mind mapping, brainstorming, roleplaying helps creativity and innovation. It is important for individuals to create new and worthwhile ideas (Nakano & Wechsler, 2018). Students should define, enhance and evaluate their own ideas so that they can improve and raise creative efforts.

Work Creatively with Others

Working with others requires being open and responsive to new ideas (Uçak & Erdem, 2020). Cooperation with the group and feedback should be provided into work. Individuals should see failure as an opportunity to learn and retain their creativity for a long time. They should keep originality and creativity in work by adopting new ideas.

Implement Innovations

Students should follow up creative ideas to make a worthwhile contribution to the field in which the innovation will take place.

2. Digital Literacy Skills

As people are in a technology and media-involved environment, it is easy for them to access to an abundance of information. They can follow rapid changes in technology tools. Moreover, they can contribute individually on these changes (Van Laar et al., 2017). To be an active individual in the 21st century, people must be able to create and rewardingly use information, media, and technology.

2.1. Information Literacy

Information literacy is a set of skills that it can find information and identify it (Voogt & Roblin, 2012). It evaluates information and its sources critically. Information literacy synthesizes all the sources and determines how to present them according to people needs so that they can use it.

Access and Evaluate Information

Thanks to information technologies, information produced anywhere spreads rapidly. In this way, it becomes easier for individuals to improve themselves (Özçiftçi & Çakır, 2015). Individuals should access information by using sources effectively and treating time efficiently. Evaluation of information needs to be done critically and competently.

Use and Manage Information

It is necessary to produce creative solutions for the issue or problem at hand. By means of variety of sources, information should be used and managed accurately (Trilling & Fadel, 2009). Ethical and legal issues must be applied while all this process is going on.

2.2. Media Literacy

Media Literacy is an indispensable skill to be able to read many types of media. It is a kind of ability to access, analyze, evaluate, and create media (Mcdougall et al., 2018). Media Literacy skills can help individuals in terms of developing critical thinking skills, evaluating latest ideas, creating, and distributing our own media messages.

Analyze Media

Individuals should realize both how and why media messages are constructed, and for what purposes. People can infer messages differently, and media can affect their beliefs and attitudes. Ethical and legal issues must always be followed in access and use of media.

Create Media Products

The most appropriate media creation tools should be selected according to its features, and the most suitable interpretations should be used effectively in diverse environments (Trilling & Fadel, 2009).

2.3. ICT Literacy

Information and communication technologies are crucial tools of 21st century. ICT Literacy is the ability to use communication tools and technology (Siddiq & Scherer, 2019). It is the capability of an individual to access, identify and present information to enhance critical thinking.

Apply Technology Effectively

Today, technology is all aspects of human life. It requires people to be a technology literate person who is capable of using digital technology tools and social networks efficiently with the purpose of accessing, managing, evaluating and creating information. This communication and interacting tools should be used appropriately to research and communicate information. It is crucial to apply legal and ethical issues in the access and use of information technologies (Dede, 2010).

3. Life and Career Skills

Today's students need teachers who are capable of teaching skills that enrich students' future workplace environment. The Partnership for 21st Century Skills suggests that students should have the opportunity to learn:

3.1. Flexibility and Adaptability

Flexibility and adaptability are the characteristics of an individual who is open to new ideas and change, which makes it easier for the person to adapt to the changing environmental conditions. So as to adapt to business and education life, this feature should be gained to individuals (Eryılmaz & Uluyol, 2015). Students should be able to:

Adapt to change

When students attend a university, or enter the workforce directly, they are expected to adapt to new contexts, roles, accountabilities, and work effectively in changing conditions (Geisinger, 2016).

Be flexible

It is normal to be criticized as much as to be praised. It must be open to praise and criticism. As different ideas and beliefs take part in multi-cultural environments, it is necessary to be responsive to this diversity and assess feedbacks effectively.

3.2. Initiative and Self-Direction

Manage goals and time

Individuals should first set short-term and long-term goals, treat the time well, and manage assignments efficiently (Gut, 2011).

Work independently

Students should be able to observe, describe, prioritize and fulfil tasks without direct oversight.

Be self-directed learners

Learners should approach learning as a lifelong process and overreach their own opportunities to gain proficiency. They should benefit from past experiences to assess future progress.

3.3. Social and Cross-Cultural Interaction

Interact effectively with others

Communication and interaction with others involve respect and professionalism, and learners should know when it is appropriate to listen and when to speak (Van Laar, 2017).

Work effectively in diverse teams

Working with others means people from different cultures, different ideas and values. To increase innovation and quality of work, individuals should approach these differences open-mindedly and work effectively with others.

3.4. Productivity and Accountability

Manage projects

Learners should be able to set goals even if they are exposed to obstacles and pressure. They should keep managing work to achieve the intended result.

Produce results

Individuals should manage time efficiently and work positively and ethically while producing high-quality products. Participating actively is important as much as being punctual and reliable (Gut, 2011). Each individual should collaborate effectively with others, respect team diversity, and be accountable for results.

3.5. Leadership and Responsibility

Guide and lead others

Individuals should not only guide others but also benefit from strengths of others. Problem-solving skills can be used to influence and inspire others. In addition, ethical behavior should be demonstrated in using influence and power.

Be responsible to others

Learners should act responsibly because working and collaborating with others demand taking responsibility (Kivunja, 2014). In the 21st century, every student must learn the essential skills for success. They must be a critical thinker and a problem solver to effectively analyze and evaluate various kinds of ideas and different attitudes. They must be an effective communicator and collaborator to use digital tools to discuss and come to conclusion together. They must be aware of information and media literacy to use information accurately and

creatively and to be able to read many types of media (Wallis & Steptoe, 2006). Thus, teachers should learn 21st century skills, focus on content knowledge and bring the real-world data and tools in the classroom. Students learn best when they actively deal with problems.

To prepare 21st century learners for life, it is also important how is taught not just what is taught. Therefore, it is necessary to prepare current teachers and think of future teachers with equipped documents and resources that allow them to bring 21st century skills into the classrooms in appropriate ways.

TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT PROGRAM ON 21ST CENTURY SKILLS

For the 21st century skills movement to be successful, one must look at what is happening in the world's classrooms. Since teachers are at the forefront, they must have the knowledge and some skills that enable them to be an efficient teacher by teaching 21st century skills (Saavedra & Opfer, 2012). This makes them an effective 21st century teacher. Both new teachers-in-training and current teachers must take part in teacher professional development programs, which provide the learning experiences to prepare teachers to gather collaborative teaching methods and to use technology and assessments of 21st century skills effectively in their everyday classroom work.

One of the studies claims that twenty-first century skills education is aimed to guide education professionals along the process of actualizing in a three-step process, starting with the teacher's own acquisition of relevant skills, followed by development of learners' twenty-first century skills using suitable pedagogy, and lastly the assessment of learner performance for evaluation and improvement (Chu et al., 2021).

Organization for Economic Co-operation and Development (OECD) organized a questionnaire study for the teaching and assessment of 21st century skills and competencies in OECD countries. The study was conducted from June to August 2009. The questionnaire was sent to all OECD member countries, including Turkey. In the study, Turkey was asked if there is specific coverage of 21st century skills or competencies in the regulations (e.g., curricula, national standards) or guidelines/recommendations for compulsory education in Turkey. If it comes to that, the question about which skills/competencies are covered by these policies was asked. Some skills such as critical thinking, problem solving, communications were selected as basic skills in the Turkish primary and secondary curriculum.

In addition, Turkey was asked to briefly explain (1) the policy context and rationale that led to the introduction of these regulations or guidelines concerning 21st century skills and competencies, (2) if there are regulations or guidelines related to the assessment or evaluation of these competencies/skills and (3) if these regulations or guidelines have an impact on teacher training programs. It was concluded that most of these skills are taught across curricular areas. However, ICT-related ones like media literacy, technology literacy are taught separately. There are no assessments policies or teacher training programs specifically targeted to these skills and competencies in Turkey (Ananiadou & Claro, 2009).

Accordingly, 21st century skills training starts with teacher preparation programs. It requires preparing tomorrow's teachers to work with students (Romijn et al., 2021). When teachers are prepared to work with the changing needs of today's students with the help of 21st century skills teacher training and professional development programs, there is only one thing left: bringing these skills into classroom. Therefore, teachers must know 21st century skills and prepare their own materials by applying to 21st century skills.

MATERIAL DESIGN

Recent technological advances have required both new approaches and new methodologies in the field of foreign language learning and teaching (Can, 2009). Herein, teaching materials play a significant role on many English instructional plans. English language classrooms are diverse places in the sense of individual learners within each context. A teacher can develop materials in which students can associate their language and culture to their second foreign language. Tomlinson (2011) relates commonly agreed principles of SLA (Second Language Acquisition) to the development of language-learning materials. Additionally, teacher-prepared materials offer the opportunity to teachers that they can make decisions about the most appropriate materials and activities for foreign language learners. Hence, Maley (2011) has studied on the principles behind ideas for materials development. Kervin and Derewianka (2011) and Motteram (2011) claim that principles need to be applied on making use of new technologies, principled and effective materials. Tomlinson (2008) suggests ways of applying commonly agreed theories of language acquisition to materials development.

According to language acquisition principals, teachers should help learners to be able to make connections between mother tongue and target language. They should bring real life situations into classroom and apply to authentic materials. In their studies, Şimşek and Can (2019) state that one of the best ways of bringing real life situations into the classroom is to use virtual reality. Foreign language education through virtual reality is similar to foreign language education in real environments. On the other hand, finding the appropriate materials for each topic or each level is not easy. Thus, foreign language teachers must prepare their own materials.

RESEARCH QUESTIONS

Competent teachers always choose materials by content to ensure the optimal congruence between materials, methodology, learners, goals, target language, and the teacher's personality and teaching style (Howard et al., 2021). However, most language teachers continue to use textbooks even though they have adequate equipment to use technology efficiently in their classes. In addition, the study conducted by OECD (Organization for Economic Co-operation and Development) in 2009 shows that some of the 21st century skills are taught separately and there are no assessments policies or teacher training programs specifically targeted to these skills and competencies in Turkey. Such studies and personal experiences have shown that teachers do not have enough knowledge about 21st century skills and they do not use the technology that the age demands. Accordingly, young people cannot access the information quickly, think critically and collaborate with others easily.

Taking into consideration all these problems, the overarching questions this study sights answers are below:

1. What are the 21st century skills that foreign language teachers can use in their lessons?
2. Do foreign language teachers' perceptions on preparing language-teaching materials change when they have in-service training involving 21st century skills?
3. How has 21st century skills teacher training influenced teachers' teaching/classroom practices?

2 | METHOD

RESEARCH MODEL

Since both quantitative and qualitative methods have been used in the study in order to reach many people with the quantitative method and to further deepen and elaborate the findings obtained from the quantitative data with the qualitative method, to increase the generalizability of the results obtained from data analysis, and to cover the weaknesses of one method with the strengths of the other method, mixed method has been used in the research (Creswell, 2014). As it was aimed to combine the results obtained from the analysis of qualitative and quantitative research data, Concurrent Triangulation Technique, one of the mixed method designs, has been used in the study (Creswell & Plano Clark, 2007). In the quantitative part of the study, The Experimental Research Method has been used to observe the effects of a variable in an event on the result and to test the cause-effect relationship (Özmen & Karamustafaoğlu, 2019). In the qualitative part, The Phenomenological Research Method, which is one of the qualitative research designs that emphasizes how people perceive reality, emphasizes experiences related to these perceptions, and aims to reveal the hidden experiences that people have lived, has been applied (Sanders, 1982; Yıldırım & Şimşek, 2003).

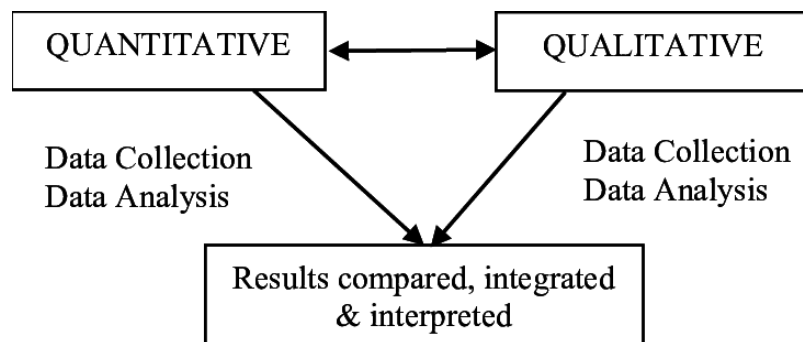


Figure 1. A Visual Diagram of the Mixed-Methods Concurrent Triangulation Strategy

RESEARCH SETTING AND PARTICIPANTS

The participants of the study are the teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy. The Language Academy was founded by Istanbul Directorate of National Education. Each term of the year, English teachers, living in Istanbul, apply for the academy. The teachers are randomly selected by the Language Academy whose aim is to create vocational development projects for foreign language teachers and they get seminars and in-service training thanks to the academy. The academy takes one term for each group. The teachers in the study were those who were selected by the academy and graduated from the first term of the academy. In the second term, they attended the seminar which was arranged by the researcher. The number of teachers who took part in this study was 33. The distribution between sexes was unequal; 30 of the participants were female, and 3 were male.

The teachers attended an 8-week “21st Century Skills and Material Design Teachers’ Training and Professional Development Program”, held on February 10th - March 31st, 2018, at Istanbul University Hasan Ali Yücel Faculty of Education. The university gave permission to the researcher to run the study in computer lab at Istanbul University. At the end of the program, the teachers were given the participation certificate.

DATA COLLECTION TOOLS

The teachers were given a training that informed about 21st century digital skills and how they could be used effectively in language teaching. Throughout the training, all teachers participated in the training actively and shared what they have learned in education as online, both during training and in their own classes. Briefly stated, with this training, it was aimed that teachers learn 21st century skills, how to prepare foreign language teaching tools practically and increase their technology literacy.

Before starting teachers’ professional development program, Application Based Educational Technology and Material Development Competencies Scale, developed by Varank and Ergün (2009), was applied as a pre-test. (Permission to use the scale was obtained.) 8 weeks later, to learn teachers’ perceptions regarding their educational technology and materials development competencies, the same scale was applied once again to the teachers as a post-test. In this regard, it has been determined whether the teacher professional development program about 21st century digital skills and preparation of foreign language teaching materials have an influence on teachers' in-service qualifications.

For reliability and validity of the scale, four different analyses (respectively Kaiser-Meyer-Olkin (KMO), Bartlett Sphericity Test, Varimax Factor Analysis and Cronbach Alpha) were used. The result of KMO Test is 0.96, Bartlett’s is ($\chi^2=27541.93$; $p < 0.05$). For 39-item scale, Cronbach Alpha internal consistency coefficient was found as 0.95 (Varank & Ergün, 2009).

In all the statements in the survey, respondents were asked to show if they have changes of their educational technology and material development perceptions by marking one of the options among “I do not have”, “I am not sure whether I have it or not”, “I have” and “I absolutely have”. The scale measured the statements on SPSS (Statistical Package for the Social Sciences 25.0).

In addition, a month after post-test, teachers' opinions were obtained through structured interview technique to deepen the parts, which are not obtained from quantitative data. It is the most important convenience presented by this interview technique to provide more systematic and comparable information because it is maintained in accordance with the pre-prepared interview protocol. Thus, the contribution of 21st century digital skills to teachers' self-efficacy has been measured in more detail. By means of these data collection tools, the perceptions of the teachers before the training have been compared with those after the hands-on training.

DATA COLLECTION

8-week teacher training program was held with the teachers of Istanbul Directorate of National Education Language Academy at Istanbul University Hasan Ali Yücel Faculty of Education. Main titles of the 21st Century Skills were divided into 8 weeks. Every week, the theoretical knowledge about each title was given first. Then the applications related to the topic of the week were examined and the materials were prepared together. The topics were explained on the host computer by reflecting on the board via projector. For communication, a group was formed on mobile phone before the training began. Likewise, a group named “21st Century Skills” on Google

Classroom by Gmail was created to share the materials that we prepared during the training. Every week printed documents were provided to the teachers.

Table 1. Main Titles of 8-Week 21st Century Skills and Material Design Teacher Training and Professional Development Program

Weeks	Titles
1 st Week	The Emergence of 21st Century Skills What is 21st Century Learning and P21? What are the 21st Century Skills? Necessity of a Teacher Training to Acquire 21st Century Skills Factors to Consider When Designing Materials
2 nd Week	Critical Thinking and Problem Solving
3 rd Week	Communication and Collaboration
4 th Week	Creativity and Innovation
5 th Week	Information Literacy
6 th Week	Media Literacy
7 th Week	ICT Literacy (Information and Communication Technology)
8 th Week	Life and Career Skills Flexibility and Adaptability Initiative and Self-direction Social and Cross-cultural Interaction Productivity and Accountability Leadership and Responsibility

DATA ANALYSIS

Application-based Educational Technology and Material Development Competencies Scale, applied at the beginning and end of the training as pre-test and post-test, has measured the statements on SPSS. The participants showed if their educational technology and material development perceptions have changed by marking one of the options among “I do not have”, “I am not sure whether I have it or not”, “I have” and “I absolutely have”.

The aim of the 39-item scale is to look at what teachers think and how they perceive their competencies on educational technology and material development because the scale used in the study does not measure the participants' actual competencies. Thus, the answers given by 33 participants to the 39-item scale on the pre-test and the post-test were compared and 39 means were obtained. A paired samples t-test was conducted to compare the mean scores of pre-test and post-test of Application-based Educational Technology and Material Development Competencies Scale to find out whether the training is helpful in developing learners' perceptions on 21st century skills and material design or not. The maximum increase is in the 17th item, while the minimum increase is seen in the 5th item.

Question 5: “*Being able to develop plans related to course (annual plan, daily plan, etc.)*”

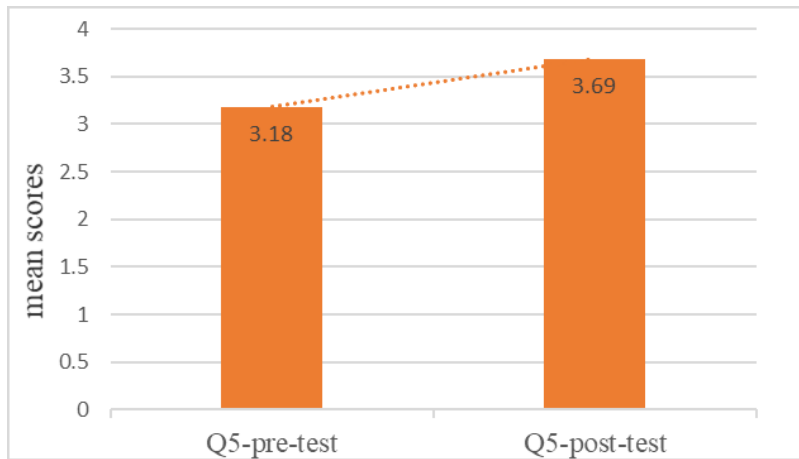


Figure 2. Mean Scores of Pre-test and Post-test Question 5

When Figure 2 is examined, it is understood that there is a statistically significant difference between pre-test Question 5 ($M= 3.18, SD=0.76$) and post-test Question 5 ($M= 3.69, SD=0.52$) scores with regard to strategy training inventory ($t(32)= -2.948, p<0.01$).

Question 17: “*Being able to plan a distance education that can be done over the internet.*”

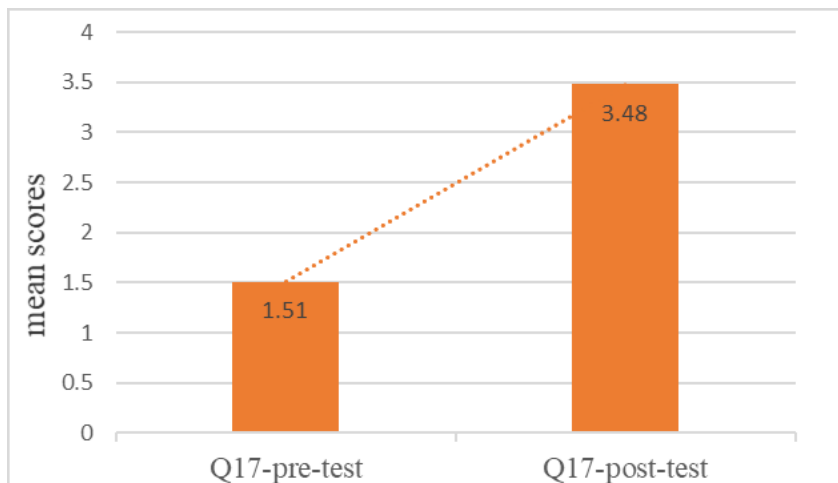


Figure 3. Mean Scores of Pre-test and Post-test Question 17

When Figure 3 is examined, it is understood that there is a statistically significant difference between pre-test Question 17 ($M= 1.51, SD=0.61$) and post-test Question 17 ($M=3.48, SD=0.50$) scores with regard to strategy training inventory ($t(32)= -15.538, p<0.01$).

The results show that this type of strategy training was found useful for developing teachers’ perceptions regarding their educational technology and material development competencies on 21st century skills in the current study.

TRANSCRIPTS OF STRUCTURED INTERVIEW

The records of the structured interview technique used to deepen the insufficient parts obtained from the quantitative data have been noted in writing and the analysis of the transcripts has been evaluated independently. As the researcher has structured the questions, transferred the interviews to the text and standardized evaluation guidelines by using coding qualitative data technique, reliability of structured interview has been achieved.

9 questions about experiences of the teachers before-during-after the training were asked through structured interview a month after 8-week training/post-test. The answers were analyzed by using coding qualitative data technique. While coding, the researcher has found some common themes.

1- What does 21st century learning look like before/after this teacher-training program?

Prior Knowledge

50% of the teachers did not have knowledge about 21st century learning while 25% of them had before and 25% of them noticed an increase in their knowledge.

<...before this teacher-training program, it was a bit far from me but after it, I am more familiar with 21st century learning...>

<Actually, I have had info about it but it was not enough and also was not in favour of using technology much. After this program, my thoughts have changed forever...>

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

Attitudes of Schools

While 75% of the teachers think that schools have not changed their teaching methods by incorporating 21st Century Learning, the others claim that schools have changed their students' learning experiences by providing smart boards and projectors into classrooms.

<Unfortunately, schools are mostly focusing on the technology... Teachers use web 2.0 tools.... However, 21st century learning is more than using technology...>

<I think schools have not successfully transformed their students' learning experiences... >

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

Prior Teaching Practices

All the teachers created learning practices before. However, they do not find them sufficient.

<Yes, I did but I did not see them enough. That's why I wanted to take this training.>

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

Knowledge of Collaborative Learning Tools

During the teacher training, some collaborative learning tools were taught such as Padlet, Zoho Show, Google Drive and QR Code. All the teachers think that they have learned such tools and started to use them in their own classes.

<Yes, I have learnt them in this course... I use especially Padlet in my eTwinning projects.>

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education /Nearpod)

Knowledge of Face-to-face and Online Teaching Materials

All the teachers think that they have learned how to do distance education via as Nearpod, Adobe Connect and reach expanded community by means of eTwinning, Turkish National Agency, EPALE, Prezi and Emaze.

<I think Nearpod has many advantages. Prezi is a practical software...>

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?

The necessity of the 21st Century Skills and Material Design Teacher Training

All the teachers agree that both teachers, in-service training, and current teachers should definitely need this training on 21st century skills.

<Definitely, they should because most teachers in state schools are not used to using technology in lessons.>

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

Reflections of the Teacher Training Program into Their Own Classes

During the teacher training, the teachers prepared their own materials about the topics they learned and shared them on Google Classroom. They also sent photographs and videos showing how they used these materials in their own classes.

<I have used “Plickers” to make a revision for my 4th grades... “Quiver” with my 2nd grades to let them talk about animals as well as to revise the colors and action verbs... “Bandicam” for my eTwinning project to record a video...>

<I shared my “Padlet” link so that students can practice listening skills and vocabulary.>

8- We expect our students to be passionate, compassionate, and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. How do you prepare your students for 21st century challenges?

Preparing Students for 21st Century Challenges

Whole teachers try to motivate their students. If they have enough time and equipment, they claim that they can use technology more efficiently to prepare their students for 21st century challenges.

<... I mainly focus on making my lessons interesting and enjoyable using different tools including web 2.0 and web 3.0 tools so that the students can be more open to learning of a foreign language... my students benefit from peer learning which makes me prepare activities that include collaborative learning environment...>

3 | FINDINGS

With this study, the researcher is able to obtain the results on the evaluation of 21st Century Skills Material Design Teacher Training and Professional Development Program with structured interview specifically designed for this study and a competency scale done by 33 English teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy. The purpose of the study, in particular, was to provide foreign language teachers an in-service training involving 21st century skills, to investigate the influence of this teacher training on the preparation of foreign language teaching materials for language teaching, and to learn teachers' perceptions on 21st century digital skills.

Application-based Educational Technology and Material Development Competencies Scale was used for this study. The scale was conducted as a pre-test and post-test before and after 8-week training. To learn teachers' perceptions regarding their educational technology and material development competencies on 21st century skills and help them to create their own teaching materials, an 8-week training was held at Istanbul University. Finally, teachers' opinions have been obtained through structured interview technique to deepen the parts that are not obtained from quantitative data.

Specifically, three research questions guided this study:

1- What are the 21st century skills that foreign language teachers can use in their lessons?

All essential information about 21st Century Skills was presented to the teachers on the first week. Then, the title of each skill was explained in detail in the other weeks. The teachers learned many activities and technological tools related to each skill. The first week was mainly a theoretical week. A broad summary of what has been described in the literature review was explained on Prezi (Online Presentation Software). The training began with the explanation of how the 21st century skills emerged. The theme of Critical Thinking and Problem Solving was explained by using PowerPoint on the second week. For Problem Solving skill, the teachers learned how to create

and use QR Code. On the third week, the teachers have learned communicative and collaborative learning tools to prepare something without they do not have to come together, when they or their students need to work together with their pairs or group friends. Teachers should improve their creativity and innovation skills. They should learn to use any materials or sources in different forms. It is also important for students to acquire this creativity skill. To that end, teachers were taught to prepare their own videos during "Creativity and Innovation" week. Information literacy is a crucial skill to be able to accurately evaluate information, effectively use, and clearly communicate it in various formats. An information literate person should be able to identify information needs, understand the structure of information, and evaluate information and its sources critically. Augmented Reality and Virtual Reality Tools were explained for information literacy on the fifth week. On the sixth week (Media Literacy week), the teachers learned how to create an animation and some solutions to technical problems.

On the seventh week, Information and Communication Technology (ICT) is a diverse set of technological tools such as computers, smart boards, tablets, mobile devices, and the Internet that are used to communicate, create, and manage information. In Turkey within the scope of Fatih Project (Increasing Opportunities and Technological Improvement Action Project), The Ministry of Education and Ministry of Transport, Maritime Affairs and Communication provide a laptop computer, a projection device, and a smart board in each class and tablets for students. (Fatih Project) Thus, the teachers were shown some applications and programs used with ICT tools. For 7 weeks, the teachers have learned how to bring 21st century skills into classroom by applying to technological tools and creating their own materials. The eighth week was all about how teachers improve their life and career skills.

On the other hand, the teachers showed what they have learned by creating their own teaching materials. For further use, printed documents were delivered and materials were shared online.

2- Do foreign language teachers' perceptions on preparing language-teaching materials change when they have in-service training involving 21st century skills?

To learn the effect of 21st Century Skills Material Design Teacher Training and Professional Development Program on teachers' perceptions, both quantitative and qualitative method were used. As it is not possible to measure teachers' competencies in this kind of research, the aim of the 39-item scale is to look at what teachers think, how they perceive their competencies and see if the 8-week teacher-training program has a positive effect on teachers' educational technology and material development perceptions. Thus, 33 participants answered Application-based Educational Technology and Material Development Competencies Scale before and after the teacher training. A paired samples t-test was conducted to compare the mean scores of pre-test and post-test of the scale. Analysis of data shows that all items of the 39-item scale have an increase. The maximum increase is in the 17th item, while the minimum increase is seen in the 5th item.

Accordingly, SPSS results indicate that this type of strategy training was found useful for developing teachers' perceptions regarding their educational technology and material development competencies on 21st century skills in the current study. In addition, the transcripts of structured interview, which are obtained from the teachers, were analyzed by using coding qualitative data technique, and the transcripts prove that the teacher training has a considerable influence on the teachers' perceptions.

3- How has 21st century skills teacher training influenced teachers' teaching/classroom practices?

Today, being a literate person means more than being able to read and write. Literate individuals use technology deliberately and effectively and can decide which media are most suitable for their communication goals. They also identify information needs, understand the structure of information, and evaluate information and its sources critically through various media and technologies. In this regard, teachers' in-service training incompetence should be eliminated. Thanks to this training, the teachers improved their creativity and created their own materials. They shared the materials they had prepared during the training and their own teaching practices on Google Classroom. In addition, their reflections in structured interview show that 21st century skills teacher training has influenced their teaching/classroom practices because they have started using 21st century digital skills in their own classes.

Structured Interview – Question 7: In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

Reflections of the Teacher Training Program into Their Own Classes

During the teacher training, the teachers prepared their own materials about the topics they learned and shared them on Google Classroom. They also sent photographs and videos showing how they used these materials in their own classes.

<I have used “Plickers” to make a revision for my 4th grades... “Quiver” with my 2nd grades to let them talk about animals as well as to revise the colors and action verbs... “Bandicam” for my eTwinning project to record a video...>

<I shared my “Padlet” link so that students can practice listening skills and vocabulary.>

<Yes, I have applied “Plickers” ... I also used “Bandicam” in order to record my presentation on “PowToon”... My students’ “WordArt” experience was nice...>

<Yes, I used “Plickers” to check my students’ knowledge... “Bandicam” and “PowToon” in eTwinning project... “Quiver” for my 5th grades... I made presentations with “Prezi” and “Emaze”...>

4 | DISCUSSION & CONCLUSION

The present study was mainly designed to measure whether 21st Century Skills and Material Design Teacher Training and Professional Development Program increases teachers’, in-service training, and current teachers’ educational technology and material development competencies. In doing so, occupational experiences and observations, studies conducted by Cisco, Intel, Microsoft, and OECD have been considered.

The world has changed significantly, and the fundamental changes have influenced education field. This situation has brought a requirement for individuals. They need to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology efficiently. Technology has helped individuals to acquire these skills. Yet, the rapid evolving technology presents them various tools. Therefore, teachers have a big role in changing education environment. They should be able to evaluate instructional materials and choose the most appropriate tools for learners. They should include today’s popular materials such as Augmented Reality, Virtual Reality, and CALL materials with the purpose of providing motivation in class and permanence in learning. Findings of other studies have proved the value of these materials in education (Can & Şimşek, 2015).

On the other hand, Second Language Acquisition requires authenticity. Digital tools aid foreign language teachers to bring real life into classroom. Students should get experience with target language while learning a foreign language. 3D virtual learning environments and 360-degree videos have supported authenticity and conveyed the learning opportunities in the field of foreign language learning (Elia et al., 2017). Today, many schools have smart boards and internet access into classrooms, and great numbers of teachers have smart phones, tablets, and personal computers. When teachers are asked how they use technology in their classes, the answer should be more than showing a video on YouTube. There are a lot of computer-based educational programs or applications that can be also downloaded on mobile devices or tablets. In this regard, teachers' awareness should be improved, and they must be encouraged to be a technology literate person. This teacher training has been planned to bring 21st century skills to the teachers and later to the students through the teachers by using the technology effectively.

Having look at the current study, its interactivity is sound, as the teachers actively have participated in the teacher training; they have had the chance to prepare their own instructional materials. They have also learned how to use a tool they have used for any skill for another skill since all 21st century skills are integrated to each other.

SUGGESTIONS

In accordance with the analysis and attitudes of the teachers, qualitative and quantitative data results show that teacher-training programs in Turkey focus mostly on theory. Before the training, the teachers who had marked “I do not have” option on the scale, marked “I have” or “I absolutely have” options after the training. It also proves that there is a need for teacher training for current teachers in Turkey. Therefore, to eliminate this need in foreign

language education in Turkey, several recommendations need to be made. First, the number of computers, projectors and smart boards in schools should be increased. Language laboratories and material offices should be set up. Fatih Project, which provides computer, smartboard and projection device for schools and tablet for students, should be continued and these opportunities should be provided for every school. For current teachers, in-service training seminars should be organized. They must be encouraged to participate in projects conducted by eTwinning and Turkish National Agency.

As a last point to note, further studies can organize a teacher training for each skill of 21st Century Skills. Each title of these skills includes extensive knowledge. It is possible to find several digital tools and create diverse materials for each skill. In the current study, there were no technical problems since all teachers have smartphones and weekly lessons were done in a computer lab with internet access, and therefore other researchers must consider this to avoid any technical problems.

As this study is limited to 8-week training, a long-term training can be planned. The teacher training conducted by the researcher can be applied to the whole English teachers to get a deeper view. Planning a teacher training on 21st century skills and material design has never been done in Turkey until now. Similar studies can be done with more participants and different parts of Turkey.

LIMITATIONS

The study is limited to 8-week training. It is limited to 33 teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy. After 8-week training, there is no access to classroom practice as to whether teachers use 21st century skills in their classroom. The study is limited to communicating to us that they use these skills.

STATEMENTS OF PUBLICATION ETHICS

We declare that the research has no unethical problems and observe research and publication ethics.

RESEARCHERS' CONTRIBUTION RATE

The study was conducted and reported by the corresponding author.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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Investigating Pre-Service Mathematics Teachers' Self-Assessment Process

Ayşegül Sağlam Arslan^a, Ayşegül Aslan^b, Selahattin Arslan^{c*}

a Prof. Dr., Trabzon University, Turkey, (<https://orcid.org/0000-0001-8340-2205>)

b Assist. Prof. Dr., Trabzon University, Turkey, (<https://orcid.org/0000-0003-2363-0091>)

c*Prof. Dr., Trabzon University, Turkey, (<https://orcid.org/0000-0001-8557-2507>), selahattin.arslan@trabzon.edu.tr

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ABSTRACT

Teaching practice requires a variety of thinking skills, the most important of which is reflective thinking, which is defined as a self-assessment ability that enables an individual to overcome the uncertainties he encounters by questioning his experiences through critical and conscious research. This study aims to examine pre-service mathematics teachers' self-assessment processes related to their classroom practices and professional development. For this purpose, a self-assessment form composed of open-ended questions was prepared, in order to allow pre-service teachers reflect on their teaching practices. The form was filled by eight pre-service teachers immediately after their in-class practice sessions through an eight-week training program. Items included in the self-assessment forms were analyzed under three categories, based on the classification proposed by Schön (1987): i) Reflection-on-action, ii) Reflection-in-action, iii) Reflection-for-action. The analysis revealed that the pre-service teachers often engaged in self-assessments in the reflection-on-action and reflection-in-action categories, but mostly steered clear of the reflection-for-action category.

Keywords: Self-assessment, pre-service teachers, reflection

Matematik Öğretmen Adaylarının Öz Değerlendirme Süreçlerinin İncelenmesi

ÖZ

Öğretmenlik, aralarında yansıtıcı düşünmenin de yer aldığı çeşitli düşünme becerilerini gerektirir. Ayrıca bireylerin kişisel gelişimleri için gerekli olan önemli beceriler arasında da yer alan yansıtıcı düşünme, bireyin deneyimlerini eleştirel ve bilinçli araştırma yoluyla sorgulamak suretiyle karşılaştığı belirsizliklerin üstesinden gelmesini mümkün kılan bir öz değerlendirme yeteneği olarak tanımlanmaktadır. Bu araştırma, matematik öğretmen adaylarının sınıf içi uygulamaları ve mesleki gelişimleri ile ilgili öz değerlendirme süreçlerini incelemeyi amaçlamaktadır. Bu amaçla öğretmen adaylarının öğretmenlik uygulamalarına ilişkin yansıtma yapmaları için açık uçlu sorulardan oluşan bir öz değerlendirme formu hazırlanmıştır. Form, sekiz öğretmen adayı tarafından sınıf içi uygulama oturumlarından hemen sonrasında sekiz haftalık bir öğretim programı sürecinde doldurulmuştur. Öz değerlendirme formlarında yer alan maddeler, Schön (1987) tarafından önerilen sınıflandırmaya dayalı olarak üç kategoride incelenmiştir: i) Eylem üzerine yansıtma, ii) Eylemde yansıtma, iii) Eylem için yansıtma. Elde edilen veriler, öğretmen adaylarının genellikle eylem üzerine düşünme ve eylemde yansıtma kategorilerinde öz değerlendirme yaptıklarını, ancak çoğunlukla eylem için yansıtma kategorisinden uzak durduklarını ortaya koymuştur.

Anahtar kelimeler: Öz değerlendirme, öğretmen adayları, yansıtma.

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1 | INTRODUCTION

As in many countries in the world, significant educational reform has occurred in Turkey. An essential and primary element of these changes, in turn, involves the efforts to increase the capabilities and improve the training of teachers. Therefore tailoring the professional training programs offered to prospective teachers to meet these specific requirements is a must (Clarke & Hollingsworth, 2002), since teaching profession, by definition, requires interaction with students who have different learning styles and levels of competence, and engagement in different learning environments. Teachers, in turn, need to continuously review and evaluate all these distinctive experiences, and develop specific strategies for subsequent educational processes. That is why teacher training programs, as well as the requirements for the teachers are expected to meet, often underline the need to introduce a range of thinking skills. Against this background, the crucial skill of reflective thinking is also noted for its function in supporting constructive perspective towards learning. It is also universally recognized as a crucial skill required for personal development of professionals (Colton & Sparks-Langer, 1993). Individuals who have high levels of reflective thinking skills are assumed to be capable of solving the problems they face, and transposing and applying their existing knowledge to different circumstances (Duban & Yelken, 2010). Çam Aktaş (2016) defines reflective thinking as the ability to overcome uncertainties through critical and conscious investigation regarding a case or a problem, to apply experiences to different circumstances, and to enable the individual in setting a distinct course based on all such experiences. The literature is rich in emphasis on the benefits this skill provides to teachers. According to Moon (2008), reflective thinking provides the individual with a perspective that is handy for analyzing and making better use of her experiences, and helps her keep track of progress in gaining experience. Larrivee and Cooper (2006) note that teachers competent in reflective thinking engage in teaching based on in-depth contemplation on the desirable as well as undesirable outcomes of any action. On the other hand, Ünver (2003) states that the activities carried out and methods employed in a learning process which fails to emphasize reflective thinking, cannot go beyond merely providing a static set of knowledge, skills, and experience for the relevant grade. Against this background, one should also note that reflection and self-assessment activities are often carried out together, and reinforce each other. They both are meaningful processes that help learn from experiences (Desjarlais & Smith, 2011). While reflection usually involves critical thinking and journal-keeping; self-assessment is a process which improves one's own performance (Desjarlais & Smith, 2011). Accordingly, many teacher-training organizations state reflective thinking as one of the basic skills that a teacher should have. For instance, the Ministry of National Education in Turkey noted, "self-assessment helps teachers to think about their professional competencies, determine their current situation, set development goals and make necessary adjustments and effect required improvements to achieve such goals" (Ministry of National Education, 2017, p.10).

A large number of studies focused on reflective thinking, both in Turkey (Savran Gencer, 2008; Tok, 2008; Erdoğan, Şengül, 2014; Töman & Odabaşı Çimer, 2017; Eğmir, 2019; Demir, 2020) and in the wider world (Amobi, 2005; Bataineh, Karasnah, Barakat & Bataineh, 2007; Eugene, 2003; Lee, 2005; Marcos, Sanches & Tillema, 2008; Schweiker-Marra, Holmes, Pula & Pula, 2003; Pedro, 2005; Thorpe, 2004). The majority of these studies carried out on parallel and complementary subjects focused specifically on the development of the reflective thinking skills of teachers or pre-service teachers. An analysis of the relevant studies in detail reveals that especially the activities designed to develop self-assessment skills support the development of pre-service teachers. It has been observed that self-assessment has positive effects on pre-service teachers' in-class teaching skills (Başaran, 2019), problem solving skills (Baki, Aydın-Güç & Özmen, 2012), performance in practice-based courses such as teaching practice (Altın, 2020; Savran Gencer 2008), planning, implementation and evaluation of teaching practices (Köksal & Demirel, 2008), and attitudes towards the profession (Tok, 2008). Demir (2020) pointed at a significant correlation between the reflective thinking tendencies of teachers, and their ability to instill in the skills demanded by the 21st century, among the students. The definition of performance criteria at the beginning is crucial since this allows revealing strengths and improvements (Wasserman & Beyerlein, 2007) according to these criteria throughout the process. It is possible to evaluate reflective thinking as a skill that includes self-evaluation which, in turn, affects reflective thinking skills positively (Özdemir, 2018). Thanks to reflective thinking skills, teachers are able to review their educational situations with a critical perspective and strive to find the best way to affect students' learning positively. Thus, teachers can both perform an effective teaching and continue their personal and professional development. The studies so far revealed a number of distinct

advantages offered by efforts to improve reflective thinking skills of teachers, however there is a lack of studies investigating the reflective skills processes in depth. Against this background, the present study stands out as a most valuable contribution to the literature in terms of its focus.

As mentioned above reflective thinking is crucial for teachers. Gaining the reflective thinking skill also contributes to the individual's ability to look at herself/himself critically and to engage in qualified self-assessment (Evin-Gencil & Güzel Candan, 2014). Efforts on this front aim to equip the teachers with an internationally recognized outlook. The quality of education is expected to increase as pre-service teachers learn reflection as a major skill. That is why seeking new means to facilitate the development of thinking processes among pre-service teachers is a must. A number of distinct methods and techniques (learning texts, concept maps, asking questions, self-assessment, mind maps, reflective diary, keeping a development journal, forms consisting of open-ended questions, camera recordings etc.) are used for this purpose (Branch & Oberg, 2004; Karataş & Cengiz, 2016; Demirören, Koşan & Palaoğlu, 2009; Kozan, 2007; Tok, 2008; Ünver, 2003; Duman, 2018; Lee, 2005). Among these, self-assessment is arguably an important technique for individuals seeking to discover their strengths and weaknesses, and is often embraced by its users given its applicability advantages (Leise, 2007). However, in the lack of objective self-assessment in line with its purpose, or when the individual presents an inaccurate picture of himself or herself, the results would likely be invalid and unreliable. When due self-assessment process is carried out in accordance with the purpose stipulated above, on the other hand, it allows pre-service teachers to identify the problems they do or would encounter in their lessons, and offer solutions. The present study is expected to help support pre-service teachers involved in realizing the benefits of the self-assessment technique, and thus embracing a rather positive attitude towards its use in the future. Moreover, the participants of the study are expected to develop awareness about the importance of self-reflection. Arguably, a systematic approach to such practices supporting personal as well as professional development will have positive effects on pre-service teachers' performance at work. On the other hand, the existing studies in the literature usually focus on pre-service primary school teachers, science teachers or English teachers (Savran Gencer, 2008; Tok; 2008; Erdoğan, Şengül, 2014; Töman & Odabaşı Çimer, 2017; Eğmir, 2019; Demir, 2020). In this context, the need for studies to provide insights into the examination and development of self-assessment skills of pre-service mathematics teachers who will be responsible for teaching a field dominated by numbers and symbols rather than verbal expressions is apparent.

PURPOSE OF THE STUDY

As the teacher training institutions in Turkey, the faculties of education, aim to provide the pre-service teachers with the experience of working at an actual school by offering a number of practice opportunities not only during the activities integrated into theoretical courses but also with a number of courses focusing on practice (e.g. Teaching Practice, School Experience). Doing so provided the pre-service teachers with an opportunity to learn about their weaknesses and strengths, based on a rather realistic experience with the profession they will soon be taking. Moreover, the benefits of the internship process and the experience gained in the context of teaching practice courses at schools are closely correlated with the pre-service teachers' reflective thinking skills. In line with these considerations, the aim of this study is to examine the self-assessment processes of pre-service mathematics teachers. For this purpose, the study investigated the following research questions:

1. Which types of reflection the pre-service teachers engage in during self-assessment activities?
2. How frequently the pre-service teachers engage in reflections as part of self-assessment activities?

2 | METHOD

This study is based on descriptive special case pattern, a qualitative research method deemed to be compatible with the subject matter involved. Descriptive special case studies involve in-depth description and review of a given system (Merriam, 1998). In the present study, every pre-service teacher included in a group attending the teaching practice course have been deemed a special case, based on the 'the case as a specific, complex functioning thing' definition provided by Stake (1995). For, in the present study, the reflections provided by individual pre-service teachers within the framework of the self-assessment activities have been analyzed. Moreover, the changes they underwent through the process were also investigated. On the other hand, as case studies are about generalizations based on existing theories, so as to develop the initial theory, rather than seeking generalizations

to test fresh hypotheses (Yin, 1984), they were deemed the research model most compatible with the present study's objectives.

SAMPLE

The study was carried out with a group comprised of 8 senior-year pre-service teachers (3 females, 5 males) enrolled in a Primary School Mathematics Teacher Education Department at a faculty of education in university in Turkey, during the academic year 2018-2019. The participants enrolled in this study carried out within the framework of the teaching practice course had previously attended the "Teaching Practice 1" course, which was based mostly on observations inside a classroom setting, and prepared regular course observation reports. Furthermore, the participants also took and successfully passed in the "Measurement and Evaluation in Education" course, which covered self-assessment as an important part of its syllabus.

The study group had weekly interviews lasting at least 90 minutes with the relevant course instructor within the framework of Teaching Practice course, throughout the eight-week period. The interviews focused on the following issues:

- Comments by the relevant pre-service teacher regarding the course (the successful and unsuccessful elements of the course, the problems and issues faced),
- Self-assessment of the relevant pre-service teacher regarding the course (the successful and unsuccessful elements of the course, the problems and issues faced),
- Group's and the instructor's advice regarding the development of the relevant pre-service teacher.

DATA COLLECTION AND ANALYSIS

A "Self-Assessment Form" developed by Sağlam Arslan et al. (2017) was used as the data collection tool. This form intends to lead pre-service teachers to thinking about their own experience as well as the teaching practice they had, upon carrying out the teaching activities they designed for each week. They were asked to fill out the forms on a weekly basis, during the day to follow each class they taught, and duly submit them to the researchers.

In the process, the participants were asked to freely express their opinions, and were told that participation in the study is completely voluntary. The leading questions directed to the participants in the self-assessment forms (taken from Schön's classification, 1987) are presented below:

- What kind of activities did I implement in this class? Which parts of the class were the ones I excelled at? Which parts of the class were the ones I had most difficulty with? (Reflection-on-action)
- Which unexpected developments did I come across during the class? (Reflection-in-action)
- What did I learn about the teaching profession, at the end of this class? What kind of changes would I introduce if I was given the chance to repeat the class? (Reflection-for-action)

Collected data were subjected to content analysis. In the light of the approaches recommended by Patton (2002) and Yıldırım and Şimşek (2016), the forms submitted by pre-service teachers were read over and over, to come up with a thorough breakdown of the data provided. Thereafter, the data points were categorized based on the similarities and differences involved, and were assigned codes, which were then subjected to a second round of categorization to identify themes, which were then analyzed by other researchers as well, to produce the final version of the theme set based on an analysis of consistency of the answers provided, with the themes. The grouping and categorization of the themes were based on Schön's (1987) work, leading to a three-way categorization based on the timing of the reflection action: reflection-in-action, reflection-on-action, and reflection-for-action. Reflection-in-action refers to the individual's ability to find a solution for any unexpected circumstances she may come across during an action. Reflection-on-action refers to looking back once the action is completed, and rethinking about it. Reflection-for-action on the other hand, refers to the application of such reflection to provide guidance for subsequent actions, and to restructure the actions thereafter (Schön, 1987). The data were first analyzed by the researchers independently. Then, the accuracy of the classifications was confirmed by comparing the data obtained. Finally, the percentage of agreement between the researchers was calculated using Miles and Huberman (1994)'s intercoder reliability formula, and it was determined that the rate of agreement

between the researchers was 0.96. The pre-service teachers are coded as “PT” on the tables and statements. The following analysis is provided as an example based on such categorization:

“During the course, my mentor told me that she forgot about the activity to model multiplication with rational numbers alongside the outcome stipulated for that class, and asked me to present it to the class. At that point, I was facing some extraordinary circumstances. And I opted to present it the way I learned in the university course on teaching numbers (PT2).” This statement by the pre-service teacher is included in the reflection-in-action category, and noted as an example of the theme “Proposed solutions and shortcomings identified in the class”.

RESEARCH ETHICS

There must be a research ethics sub-section dedicated in your article under Method section. Please explain your ethical procedures in your study.

3 | FINDINGS

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The data obtained from the reflections provided by the pre-service teachers on the self-assessment forms were classified under three major categories –reflection-on-action, reflection-in-action, and reflection-for-action. The themes and codes presented for each category are presented below, along with self-reflections on part of the pre-service teachers.

Reflection-on-action

This category covers the views the pre-service teachers voiced with respect to the teaching activities they carried out during the eight-week teaching practice, after the completion of the teaching process. This category comprises six distinct themes (the practices the pre-service teachers had implemented during the classes, the purposes of such practices, the successful aspects of the class, lessons learned, problems experienced during the class, and feelings) covering 31 codes (see Table 1).

The ‘practices implemented during the classes’ theme covers the codes stating the subject matter of the class, investigating existing knowledge about the topic, evaluation activities, leading the students to group-work, raising the students’ awareness about the topic (by drawing their interest), using concrete materials, and creating associations with daily life. Among these, the most commonly observed code is investigating the students’ existing knowledge about the topic. PT8’s statement “At the beginning of the class, I first reminded the students about the topics covered in the previous class, and asked them a question about factorization using common factor parentheses. Then, I told them we would now proceed with factorization of perfect square identities.” is a good example of this code.

Under the theme ‘the purposes of practices’, in turn, the pre-service teachers noted the purposes served through the practices they implemented. Among these, the most commonly mentioned purposes were facilitating active involvement of the students, achieving effective learning, reinforcing learning, and making the class interesting. PT5 had the following to say in terms of explaining the purposes of the activities she carried out during the class: “During the class, I began with some examples, with the purpose of checking the readiness and existing knowledge levels of the students. First of all, I presented some cases to remind them about the concepts of equal probability, impossibility, and absolute probability, in the context of probability involving rational numbers. Then, I allowed the students work actively on the problem-solving activity. I was amazed by the inquisitive attitudes and excitement about discovery on part of the students. That really made me happy.” PT7 had the following to note on the fourth self-assessment form, about the purposes of the activities involved in the class: “I began the class with a question to draw their interest, about a matter related closely with their daily lives. After receiving the students’ feedback, I provided explanation about the question I asked, in the form of a model I drew on the board. I asked the students to come up with models of the fractions, and to find which fraction is bigger. I then had the students play a little game, to see if they truly grasped the lesson or not.”

Table 1. Pre-service teachers' reflections on their practices

Reflection on Action										
Themes	Codes	PT1	PT2	PT3	PT4	PT5	PT6	PT7	PT8	f*
Practices implemented during the classes	Determining the topic of the lesson	-	-	-	-	-	-	-	1	1
	Checking prior knowledge,	-	1	1	-	6	7	-	1	16
	Conducting evaluation activities,	-	-	-	-	-	-	-	1	1
	Conducting cohort activities	1	2	1	-	1	1	-	-	6
	Stimulate students' interest/awareness	-	-	-	-	2	1	-	-	3
	Using concrete materials	2	-	-	-	-	-	-	-	2
	Relating to daily life	-	1	-	-	1	6	-	-	8
The purposes of practices	Facilitating active learning,	-	-	-	-	1	1	-	-	2
	Making the class interesting	2	-	-	-	2	-	-	-	2
	Achieving effective learning,	-	-	-	-	-	2	-	-	2
	Reinforcing learning	1	-	-	-	-	-	-	-	1
Inferences	Effectiveness of the methods/materials implemented	1	-	-	-	1	-	-	-	2
	Identifying issues to be considered during teaching	-	1	-	-	-	-	1	-	2
Successful parts in the course	Ensuring students' active learning	1	-	-	-	2	-	-	-	3
	Provide prompt feedback/rectification	-	-	-	-	1	1	-	-	2
	Teaching with games	-	-	-	-	-	1	1	-	2
	Effective communication with learners	-	1	1	-	1	-	-	1	4
	Deliver the lesson effectively	1	4	2	-	-	-	-	-	7
	Ensuring classroom management	2	-	2	-	1	-	-	-	5
	Conducting cohort activities	-	-	-	-	-	1	-	-	1
	Time management	-	-	-	-	-	1	-	-	1
	Compatibility of the teaching approach with the learning objective	-	1	-	-	-	-	-	-	1
	Difficulties faced in class	Learners-teacher communication	-	1	-	1	-	-	-	-
Difficulties in explaining some aspects of the subject		1	-	-	-	1	2	1	-	5
Failing in certain aspects of the subject		1	2	-	1	-	-	-	1	5
Failing in time management		2	-	-	-	-	-	-	1	3
Reviewing previous knowledge		-	1	1	-	-	-	-	-	2
Generation of alternatives solutions		-	-	1	-	-	-	-	-	1
Using materials compatible with the learning outcome		1	-	-	-	-	-	-	-	1
Emotions felt during the class	Teacher candidate' satisfaction	-	-	-	-	4	-	-	-	4
	Students' satisfaction	-	-	-	-	2	-	-	-	2

f*:Frequency

The point most frequently emphasized by the pre-service teachers under the 'lessons learned' (Table 1) theme is about the realization through experience, of the effectiveness levels of various teaching approaches they tried during the teaching processes, based on the knowledge and insights gained through the teaching practice course as well as their practical experience in the classes. Pre-service teacher PT5 stated "choosing daily-life examples for use in the class certainly helped boost the students' level of interest" as an example of reflection on action, arguing that a class taught with reference to daily life cases would be more interesting to students. The pre-service teachers also mentioned the importance of certain crucial points they observed with respect to the planning or teaching of the classes. In her first self-assessment form, PT7 stated "I am not very good at noticing my strengths and weaknesses in terms of teaching classes. The feedback provided by my mentor in the internship made me realize that I was not particularly successful in the class. Sure, that does not mean I cannot improve myself. I will work on my weaknesses during the week, and try to perform better next week." This statement serves as an example of how one can, through the practices, notice the issues requiring improvement for more effective teaching.

Regarding the 'successful parts in the course' (Table 1), most pre-service teachers described how the method/activities they implemented affected learning on part of the students: "I began with an unusual story. It helped with drawing interest of the students as well as of my mentor. Then, I proceeded to present multiple examples of reduction and expansion applied by the students. This approach helped minimize the number of errors made by the students. And I had the students solve a lot of problems during the class. They were pretty happy to come up with solutions (PT5)". PT7 had the following to describe her success in teaching concepts through games, on her self-assessment forms: "When I told the kids 'now we will play a little game with you', they were really elated, and that really increased my motivation. The game was not only a group activity, but also a means to really settle what they learned. To boot, they had a lot of fun. At the end of the class, when I asked them what they learned on that day, one of the students answered 'we learned that games could be a part of mathematics classes.' That answer excited me and made me very happy. At that age, the children are really into games, and they also love being on the move at all times. I think that contributed to my success on this topic." On their self-assessment forms, the pre-service teachers usually stated that the students were actively involved and highly motivated throughout the classes they taught, and that the classes saw some effective learning on the part of the students.

The pre-service teachers also referred to the 'difficulties faced in class'. The most frequently mentioned problems were about the lack of time for activities they developed, the incompatibilities between the current proficiency levels of the students and the activities developed, and the teachers' inability to keep control of the class at times. PT3 expressed the difficulties she experienced during the class, with the following statement on her fifth self-assessment form: "As the problems were rather simple given the current level of proficiency of the class, the students solved them right away, and left me scratching my head for new ones." PT4, in turn, mentioned the following problem she had with class management in her second week of teaching the course: "After giving the game to the students, I really had trouble making my voice heard. They concentrated on the game right away, and didn't hear some of the warnings I provided, and thus made some mistakes."

REFLECTION-IN-ACTION

The reflection-in-action category covers the statements provided by the pre-service teachers, about the solutions they came up with during the class (in action) for the unexpected cases they faced during the teaching practice. The problems identified and the solutions proposed during the class itself were categorized under a single theme in this category. This theme is comprised of eight distinct codes (see Table 2). Two pre-service teachers mentioned the proposed solutions they came up with in order to make the topic or activities more comprehensible for the students. After the first week's class, PT4 engaged in the following reflection-in-action statement: "I noticed that some students had difficulty with some examples. Honestly, I didn't expect that. So, I was more careful in subsequent classes, to make sure that the examples were better matches to students' current levels of proficiency." Another pre-service teacher (PT7) also described the unexpected turn of events she witnessed in the first week of the class, as a case of reflection-in-action: "I did not expect the students to be puzzled about what to do with the worksheet. And that was mostly due to my shortcomings regarding the worksheet. I now know that I should make the worksheet clearer and easier to comprehend." In addition to the statements provided here as examples, some pre-service teachers expressed how they identified certain misconceptions among the students through reflective thinking, had problems regarding effective use of time, failed to initiate engagement of the students, saw students

misunderstanding the directions provided, or had difficulty handling student behavior in terms of maintaining discipline in the classroom. They were able to come up with solutions for some of these cases but were unsuccessful with others.

Table 2. Pre-service teachers' reflections during their practices

Reflection in action		PT1	PT2	PT3	PT4	PT5	PT6	PT7	PT8	f*
Themes	Codes									
Problems revealed in class and solutions developed right there	Take care of a deeper understanding	-	1	-	1	-	-	-	-	2
	Providing explanation for unanticipated situations	-	1	-	-	-	-	1	-	2
	Struggle with improper student behaviors	-	-	1	-	-	-	1	-	2
	Prepare and apply proper worksheets	-	-	-	-	-	-	1	-	1
	Time management	-	-	-	1	-	-	-	-	1
	Giving accurate instructions	-	-	-	-	-	-	-	1	1
	Activating learners	1	1	-	-	-	1	-	-	3
	Noticing misconceptions	-	-	-	-	-	1	-	-	1

f*:Frequency

REFLECTION-FOR-ACTION

This category covers the plans the pre-service teachers come up with for their future teaching practices, through a review of the teaching practices they just had. The reflection-for-action category is comprised of two distinct themes ('action plans for the future', and 'pre-service teacher's awareness levels'), covering 22 distinct codes (see Table 3). The vast majority of pre-service teachers mentioned the valuable experience they gained in terms of preparing materials and activities in accordance with the students' proficiency levels, and further enriching the activities developed. On her fourth self-assessment form, PT8 stated that "I will be preparing simpler questions compared to the ones I originally came up with, as the students were not yet at a level of proficiency to solve the problems I presented" and added she would be more careful about this matter in the future. On the theme 'awareness levels', on the other hand, the most common point raised by pre-service teachers was that the classes they taught contributed to their awareness about the positive aspects and concrete requirements of teaching as a profession. For instance, in the form she submitted at the end of week five, PT5 wrote "the teacher is an actor, and plays the part in accordance with the audience. My students love me so much, and I am very happy about this matter. They always want me to offer them some activities or materials. Making them feel valuable is a small but most crucial detail. Teaching is all about love and affection. One cannot put a prize on touching the heart of a child." On her second self-assessment form, PT6 underlined individual differences, stating "given the fact that each student has a distinct style of learning, developing a wide range of activities and games when teaching the class would make the whole process more effective."

Table 3. Pre-service teachers' reflections for their practices

Reflection for action										
Themes	Codes	PT1	PT2	PT3	PT4	PT5	PT6	PT7	PT8	f*
Action plans for the future	Preparing the lesson	1	-	-	-	-	-	1	-	2
	Providing more guidance when needed	-	-	-	-	-	-	-	1	1
	Favoring student centered practices	2	-	-	-	-	2	-	-	4
	Taking precautions for time management	-	-	-	1	-	-	-	1	2
	Enriching the activities developed	1	1	2	1	-	-	2	-	7
	Using suitable materials	-	-	3	1	-	-	-	4	8
	Supporting teaching with games	-	1	-	1	-	2	1	-	5
	Using smart board	-	1	3	-	-	1	-	-	5
	Using in-class assessment	-	-	-	-	1	-	1	1	3
	Worrying about teacher-students communications	-	-	-	-	1	-	-	1	2
Pre-service teachers' awareness level	Setting the time according to the activities' characteristics	1	-	-	1	-	-	-	1	3
	Motivation	2	-	-	-	-	-	-	3	5
	Professional requirements	1	-	3	1	6	2	1	1	15
	Preferring activities involving students	-	2	-	1	-	-	1	-	4
	Using various types of questions	-	-	-	1	-	-	-	-	1
	Coming up with a concrete formulation of the subject	-	-	-	1	1	1	-	-	3
	Difficulties in classroom management	1	1	2	-	-	-	-	1	5
	Importance of teacher-students communication	-	1	1	-	1	2	2	-	7
	Taking individual differences into account	-	3	-	-	-	1	-	-	4
	Effectiveness of learning with games	-	-	-	-	1	-	1	1	3
	Importance of previous knowledge	-	1	-	-	-	-	1	-	2
	Importance of professional development	-	-	-	-	-	-	1	-	1

f*:Frequency

4 | DISCUSSION & CONCLUSION

The study is based on the analysis of the self-assessment forms filled out by the participants at the end of the class through a period of eight weeks of practice, with a view to gathering data on their reflection skills. The analyses revealed that the frequency of reflective thinking on part of the pre-service teachers varied in relation to their personal and professional characteristics. The differences are deemed to be directly related with their efforts put into the teaching practice course (for the course plan, material preparation, model development etc.), and with their attitudes towards the teaching profession. It is beyond dispute that a high level of motivation is a must for the teachers to be able to perform activities to support life-long development, beyond the obligatory elements of any course. A holistic analysis of the self-assessment forms led to the observation that the participants expressed reflection-on-action statements more frequently compared to statements on reflection in-action and reflection-for-action. This finding can be explained by the lack of any unexpected circumstances the participants coming across during the classes, or the lack of sufficient motivation on their part, for making plans for the future. The fact that the participants rather more frequently made statements under this category can also be explained by the

association of reflection-on-action with rather simpler skills. For instance, reflection-in-action requires the individual to analyze the unexpected circumstances occurring during the class, whereas reflection-for-action requires the development of new proposals based on process analysis applied with respect to the courses. In other words, reflection-on-action was frequently used by the participants, as the only requirement for it was the ability to express what happened during the class, without the need for any significant analysis. On the other hand, the most common reflection-in-action expressions the participants used were found to be usually related to the issues, shortcomings, and problems they had experienced. This finding supports the conclusions reached in previous studies (Akın & Güven, 2014; Güneş & Baki, 2011), which argued that the teachers were usually inclined to notice / express the problems faced. Erginel (2006), in turn, observed that pre-service teachers usually focused on teaching methods, student motivation, and class management in the context of reflective thinking regarding the practice process.

The statements provided in pre-service teachers' self-assessment forms reveal that they realized not only the positive effects of teaching methods they apply in their classes, in terms of achieving effective learning, but also the importance of ensuring a match between the complexity of the activities and the proficiency levels of the students, with specific reference to individual differences. Reflections helped raise awareness among pre-service teachers with respect to what is needed to overcome existing shortcomings, allowed them to notice their existing strengths, and motivated them for working harder to achieve what needs to be done. This conclusion is in line with the results reached by Fırat-Durdukoca and Demir (2012). In a study on developing reflective thinking, Schweiker-Mara, Holmes and Pula (2003) found that the activities described were most effective in helping pre-service teachers in terms of decision-making and problem-solving in classroom settings. The findings reached here also lead one to the conclusion that the participants really make an effort to improve their professional skills, through reflection on and for action.

The present study also paved the way for effective peer-evaluation for pre-service teachers, in conjunction with self-assessment. Other studies also underline the positive effects such an approach would have on reflective thinking skills. Özbek and Köse (2019) noted that interviews to follow the teaching practice ranked high among the 10 factors which helped reflective thinking skills. In other words, the recommendations provided to pre-service teachers by their peers helped the former to grasp details they did not notice during the practice itself, and to work on improvements for subsequent classes.

Based on the results reached, one can argue that providing pre-service teachers with the opportunity to get experience in actual class environments at schools, in the context of developing one's reflective thinking skills, would be most helpful. Doing so enables pre-service teachers to realize actual problems and needs, and gives them the opportunity to organize their education accordingly. In the same vein, Abrams and Middleton (2004) and Weshah (2007) observed that, through reflection, teachers were able to assess the quality of their performance, and identify specific skills they need for professional development.

According to the findings noted above, the pre-service teachers mostly made similar points in their reflective thinking activities, and had shortcomings on the reflection-in-action and reflection-for-action fronts. Based on this observation, one can argue that the participants can certainly do better in terms of problem solving and investigation skills. For, reflection refers to the process of carving out a meaning through the use of problem solving and investigation skills to reveal approaches regarding connections established between different experiences and ideas (Rodgers, 2002). On the other hand, the shortcomings regarding reflective thinking, as noted in this study in a group of pre-service teachers, are understood to be prevalent among teachers as well (Alp & Şahin-Taşkın, 2012; Kır, 2014).

Based on the conclusions reached here, one can recommend courses and activities focusing on the development of self-assessment and reflection in teacher training, as it is found that regardless of their existing self-assessment abilities, the pre-service teachers' reflection skills have some room for improvement regarding certain categories. The faculties of education, as the schools training teachers, play a major part in the development of reflective thinking skills among teachers (Harford & MacRuairc, 2008). In the light of the findings reached here, one can argue that the pre-service teachers' level of development on that front leaves much to be desired. The total lack of core courses on reflective thinking at faculties of education in Turkey, coupled with the rather limited numbers of elective courses on this topic, are probably the root causes of these shortcomings. On the other hand, providing

adequate training to pre-service teachers before they take teaching positions would help ameliorate this picture, and allow them to achieve personal development based on the results of self-assessment on their professional competence levels. The pre-service teachers' activities through the process were not subjected to a holistic analysis here. More comprehensive studies based on a wider range of data collection tools, with a larger group of participants, would certainly help understand and analyze-in-depth the shortcomings noted here. Moreover, studies on the effects of teaching activities focusing on self-assessment on pre-service teachers' creative thinking, problem solving, and analysis skills would also lead to valuable contributions to the literature in this field.

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STATEMENTS OF PUBLICATION ETHICS

While preparing this article, the authors certify that research and publication ethics were followed, as well as copyright restrictions for the intellectual and artistic works used.

RESEARCHERS' CONTRIBUTION RATE

Three authors contributed equally to the article writing. All authors read and approved the final version manuscript.

CONFLICT OF INTEREST

The authors of this article declare that there is no personal conflict of interest within the scope of the study.

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A Research on Primary School Teachers' Proficiencies on Inclusive Education and Teaching Mathematics for Inclusion Students

Sedat TURGUT^{a*}, Mahir UĞURLU^b

a* Dr., Bartın University (<http://orcid.org/0000-0002-6612-9320>) *sedatturgut42@gmail.com

b Res. Asst., Bartın University, (<http://orcid.org/0000-0003-4005-4882>)

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ABSTRACT

This study aims to examine primary teachers' proficiency in inclusion and teaching mathematics to inclusive students within the scope of some variables. Survey design was adopted in the research. The study group consists of 324 primary teachers. The data were collected through the Teacher Efficacy for Inclusion Scale and Teaching Mathematics in Inclusive Settings Scale. The Mann-Whitney U test, and the Kruskal-Wallis H test was used. As a result of the current study, it was determined that female teachers were more proficient in inclusion in teaching mathematics. It was determined that primary teachers with a master's degree were more proficient in inclusion. It was determined that primary teachers who have fewer inclusive students in their class were more proficient in inclusion in teaching mathematics. It was determined that more experienced primary teachers were more proficient in inclusion. It was determined that primary teachers teaching in the second, third and fourth grades and teaching mathematics were more proficient than those teaching in the first grade. It was determined that teachers who teach in less crowded classrooms were more proficient in inclusion.

Keywords: Inclusive student, primary teacher, teaching mathematics

Sınıf Öğretmenlerinin Kaynaştırma ve Kaynaştırma Öğrencilerine Matematik Öğretimi Yeterlikleri Üzerine Bir Araştırma

ÖZ

Bu araştırmada sınıf öğretmenlerinin kaynaştırma yeterliklerinin ve kaynaştırma öğrencilerine matematik öğretimi yeterliklerinin bazı değişkenlere göre incelenmesi amaçlanmıştır. Araştırmada tarama modeli benimsenmiştir. Çalışma grubu uygun örnekleme göre belirlenmiştir. Çalışma grubunu 324 sınıf öğretmeni oluşturmaktadır. Veriler, Kaynaştırmada Öğretmen Yeterliği Ölçeği ve Kaynaştırma Uygulamalarında Matematik Öğretimi Ölçeği aracılığıyla toplanmıştır. Verilerin analizinde Mann-Whitney U testi ve Kruskal-Wallis H testi kullanılmıştır. Araştırma sonucunda sınıf öğretmenlerinin cinsiyet değişkenine göre kaynaştırmada matematik öğretimi yeterlikleri bakımından kadın öğretmenlerin daha yeterli oldukları belirlenmiştir. Eğitim düzeyi değişkenine göre, kaynaştırma yeterlikleri ve kaynaştırmada matematik öğretimi yeterlikleri bakımından yüksek lisans yapmış olan sınıf öğretmenleri daha yeterli oldukları belirlenmiştir. Öğretim yaptığı sınıfta bulunan kaynaştırma öğrencisi sayısı değişkenine göre, sınıfta daha az kaynaştırma öğrencisi bulunan sınıf öğretmenlerinin kaynaştırma yeterlikleri ve kaynaştırmada matematik öğretimi yeterliklerinin daha yüksek olduğu belirlenmiştir. Mesleki kıdem değişkenine göre, daha kıdemli olan sınıf öğretmenlerinin kaynaştırma yeterlikleri ve kaynaştırmada matematik öğretimi yeterliklerinin daha yüksek olduğu belirlenmiştir. Öğretim yaptığı sınıf düzeyi değişkenine göre, ikinci, üçüncü ve dördüncü sınıflarda öğretim yapan sınıf öğretmenlerinin birinci sınıfta öğretim yapanlara göre kaynaştırma yeterliklerinin ve kaynaştırmada matematik öğretimi yeterliklerinin daha yüksek olduğu belirlenmiştir. Öğretim yaptığı sınıf mevcudu değişkenine göre, daha az mevcudlu sınıflarda öğretim yapan sınıf öğretmenlerinin kaynaştırma yeterliklerinin ve kaynaştırmada matematik öğretimi yeterliklerinin daha yüksek olduğu belirlenmiştir.

Anahtar kelimeler: Kaynaştırma öğrencisi, sınıf öğretmeni, matematik öğretimi

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1 | INTRODUCTION

Teachers are the main contributors to the achievement of education (Goldhaber, 2007). Teacher proficiency is one of the factors which affects student success (Connor et al., 2005; Lee & Lee, 2020; Rivkin et al., 2005). Most countries make investment and develop educational policies in order to improve teacher proficiency. (Feng & Sass, 2018). The inadequacies related to teacher proficiency have negative effects on student success (Lee, 2018).

There are many components affecting teacher proficiency. It can be said that educational level, professional seniority, expertise of subject field are the fundamental factors which are effective on teacher proficiency (Lee & Lee, 2020). Some scholars conducted studies that reveal the educational level of teachers who had a positive (Goldhaber & Brewer, 1997; Harris & Sass, 2011), negative (Clotfelter et al., 2007; Goe, 2007) or neutral (Buddin & Zamarro, 2009; Shuls & Trivitt, 2015) effect on students' success. It was determined that professional seniority affects student success positively (Clotfelter et al., 2007; Ladd, 2008; Wiswall, 2013), affects less (Chingos & Peterson, 2011; Shuls & Trivitt, 2015), that the positive effect in the first years of profession turns into negative (Chingos & Peterson, 2011; Winters et al., 2012), and professional seniority has no effect on student success (Xin et al., 2004). Expertise in the subject field has a positive contribution to student success (Betts & Frost, 2000; Ferguson & Womack, 1993; Monk & King, 1994). Besides, expertise of subject field effects teaching styles of teacher. Teachers who have more information about any subject use more different and effective teaching methods (Banks, 2008).

INCLUSIVE EDUCATION

Inclusive education is stated as an education type that adapts students with special needs for the future life academically, socially, and professionally, is arranged for their needs, in the same educational environment with their peers who are developing typically, based on the principles of the least restrictive environment. Inclusion is not only that students with special needs are physically included in general educational environment but also that all students with disabilities and without disabilities are given supportive services according to their individual differences and traits (Mastropieri & Scruggs, 2004; Salend, 2005).

Students with special needs develop their social skills and academic performance within inclusive education. Teachers, school administrators and families have various roles in the achievement of inclusive education and students developing positive attitudes and behaviours. During inclusive education, the shareholders of this process should have some proficiencies in order all of students to be able to have all their potential. Students' individual differences and learning styles should be taken into consideration and learning environments should be personally arranged. Since they spend more time with students, that teachers working especially in inclusive environment are experienced, quite effective on that they can adapt curriculum according to students' individual differences, they can effectively manage their classroom and orientating of students with disabilities and without disabilities (Bauer & Kroeger, 2004; Friend, 2006; Jarvis & Iantaffi, 2006; Wood, 2002).

Teacher proficiency has an active role on meeting student needs, establishing and maintaining a proper communication between them, developing their academic skills, improving the social acceptance of individuals with special needs. It is known that teachers with more academically and professionally proficiencies contribute positively to student development (Causton-Theoharis et al., 2011; Onyishi & Sefotho, 2020). Teachers' positive or negative opinions and attitudes towards inclusive education and students with special needs affect the achievement of inclusive education. Besides, it is stated that other factors effecting the achievement of inclusion are teachers' willingness, tolerant and proficiencies. Teachers with inclusive students in their classroom should conduct activities based on measurement and evaluation curriculum development for their students, in order to make inclusion more successful, arrange learning environments taking individual differences of students with special needs into consideration, guide parents, and create equal opportunities for all kids (Akman et al., 2018; Batu, 2000; Friend & Bursuck, 2006).

MATHEMATICS TEACHING IN INCLUSION

It is a well-known fact that even children who develop typically have difficulties in learning basic mathematical skills and operation, however; children with special needs have more difficulties in those subjects. Unlike their peers developing typically, students with special needs also have difficulties in learning maths due to the type and

level of their inability. Students with special needs have difficulties in learning maths because of the reasons such as ineffective teaching, the problems related oral language, inadequate reading skill, affective factors, attention and perception problems. Moreover, when the content of curriculum is not convenient for student needs, they may not be able to have relevant mathematical skills and acquisitions (Katsiyannis & Prillaman, 1990; Yıkımsı, 2012).

Inclusive students need more support in learning mathematical skills compare to their peers developing typically. Teachers' mathematical proficiencies related to their teaching level and pedagogical professionalism in terms of the effectiveness and quality of maths teaching for students with special needs in a classroom is quite important (DeSimone, 2004). The more inclusive students with special needs improve their academic skills, the more their mathematical skills develop. This facilitates the daily life of students with special needs, as well; because there is a direct relationship between mathematical skills in their daily life and basic mathematical processes (Bley & Thornton, 2001; Geary, 2004).

Inclusive students with special needs have less mathematical skills than they should have. These students generally have difficulties in word problems and setting mathematical relationships. Moreover, they have problems in measurement, time, counting money, mental calculating, and solving problems (Beacham & Trott, 2005; Cortiella & Horowitz, 2014).

In order to resolve problems which students with special needs face, having mathematical skills could be effective in making instructional contents simple, to differentiate instructional methods, to separate teaching into small levels, to increase teaching time, to choose effective instruction methods, to teach students mathematical prerequisite skills, to give more time for mathematical operations, and to exemplify for real life in teaching (Bryant et al., 2011; Montague, 2007). In consideration of the role of mathematical knowledge and skills which students with special needs for their daily life, it can be said that maths teaching should be set for students with special need and presented by individualizing towards their needs. In inclusive education, convenient curriculum should be planned for students with special needs because of the difficulties in gaining mathematical skills and concepts for those students. Teachers have an active role for inclusion to be successful. Therefore, they should correctly determine the educational performance and needs of students with special needs in inclusion in their classroom (Batu, 2000; Hudson & Miller, 2006). In this context, it can be said that teacher proficiency has positive or negative impact on inclusion and more qualified teachers can affect positively both process and students learning.

THE CURRENT STUDY

According to the literature, various studies related to teacher proficiencies on inclusion were conducted. Soodak and Podell (1993) found that primary teachers with less proficiencies approach negatively to individuals with special needs in inclusion have education in the same place with their peers. Soodak et al. (1998) revealed that primary teachers who have better proficiencies can differentiate instructional activities, and are good at teamwork, have a more positive attitude towards inclusion and make more contributions to the development of students with special needs. Diken (2006) conducted a study finding that teacher candidates with proficiencies have a more positive opinion on inclusion and there is a medium-level relationship between teacher candidates' proficiencies and approaches to inclusion. Weisel and Dror (2006) investigated primary teacher's proficiencies and found that teachers with proficiencies were more successful to integrate and make students with special needs participate in inclusive environments. Almog and Shectman (2007) stated that primary teachers with higher proficiencies are more successful to develop instructional strategies for students with special needs. Camadan (2012) found that both primary teachers and teacher candidates, who have high-level proficiencies, are more successful in educational processes in inclusion. Dolapçı and Yıldız Demirtaş (2016) conducted a study revealing that there is a significant relationship between inclusive proficiency and self-efficacy of teacher candidates. They emphasized that the more teacher candidates' self-efficacy increases, the more their proficiency related to education increase.

The current study aims to investigate primary teachers' proficiency of inclusion and maths teaching for inclusive students in terms of some variables. In this context, the statistical impact of the variables of gender, educational level, professional seniority, the number of inclusive students in class that teachers teach, class level that teachers teach, and the total number of students in class that teachers teach, primary teachers' proficiencies in inclusion and maths teaching for inclusive students was investigated.

2 | METHOD

RESEARCH DESIGN

This study employed a survey design which is one of the descriptive designs. Survey design aims to comprehend qualifications of a group or a situation by means of an interview or a questionnaire (Fraenkel et al., 2012). The current study is a cross-sectional survey study since the data were collected at one time.

PARTICIPANTS

The participants of the current study consist of 324 primary teachers working at schools in Istanbul which are affiliated with Ministry of National Education, in the second term of 2020-2021 academic year. The participants were determined by convenience sampling, one of the non-random sampling methods. Then descriptive qualifications related to the participants are presented in Table 1.

Table 1. Qualifications Related to the Participants

Variable	f	%	
Gender	Female	175	54
	Male	149	46
Professional seniority	1-5 years	70	21.6
	6-10 years	64	19.8
	11-15 years	63	19.4
	16-20 years	66	20.4
	21 and more years	61	18.8
Educational level	Undergraduate	292	90.1
	Graduate	32	9.9
Class level that teachers teach	1 st grade	78	24.1
	2 nd grade	82	25.3
	3 rd grade	81	25
	4 th grade	83	25.6
The total number of students in class that teachers teach	26-30 students	40	12.3
	31-35 students	161	49.7
	36-40 students	110	34
	41-45 students	13	4
The number of inclusive students in class that teachers teach	One student	270	83.3
	Two students	40	12.3
	Three students	10	3.1
	Four students	4	1.2
Total	324	100	

According to Table 1, it is seen that 175 (54%) of the primary teachers participating in the study are female and 149 (46%) are male. 70 (21.6%) primary teachers have a 1-5 year professional seniority, 64 (19.8%) primary teachers have a 6-10 year professional seniority, 63 (19.4%) primary teachers have a 11-15 year professional seniority, 66 (20.4%) primary teachers have a 16-20 year professional seniority, and 61 (18.8%) primary teachers have a 21-and-more year professional seniority. 32 (9.9%) of the teachers participating in the study are graduates of a master's degree. 78 (24.1%) of the teachers teach at the 1st grade, 82 (25.3%) of them teach at the 2nd grade, 81 (25%) of them teach at the 3rd grade, and 83 (25.6%) of them teach at the 4th grade level. Total number of students in class that teachers teach are usually between 31 and 40. There is one inclusive student in the classroom of most of the teachers (f=270, 83.3%).

DATA COLLECTION

Data were collected through the Teacher Efficacy for Inclusion (TEI) Scale and the Teaching Mathematics in Inclusive Settings (TMIS) Scale.

The TEI Scale was developed by Hollender (2011) and adapted into Turkish by Meral and Bilgiç (2012). The scale has 24 items with 5-likert type (1=I never do; 5=I can mostly do). The lowest score of the scale which has one factor is 24, and the highest score is 120. The higher scores of the scale shows that teacher proficiency are at

a good level. The CFA results ($\chi^2/df=4.06$, RMSEA=.09, SRMR=.05, NFI=.96, NNFI=.97, CFI=.97) of the scale, which was adapted into Turkish, demonstrate that the one-factor-structure of the scale has acceptable values of goodness of fit index. Cronbach Alpha internal consistency coefficient is .96 (Meral & Bilgiç, 2012).

The TMIS Scale was rearranged by Aerni (2008) and adapted into Turkish by Meral and Takunyacı (2016). The scale consists of 12 items with 9-Likert type (1=not at all; 9=quite a lot). The scale consists of two sub-dimensions: effectiveness in classroom management and effectiveness in teaching strategies. The sub-dimensions of the scale can be separately scored and the lowest score that can be obtained from the sub-dimensions is 6 and the highest score is 54. A total score can be obtained from the entire scale, as well; and the lowest score that can be obtained in this way is 12, and the highest score is 108. The higher score of the scale indicates that the maths teaching proficiency in inclusive education is at a good level. The DFA results of the scale which was adapted into Turkish ($\chi^2/df=4.4$, RMSEA=.10, SRMR=.04, GFI=.90, AGFI=.85, NFI=.98, NNFI=.97, RFI=.97, IFI=.98, CFI=.98) shows that the two-factor structure of the scale has acceptable values of goodness of fit index. The Cronbach Alpha internal consistency coefficient is .95 for the whole scale and the Cronbach Alpha internal consistency coefficients are .92 and .90 for the sub-dimensions (Meral & Takunyacı, 2016).

The scales were applied online in line with voluntary participation and in a way that did not interfere with the teaching activities of the teachers. Data collection was carried out in a period of approximately one month.

DATA ANALYSIS

In the analysis of the data, the total scores obtained from the scale were taken into account. The relationships between the scales were determined by calculating the correlation coefficients. Kolmogorov-Smirnov^a test, measures of central tendency (mean, median, mode) and skewness kurtosis values were used to determine the normality of the distribution. Therefore, the Mann-Whitney U test, which is one of the non-parametric tests, was used in order to compare the averages of the two groups, and the Kruskal-Wallis H test was used in order to compare the averages of more than two groups.

RESEARCH ETHICS

All ethical procedures were performed in this study. Ethical permission of the research was approved by Bartın University Social and Human Sciences Ethics Committee. Ethics committee document number is 2021-SBB-0306.

3 | FINDINGS

As a result of Kolmogorov-Smirnov^a test, it was determined that the data obtained from the scale were not normally distributed ($p<.05$). Besides, other factors that show non-normal distribution are that the mean, median, and mode are far from each other and the ratios of the skewness and kurtosis values to the standard error are outside the range of -1.96 to +1.96 (Can, 2013). Therefore, the Mann-Whitney U Test, one of the non-parametric tests, was used for gender and education level variables in order to determine whether there is a statistically significant difference between the groups according to the variables; The Kruskal-Wallis H Test was used for the variables of the number of inclusive students in the class teachers teach, professional seniority, the class level that teachers teaches and the total number of classroom that teachers teach. Spearman Rank Differences correlation coefficients were calculated to determine the relationships between the scales.

The mean (M), standard deviation (SD), skewness and kurtosis values and correlation coefficients calculated for the TEI and TMIS are presented in Table 2.

Table 2. Descriptive Statistics Related to the Scales and Corelation Coefficients

	1	2	<i>M</i>	<i>SD</i>	skewness /SH	kurtosis /SH
1. TEI	-		95.63	22.96	-10.2	1.70
2. TMIS	.806**	-	83.77	21	-10.4	1.99

** $p<.001$

According to Table 2, there is a high-level and positive ($r=.806$, $p<.001$) significant relationship between TEI and TMIS. The values calculated as a result of the ratio of the skewness and kurtosis values to the standard error show that the data are not normally distributed.

The test results according to the gender variable of the TEI and TMIS scores of the primary teachers are presented in Table 3.

Table 3. The Results of Mann-Whitney U Test According to Gender

	Group	N	Mean rank	Rank sum	U	<i>p</i>
TEI	Female	175	169.99	29749	11726	.11
	Male	149	153.70	22901		
TMIS	Female	175	172.10	30117	11358	.04
	Male	149	151.23	22533		

According to Table 3, there is no statistically significance between the groups in the TEI scores in terms of the gender variable ($U=11726, p>.05$), while there is a statistically significance between the groups in the TMIS scores ($U=11358, p<.05$). When mean ranks are examined, it can be said that the TMIS scores of female teachers are higher than male teachers'.

According to educational level, the test results of the TEI and TMIS scores of the primary teachers are presented in Table 4.

Table 4. The results of Mann-Whitney U Test According to Educational Level

	Group	N	Mean rank	Rank sum	U	<i>p</i>
TEI	Undergraduate	292	157.05	45859	3081	.00
	Graduate	32	212.22	6791		
TMIS	Undergraduate	292	158.10	46166.50	3388.50	.01
	Graduate	32	202.61	6483.50		

According to Table 4, there is a statistical significance between the groups in terms of educational level (TEI $U=3081, p<.05$; TMIS $U=3388.50, p<.05$). When the mean rank is examined, it can be said that this significance derives from that the scores of the teachers who have a master's degree are higher than the scores of the teachers who have an undergraduate degree.

According to the variable of the number of inclusive students in the class that teachers teach, the test results of TEI and TMIS scores of primary teachers are presented in Table 5.

Table 5. The Results of Kruskal-Wallis H Test According to the Number of Inclusive Students in the Class that Teachers Teach

	Group	N	Mean rank	sd	χ^2	<i>p</i>	Significance	η^2
TEI	One Student (1)	270	185.83	3	100.903	.00	1-2	.31
	Two Students (2)	40	48.18				1-3	
	Three Students (3)	10	45.50				1-4	
	Four Students (4)	4	23.38				2-3	
TMIS	One Student (1)	270	185.82	3	100.887	.00	1-2	.31
	Two Students (2)	40	48.96				1-3	
	Three Students (3)	10	42.90				1-4	
	Four Students (4)	4	22.75				2-3	

According to Table 5, there is a statistical significance between the groups in terms of the variable of the number of inclusive students in the class that primary teachers teach (TEI $\chi^2_{(3)}=100.903, p<.05$; TMIS $\chi^2_{(3)}=100.887, p<.05$). As a result of the multiple comparisons made with the Mann-Whitney U Test, it was found that the significances are between the first group and the second, third and fourth groups, and the second group and the third group. In terms of the mean rank, it can be said that this significance derives from that the scores of the group that has one and two inclusive students in the class taught are higher than the scores of the group that has three and four inclusive students in the class taught.

According to the professional seniority variable, the test results of the TEI and TMIS scores of the primary teachers are presented in Table 6.

Table 6. The Results of Kruskal-Wallis H Test Results According to Professional Seniority

	Group	N	Mean rank	sd	χ^2	<i>p</i>	Significance	η^2
TEI	1-5 years (1)	70	60.18					
	6-10 years (2)	64	162.84				1-2, 1-3	
	11-15 years (3)	63	184.67	4	121.463	.00	1-4, 1-5	.37
	16-20 years (4)	66	190.54				2-3, 2-4	
	21 and more years (5)	61	226.33				2-5, 3-5 4-5	
TMIS	1-5 years (1)	70	59.78					
	6-10 years (2)	64	159.31				1-2, 1-3	
	11-15 years (3)	63	183.55	4	124.224	.00	1-4, 1-5	.38
	16-20 years (4)	66	195.30				2-3, 2-4	
	21 and more years (5)	61	226.50				2-5, 3-5 4-5	

According to Table 6, there is a statistical significance between the groups according to the variable of professional seniority (TEI $\chi^2_{(4)}=121.463$, $p<.05$; TMIS $\chi^2_{(4)}=124.224$, $p<.05$). As a result of the multiple comparisons made with the Mann-Whitney U test, the significances are between the first group and the second, third, fourth and fifth; the second group and the third, fourth and fifth; between the third group and the fifth group, and the fourth group and the fifth group. In terms of the mean rank, it can be said that this significance derives from the higher scores of teachers with more professional seniority.

According to the class level variable, the test results of the TEI and TMIS scores of the primary teachers are presented in Table 7.

Table 7. The Results of Kruskal-Wallis H Test Results According to Class Level

	Group	N	Mean rank	sd	χ^2	<i>p</i>	Significance	η^2
TEI	1 st grade (1)	78	131.36					
	2 nd grade (2)	82	164.73	3	15.317	.00	1-2	.04
	3 rd grade (3)	81	163.11				1-3	
	4 th grade (4)	83	188.96				1-4	
TMIS	1 st grade (1)	78	131.63					
	2 nd grade (2)	82	166.07	3	15.689	.00	1-2	.04
	3 rd grade (3)	81	160.65				1-3	
	4 th grade (4)	83	189.78				1-4	

Table 7 indicates that there is a statistical significance between the groups according to the variable of the class level that teachers teach (TEI $\chi^2_{(3)}=15.317$, $p<.05$; TMIS $\chi^2_{(3)}=15.689$, $p<.05$). As a result of multiple comparisons made with the Mann-Whitney U Test, it is determined that this significance is between the first group and the second, third and fourth groups. In terms of the mean rank, it can be said that this significance derives from the higher scores of the second, third and fourth grades.

According to the total number of students, the test results of the TEI and TMIS scores of the primary teachers are presented in Table 8.

Table 8. The Results of Kruskal-Wallis H Test Results According to the Total Number of Students

	Group	N	Mean rank	sd	χ^2	<i>p</i>	Significance	η^2
TEI	26-30 students (1)	40	193.95					
	31-35 students (2)	161	192.32	3	67.654	.00	1-3,1-4	.20
	36-40 students (3)	110	123.59				2-3,2-4	
	41-45 students (4)	13	25.65				3-4	
TMIS	26-30 students (1)	40	201.30					
	31-35 students (2)	161	191.15	3	71.817	.00	1-3,1-4	.22
	36-40 students (3)	110	123.46				2-3,2-4	
	41-45 students (4)	13	18.65				3-4	

According to Table 8, it is seen that there is a statistical significance between the groups according to the variable of total number of students (TEI $\chi^2_{(3)}=67,654$, $p<.05$; TMIS $\chi^2_{(3)}=71.817$, $p<.05$). As a result of the multiple comparisons made with the Mann-Whitney U Test, the significances are between the first group and the third and

fourth groups; between the second group and the third and fourth groups, and between the third and fourth groups. In terms of the mean rank, it can be stated that this significance derives from the higher scores of the teachers who have more students in their class.

4 | DISCUSSION & CONCLUSION

The current study reveals that there is a high-level and positive correlation between TEI and TMIS. Based on this result, it can be concluded that there is a relationship between primary teachers' proficiencies on inclusion and maths teaching in inclusion and the two proficiencies affect each other.

The primary teachers participating in the study can be said to have similar characteristics in terms of inclusion proficiencies according to the gender variable. This finding is similar to the results of the results of other research studies (Berk et al., 2009; Hofman & Kilimo, 2014; Telef, 2011; Tschannen-Moran & Hoy, 2007; Şahbaz & Kalay, 2010), which state that the gender variable does not affect teacher proficiency.

It was determined that female teachers are more proficient in terms of mathematics teaching in inclusive education. According to some studies (e.g. Fakolade et al., 2009; Forlin et al., 2009; Kumar, 2016; Palavan et al., 2018) female teachers are stated to have more positive attitudes towards inclusion. It can be said that this situation supports the finding that female teachers' proficiency in teaching mathematics in inclusion is also higher. Besides, it is thought that the previous education-teaching experiences of the primary teachers participating in the study on teaching mathematics in inclusion may be different.

According to the educational level, it was determined that primary teachers who have a master's degree were more proficiency in terms of inclusion proficiencies and mathematics teaching proficiencies in inclusion. Based on this, it can be stated that the increase in the educational level positively affects the proficiencies of primary teachers. There are various studies (e.g. Forlin et al., 2009; Parasuram, 2006; Sharma et al., 2008) revealing that higher education level of teachers positively affects their attitudes towards inclusion. Accordingly, it can be said that teachers who have positive attitudes towards inclusion may have higher inclusion proficiencies and maths teaching proficiencies in inclusion.

According to the variable of the number of inclusion students in the classroom that primary teachers teach, it was determined that primary teachers who have fewer inclusive students in their classroom have higher inclusion proficiencies and maths teaching proficiencies in inclusion. Schmidt and Vrhovnik (2015) stated that teachers who have two or less inclusion students in their class have a more positive attitude towards inclusion. The high number of inclusive students in the classroom causes teachers to work more and be stressed (Avramidis & Kalyva, 2007). It can be stated that because teachers who have more students with special needs in their classroom can allocate less time to these students and do not have enough time to adapt the content of teaching and curriculum, and therefore their inclusion proficiency and maths teaching proficiency in inclusion may be lower.

According to the professional seniority variable, it was determined that primary teachers with more senior have higher proficiencies on inclusion and maths teaching in inclusion. In the studies of Campbell (1996), Daugherty, (2005), Gençtürk and Memiş, (2010) and Tschannen-Moran and Hoy, (2002) it was found that the proficiency of teachers increases as their professional seniority increases. Based on this, it can be said that as the seniority of the primary teachers increases, they have more inclusion students and gain experience in adaptation and teaching.

According to the grade level variable, it was determined that primary teachers teaching in the second, third and fourth grades have higher proficiencies in inclusion and in maths teaching in inclusion than teachers teaching in the first grade. Sadioglu et al. (2012) found that primary teachers stated that educational activities are more tiring in the first grade of primary school, and they are more tired because they allocate extra time to the inclusion student in the first grade. On the other hand, Schmidt and Vrhovnik (2015), stated that secondary school teachers have more positive attitudes towards inclusive students than primary teachers. In this respect, it can be said that the presence of inclusive students in the first grade of primary school causes primary teachers' proficiencies on inclusion and maths teaching in inclusion to be lower than that of primary teachers teaching at other grade levels.

According to the variable of the total number of students that teachers teach, it was determined that the inclusive proficiency and maths teaching proficiency of the primary teachers who teach in less crowded classrooms are higher. Arico (2011) revealed that the academic achievement of inclusive students in lower crowded classrooms

was higher and that the teachers also thought in this way. Köse-Biber (2009) stated that crowded classrooms in inclusive education make it difficult for teachers to communicate with children with special needs and pointed out that the inability of teachers to take care of students with special needs in crowded classrooms causes negative attitudes in teachers. Smith and Smith (2000) stated that the decrease in the number of students in classrooms increases teachers' perceptions of success in inclusion. Shin and Chung (2009) stated that student achievement decreased in crowded classrooms, while Robertson (2005) stated that class size affects the quality of education and the quality in less crowded classrooms increases. Consequently, it can be said that the crowded classrooms may decrease the working efficiency of the teachers, therefore; negatively affect the primary teachers' proficiencies on inclusion and proficiency in maths teaching in inclusion.

STATEMENTS OF PUBLICATION ETHICS

Ethical permission of the research was approved by Bartın University Social and Human Sciences Ethics Committee. Ethics committee document number is 2021-SBB-0306.

RESEARCHERS' CONTRIBUTION RATE

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Sedat Turgut	☒	☒	☒	☒	☒	☒
Mahir Uğurlu	☒	☒	☒	☒	☒	☒

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CONFLICT OF INTEREST

We confirm that there are no conflicts of interest associated with this study.

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A Formative Approach to Translator Training

Semih OKATAN^{a*}, Hülya YUMRU^b, & Mine YAZICI^c

a* Asst. Prof. Dr., Kafkas University, Kars/Türkiye (<https://orcid.org/0000-0001-5798-6278>), *semih3636@hotmail.com

b Asst. Prof. Dr., İstanbul Aydın University, İstanbul/Türkiye (<https://orcid.org/0000-0003-2999-243X>), hulyayumru@aydin.edu.tr

c Prof. Dr., İstanbul University, İstanbul/Türkiye (<https://orcid.org/0000-0003-4723-1001>), mineyaz@istanbul.edu.tr

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ABSTRACT

This study aims to identify the challenges that might occur during the implementation of the seven strategies used in formative assessment, to find solutions, and to examine the role of the translation course in teaching the source language English and the students' attitudes towards the translation course in the context of these strategies. For this purpose, the study uses mixed methods research design, based on a case study using a performance-based measurement method associated with a constructivist approach. In the study, the researcher's field notes, in which he/she recorded his/her observations about the use of formative assessment strategies in the classroom; semi-structured focus group interviews, conducted after the completion of each text translation; student drafts, to determine the improvement the students made after self-assessment; and, to examine the students' attitudes towards the translation course, a Translation Course Evaluation Questionnaire and semi-structured pre- and post-interview forms, were used. In line with the analyses of the collected data, it was observed that students took an active role in the self-assessment process and made progress in forming the equivalence between source language and target language in the translation courses; and in this sense, it was determined that they developed a positive attitude towards the translation courses. The researchers discussed the findings and results of the study in the light of the research context and presented pedagogical recommendations.

Keywords: Constructivism, formative assessment, self-assessment, translator training, translation courses

Çevirmen Eğitime Biçimlendirici Bir Yaklaşım

Öz

Bu çalışma; biçimlendirici değerlendirmede kullanılan yedi stratejinin uygulanması esnasında ortaya çıkabilecek zorlukların saptanması, çözüm yollarının bulunması ve bu süreçte çeviri dersinin kaynak dil İngilizcenin öğretilmesindeki rolü ve öğrencilerin çeviri dersine karşı tutumlarının bu uygulanan stratejiler bağlamında araştırılmasını amaçlamaktadır. Bu amaçla; çalışma bir oluşturma yaklaşım bakış açısıyla ilişkilendirilmiş, performansa dayalı ölçme yöntemini kullanan bir durum çalışması üzerine tasarlanmış karma yöntem araştırma desenini kullanmaktadır. Çalışmada, biçimlendirici değerlendirme stratejilerinin sınıf içinde kullanılmasıyla ilgili araştırmacının gözlemlerini kaydettiği araştırmacı alan notu, her bir çalışmanın tamamlanmasından sonra uygulanan yarı yapılandırılmış odak grup görüşmeleri, öz değerlendirmeden sonra öğrencilerin ne tür değişimler kazandıklarını belirlemek için öğrenci taslakları ve öğrencilerin çeviri dersine karşı tutumlarını ölçmek için Çeviri Dersi Değerlendirme Anketi ve yarı yapılandırılmış ön ve son görüşme formu kullanılmıştır. Toplanan verilerin analizleri doğrultusunda, öğrencilerin öz değerlendirme sürecinde etkin rol aldıkları, çeviri derslerinde kaynak dil ile erek dil arasındaki eşdeğerliği oluşturmada ilerleme kat ettikleri gözlemlenmiş ve bu bağlamda çeviri dersine karşı olumlu tutum geliştirdikleri saptanmıştır. Araştırmacılar, çalışmanın bulgularını ve sonuçlarını araştırma içeriği ışığında tartışmış ve pedagojik öneriler sunmuştur.

Anahtar Kelimeler: Oluşturmacılık, biçimlendirici değerlendirme, öz değerlendirme, çevirmen eğitimi, çeviri dersleri

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1 | INTRODUCTION

Among many issues that are discussed under the title of assessment, the present study, entitled “A Formative Approach to Translator Training,” aims to explore how to implement formative assessment strategies, with a specific emphasis on student use of cycles of self-assessment strategies, in translation course in higher education. In this context, the terms *assessment* and *evaluation* involve the whole study focusing on the formative assessment. This is because these terms, which may be used either with different meanings or interchangeably, indicate a learning process in which evidence gathered from learners is collected systematically and interpreted to make a judgment. Although assessment and evaluation procedures show similarity, the evidence about learners differs (Harlen, 2007).

Assessment is an ongoing process, in which the learners may be regarded as stakeholders who must be given the opportunity to undertake the role of assessor; and this presupposes the mutual understanding and cooperation of both teachers and learners in the design of an effective learning process (Chandio & Jafferi, 2015). The literature has shown that two types of assessment exist, formative and summative assessment. One of the ways to understand the scope of formative assessment is to compare it with summative assessment. Formative assessment is based on a circle, which involves the process of instruction to identify learners’ misunderstandings, feedback to help learners correct their mistakes, and implementation of instructional correctives, whereas summative assessment measures only the current achievement of learners (Cauley & McMillan, 2010). Taras (2005) has explained that assessment starts with summative assessment, and then it goes on with formative assessment that is based on summative assessment with feedback. According to Roskos and Neuman (2012), “Formative assessment is all about forming judgments frequently in the flow of instruction, whereas summative assessment focuses on making judgments at some point in time after instruction” (p. 534). That is, while formative assessment refers to the process of instruction supported by feedback to a learner, summative assessment refers to the process after instruction, based on testing and grading (Ayala, 2005).

To identify weaknesses and gaps in instruction, the employment of formative and summative assessment together can be a useful mechanism (Glazer, 2014). Although these two assessment types work together, they differ from each other in terms of reliability, judgments, and information (Harlen & James, 1997). To put it another way, they complete each other during the learning process, but differ in function. Formative assessment functions as guidance for learners during instruction, whereas summative assessment functions as a means of evaluating how many of the learning goals have been achieved at the end of a learning process or instruction (Dixson & Worrell, 2016). In short, the basic distinction between these two assessment types is “purpose and effect, not timing” (Sadler, 1989, p. 120).

Much of the current literature in this research context emphasizes the utility of formative assessment in a learning milieu. Different researchers have examined the impact of formative assessment upon the teaching and learning process. For example, formative assessment through feedback has been found to facilitate the teaching process and self-improvement (Xu, 2011). Similarly, formative assessment affects learner autonomy and makes an important positive impact on learners’ creativity, problem solving ability, and linguistic achievement (Ge, 2010). In addition, when the relationship between test anxiety and formative assessment is considered in an EFL context, formative assessment has been shown to be effective in decreasing the level of test anxiety that learners are exposed to (Büyükkaracı, 2010). Even where learners might have had little prior experience of formative assessment, especially in portfolio use, reflective assessment has been found to make an impact on learners’ language improvement (Efe, 2016).

Another view is that formative assessment could be implemented in various strategies to enable learner self-improvement in oral performance and fluency in speaking (Wang, 2010). In addition to this, formative assessment might be integrated with a variety of strategies to harness its positive effect on language teaching and to help cope with challenges occurring during the learning process. During such an assessment, some significant features should be taken into consideration: focusing on learning and academic achievement, equal opportunity, congruence of assessment tools, defining the limitations of assessment, supportive interaction, engaging students in the process, and meaningful and consistent reporting of assessment (Gathercoal, 1995).

Prior studies have noted the positive effect of formative assessment. However, some studies have revealed that certain challenges may be faced during the implementation of formative assessment. For instance, portfolio assessment in foreign language learning in a university context may present some challenges in relation to grading learners' performance and large class sizes (Alhuwaydi, 2017). Moreover, there may be limitations on the implementation of formative assessment because of a lack of time; in such a case, feedback given quickly may be helpful in overcoming this constraint during classroom instruction (Mangino, 2012). Another challenge is that, when feedback is considered in a socio-cultural context, learners may show differences in terms of perceptions and their feedback practices (Alfayyadh, 2016). Nonetheless, the literature mentioned above indicates that formative assessment may be an effective type of assessment with a well-designed course program.

Elsewhere, the literature addresses the central question of whether, in a classroom context, self-assessment or assessment by the teacher alone, gives a better picture of learners' progress. This issue arises because teachers generally ignore the essential source in this process, the learners themselves. It is argued that self-assessment procedure has a wide range of advantages in terms of monitoring learners' needs, and so, that it provides more direct information about learner improvement than teacher assessment does (Harris & McCann, 1994). The implementation of self-assessment procedures leads to improvement in learner outcomes and enables the teacher to monitor each student, as well as ensuring high classroom standards (Geeslin, 2003). In addition to this, within an EFL context, the implementation of self-assessment has an important positive impact on learners' self-efficacy, when it is used to engage learners on a regular basis in an assessment process with a formative technique (Baleghizadeh & Masoun, 2013). Although implementation of a process of self-assessment will bring the pedagogical benefits mentioned above, it is clear that it may take time for learners to gain assessment skills: "self-assessment may initially commence at the lower levels of the cognitive, affective, and psychomotor domains. As time progresses and the learner internalizes self-assessment skills, higher levels of those domains would replace lower levels" (McDonald, 2007, p. 34). Therefore, while building the framework of assessment, the following factors should be taken into consideration, in turn: performance, criteria and the application of these criteria, rating performance, and helping the individual to monitor progress (Woods, 1987).

As well as the above-mentioned issues, another key concept in the present study is equivalence theory. Equivalence in translation, which works as a theoretical and pragmatic concept for translation studies, is a key term, even though controversy still surrounds its applicability in translation. While forming equivalence in translation, a common issue is the concept of untranslatability, related to the nature of language, cultural restrictions and linguistic differences (Kashgary, 2011). In pursuit of translation quality, the first stage is to form linguistic equivalence between source text and target text. In this sense, "equivalence appears as a product of the contrasting of textually realized formal correspondents in the source and the target language and the communicative realization of the extralinguistic content of the original sender's message in the target language" (Ivir, 1981, p. 59). In translation, three types of equivalence might emerge. These are absolute, partial and no equivalence between source and target texts. In addition, in finding equivalence between two languages, coherence affect the quality of translation; and various factors such as language, culture and the role of translator affect the coherence between two languages (Ulanska, 2015).

In conclusion, the researchers base the present study on a triangle in line with the literature mentioned above: a) translation from source text to target text in the light of equivalence theory, b) assessment based on AfL strategies in a formative technique, and c) constructivism, which helps learners make a gradual improvement in the process. The study lays emphasis upon a process of self-assessment, because self-assessment is the essential factor in inclusion, as it validates the learner voice in all kinds of assessment, whether formative or summative, and in the teaching process (Bourke & Mentis, 2013).

Statement of the Problem

Continuous assessment supports the learning process through feedback and by increasing student motivation; but in practice, the implementation of formative assessment through feedback is not used effectively in assessment for learning in a university context (Hernandez, 2012). Apart from the fact that giving feedback in a classroom setting may take a long time, and so may be regarded as a time-consuming process, using all of the formative assessment strategies in a class to promote the learners' proficiency level in a short time is difficult (Wang, 2010). Likewise, self-assessment is a key factor in the learning process; on the one hand, when self-assessment is used

for a particular student assignment, it has a short-term effect; but on the other hand, when it is used to make student more regulated, then, the effect becomes long-term (Andrade & Valtcheva, 2009). In this context, the real problem lies in the fact that educators, whose preliminary job is to improve student success, avoid the implementation of formative assessment (Bhagat & Spector, 2017). Although self-assessment has been used in foreign language teaching for decades, the literature still shows a research gap, in that “self-assessment skills can be learned by students, but further work needs to be done to establish how these skills might be best taught” (Yan & Brown, 2017, p. 1260). In spite of the fact that self-assessment is used to promote the active participation of learners in other EFL contexts, self-assessment criteria have not been widely used in the Turkish EFL context (Ünalı, 2016). A study by Efe (2016) highlighted the same point and demonstrated the usefulness of constructive activities in stimulating the active participation of learners in a Turkish EFL context. Again, in the Turkish EFL context, a study by Han and Kaya (2014) investigated the negative effects of issues such as insufficient materials, textbooks, and especially teacher competence. In this regard, the researchers stressed the importance of using a constructivist approach in foreign language teaching in order to overcome these challenges. In addition to the barriers mentioned above, the question of how to train new translators arises. In this context, Yazıcı (2017) has identified some basic barriers in translator training in Turkey. One of these barriers is the lack of a training model which can be used specifically for Turkish students. Yazıcı (2005) previously highlighted another significant issue, surrounding the use of theoretical knowledge in the process of translation, and claimed that using theoretical knowledge in translation broadened learners’ horizons while translating, as it helped them to tackle translation from a multidimensional perspective. This discussion underlines the necessity of using theoretical knowledge and an effective process of training in which learners engage actively.

In conclusion, despite these various barriers to the use of formative assessment and its sub-components, especially self-assessment, it is still worth studying AfL strategies in order to open new perspectives on their implementation and to identify the potential challenges that may occur during the implementation of self-assessment strategies in translation courses. Feedback, self- and peer-assessment are authentic, affect learners’ involvement and help them make decisions; nonetheless, the inadequate use of these techniques by teachers constrains their application in education (Rawlusk, 2016). In the light of the current research context, the principal challenge in relation to self-assessment, which is still controversial, is about how well it may be used in an EFL context. Although many studies have focused on the use of formative assessment in foreign language teaching, there has been little discussion of the implications of using self-assessment strategies in translation teaching. Lastly, much uncertainty still exists related to the seven strategies of AfL and their application, especially in translation courses.

PURPOSE OF THE STUDY

The present study focuses principally on the use of AfL strategies in translation courses, on making these strategies clearer and easier to understand in the light of the research context, and explores the possible barriers that learners and teachers might encounter during such a learning process. Although much of the current literature focuses on the claim that Assessment for Learning makes a great contribution to student learning, the key factors which either facilitate or hinder the implementation of AfL in the classroom setting are still unclear (Heitink, van der Kleij, Veldkamp, Schildkamp, & Kippers, 2016). In this respect, the process of AfL must be examined in terms of its various facets.

Self-assessment procedure takes the form of a crucial pedagogical cycle which presents learners with the opportunity to evaluate their own performance week by week; and which enables them to take an active role in evaluation procedure, and not to be subject only to teachers’ judgments (Mican & Medina, 2017). In the light of this, the present study aims to bridge a gap in the research context by using self-assessment strategies in a translation classroom setting. In doing so, it aims to give students the opportunity to evaluate their own outcomes, to reflect on their tasks, and to develop the skills necessary for determining their own weaknesses and strengths, and for defining their own assessment criteria. Another purpose of the present study is to focus on the process of using self-assessment strategies in translation, and to identify the challenges which might occur during the implementation of self-assessment procedure in translation courses. Thereby, the researchers aim to bridge the gap in the research context.

In the present study, two primary aims come to the fore. One concerns formative assessment, which stresses the importance of the progress made in translation, and the other concerns self-assessment, which involves the role of the student as an assessor. The study aims to help students to engage in a formative learning process in line with the principles of AfL strategies. To achieve the goals mentioned above, first, the study aims to ascertain the extent to which student-centered assessment facilitates the learning process. Second, it aims: a) to delineate how Assessment for Learning strategies might be implemented in a classroom setting; b) to explore the challenges which might occur during the process of self-assessment; c) to present solutions to the problems that occur during self-assessment; and d) to shed light on future research by creating a new perspective on AfL procedures in translation courses.

Based on the principles mentioned above, and given that the aim of the present study was to implement process-based translation teaching, in which learners would take over the responsibility for their own improvement, the following strategies of AfL were imbued into the translation courses.

Seven strategies of Assessment for Learning (Chappuis, 2015, p. 11-14).

Strategy 1: Provide a clear and understandable vision of the learning target.

Strategy 2: Use examples and models of strong and weak work.

Strategy 3: Offer regular descriptive feedback during the learning.

Strategy 4: Teach students to self-assess and set goals for next steps.

Strategy 5: Use evidence of student learning needs to determine next steps in teaching.

Strategy 6: Design focused instruction, followed by practice with feedback.

Strategy 7: Provide opportunities for students to track, reflect on, and share their learning progress.

In conclusion, the present study aims to contribute to the growing interest in the use of AfL process in translation courses and to create a learner-centered assessment process. To achieve this goal, the design of the study is based on the seven strategies of AfL, because: “Self-assessments require students to rate their own language, whether through performance self-assessments, comprehension self-assessments, or observation self-assessments” (Brown & Hudson, 1998, p. 665). On this basis, learners can be encouraged to be active participants in the classroom setting; and they can take part in the process of making decisions and in identifying their own strengths and weaknesses during the assessment process. In taking this approach, the researcher aimed to achieve success at both the micro and macro levels of translation teaching. This is because, in translation pedagogy, translation trainers need to focus on both the micro and macro levels of translation in order to enhance the quality of learners’ translation (Karimzadeh, Samani, Vaseghi, & Kalajahi, 2015).

RESEARCH QUESTIONS

In line with the purpose of the study, the following research questions were generated for the research to be carried out in translation courses.

1. What are the students’ attitudes towards the use of the seven strategies of Assessment for Learning in translation courses?
2. What are the contributions of involvement in self-assessment in the students’ translation process?
3. What are the challenges that students experience during the Assessment for Learning procedure?

2 | METHOD

The research design of the present study took the form of a case study, in which the data were collected quantitatively and qualitatively (Bhattacharjee, 2012; Creswell, 2009), and in which the process of the study was carried out from a constructivist point of view. In terms of translation pedagogy, the research was based on a framework of process-oriented research, focusing on the training of new translators and on their improvement in the translation training process (Palumbo, 2009).

PROCEDURE

This study involved the fall and spring semesters of the 2018-2019 academic year, and was carried out with the first and second grades of a Department of Translation and Interpretation, in which English is taught as a foreign language and in which the translation lesson from English to Turkish is given in both grades. The process of the study was conducted in two consecutive phases involving the fall and spring semesters of the 2018-2019 academic year: a pilot study and, thereafter, the main study.

PARTICIPANTS

The participants in the study were selected from the Department of Translation and Interpretation, Kars Kafkas University. While the second-grade students took part in the pilot study, the first grade students participated in the main study (n:38). The rationale for selecting the research group from the first-grade students was that: a) the research group had all completed the one year preparatory class in English at the same time; b) they were taking a translation course for the first time, so all of them were novices in the translation course. In addition, when the background information of the participants taking part in the main study was taken into consideration, they had all passed the university entrance exam on the same basis in the 2017-2018 academic year. On this basis, the first-grade students were selected for the main study.

DATA COLLECTION

Translation Course Evaluation Questionnaire

In the process of pilot study, the researcher developed an evaluation questionnaire which was used to elicit students' opinions about the process, in which self-assessment strategies were used intensively. This Likert type questionnaire consisted of short and clear statements expressed in student-friendly language which were used to elicit degrees of agreement, ranging through Strongly Disagree, Disagree, No Idea, Agree, to Strongly Agree, scored on a 1 to 5 point scale. While the positive statements were given scores ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), the negative statements were given the scores from 5 (Strongly Disagree) to 1 (Strongly Agree). The design of the questionnaire was organized following Oppenheim (1992).

To provide reliability, the questionnaire was administered in the Department of Translation and Interpretation (Grades 3 and 4); and the Department of English Language and Literature (Grades 1, 2, 3, 4), which caused no limitation, as the learners in these departments had a background in translation lessons from English to Turkish. Subsequently, the questionnaire was administered in the phase of the pilot study. The data gathered from the two departments were computed and factor analysis was performed to determine the internal reliability and consistency of the items in the questionnaire. Here, two analyses were conducted: the value of Cronbach's alpha was calculated to assess internal consistency, and factor analysis was performed to determine the variables. This approach was taken because reliability in questionnaire design may be proved by the Cronbach's alpha value and the factor analysis of items (Kember & Leung, 2008). In factor analysis, the Cronbach's alpha value is evaluated, and for internal reliability it must lie between the values 0 and 1. If the value of each item is above .40 and the total value is over .70, this shows that a questionnaire is reliable (Hinkin, 1998).

In the light of the research context and the literature review mentioned above, the original form of the questionnaire was designed with 35 items. During the pilot study, 361 students voluntarily completed the initial form of the 35-item questionnaire. After piloting the questionnaire, the factor analysis showed that 11 of 35 items were unequally loaded into different factors and remained below the value of .50. Hence, these items were removed from the questionnaire, as a value above .50 was accepted as valid for the factor analysis in the study; and so, the questionnaire was reduced to 24 items. Then, computation of the value of Cronbach's alpha and factor analysis were performed again in respect of these 24 items. In this analysis, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was found to be .865, indicating that the questionnaire could be analysed in terms of the factors. After this analysis, the Cronbach's alpha value for the questionnaire was found to be .825; and the 24 items were deemed to be acceptable, as they were equally loaded into seven factors.

Rubrics

Another tool used in the study was an analytical translation rubric which was developed according to five key points: word, above-word, grammatical, textual and pragmatic levels (Baker, 1992). In designing the rubric to be

used in the translation courses, a top-down approach was used (Brookhart, 2013). In addition, the items in the rubric were marked according to a five-point scale ranging through “poor, insufficient, sufficient, good, and excellent” (Hurtado Albir, 2015, p. 272).

The literature reveals that two approaches are commonly used in determining the reliability of an analytical rubric. Inter-rater reliability focuses on the judgmental variations between raters, and intra-rater reliability is based on the consistency of only one rater (Jonsson & Svingby, 2007; Moskal & Leydens, 2000). Thus, a crucial aspect of reliability is rater consistency. In this context, the literature shows that one of the methods used to compute consistency and reliability is the Cronbach’s alpha coefficient, which may be used to determine the level of consistency and reliability among raters, in respect of their common judgment, or to estimate a rater’s own consistency (Stemler, 2004; Jonsson & Svingby, 2007). In the light of this, the Cronbach’s alpha coefficient was computed for inter-and intra-rater reliability; and so, the consistency levels were determined for the present study. A value of alpha at or above .70 was regarded as an acceptable level in terms of reliability (Saxton, Belanger, & Becker, 2012). To establish the level of reliability of the analytical rubric, the researcher used a test-retest reliability technique, in which a test is administered to the same group at intervals (Drost, 2011).

In the light of the information given above, four raters, who were randomly selected, voluntarily participated in the process of testing the reliability of the analytical rubric in the present study. Each rater scored the same seventeen papers which the students translated from English to Turkish during the pilot study. In the first assessment, the scores given by each rater were computed in the SPSS (Statistical Package for the Social Sciences 20), and the reliability of the rubric was examined through the use of the Cronbach’s alpha value, which was found to be .894 for inter-rater reliability. The intraclass correlation coefficient was .862 and significant at .000 ($p < .05$), which indicated that the agreement among the raters met the acceptable level of reliability. In the second assessment, all four raters scored the same papers again, a month later; and the Cronbach’s alpha value was computed as .885. The intraclass correlation coefficient was .792 and significant at .000 ($p < .05$). Therefore, the Cronbach’s alpha values for all dimensions of the analytical rubric indicated an acceptable level of consistency and reliability among the raters.

Another issue in the reliability of a rubric is consensus among the raters. In this context, the literature shows that one of the methods that may be used to measure consensus between raters is Cohen’s Kappa value. Cohen’s Kappa value is used to determine the level of consensus between two raters (Stemler, 2004). The value in Kappa is interpreted as “poor (<0), Slight (0-0.2), Fair (0.2-0.4), Moderate (0.4-0.6), Substantial (0.6-0.8), and Almost perfect (0.8-1)” (Munoz & Bangdiwala, 1997, p. 106). In this sense, the agreement between rater 1 and rater 4 met the acceptable level of consensus for the translation rubric used in this study. The following table shows the level of consensus between the two raters.

Table 1. *Kappa Value* between Rater 1 and Rater 4

	<i>Kappa Statistics</i>	<i>Sig.</i>	<i>Strength of agreement</i>
Word Level	1.000	.000	Almost perfect
Above-word Level	.773	.000	Substantial
Grammatical Level	.773	.000	Substantial
Textual Level	.827	.000	Almost perfect
Pragmatic Level	1.000	.000	Almost perfect

The final step in establishing the reliability of the rubric was to examine intra-rater reliability. Therefore, each rater’s own consistency in assessment was computed. Here, the raters who had already scored the translated papers re-scored the same papers, after a month. The scores given by each rater were computed again through the SPSS, and the Cronbach’s alpha values between the first and second assessments of the raters were calculated to determine each rater’s own consistency. In this analysis, the Cronbach’s alpha value between the first and second assessments was .867 and significant at .000 ($p < .05$) for rater 1; it was .859 and significant at .000 ($p < .05$) for rater 2; it was .821 and significant at .000 ($p < .05$) for rater 3, and it was .840 and significant at .000 ($p < .05$) for rater 4.

In addition to the translation rubric, a holistic self-assessment rubric was developed for learners to evaluate their own performance during the process of implementing AfL strategies. Hence, the self-assessment rubric was

constructed in relation to the strategies of AfL, and a student self-assessment form was also used to identify strengths and weaknesses.

Interviews

In the present study, two interview protocols were used: a) a semi-structured interview for course evaluation, which was administered before and after the study to explore the students' positive or negative attitudinal changes towards the translation courses; and b) a semi-structured face-to-face interview (focus-group interviews).

Observation

There are two kinds of observer's role in the research context, non-participant or complete participant (Creswell, 2009). In this study, the role of the researcher was that of complete participant due to his active participation. During the observation, the role of the researcher as an instructor of the translation course facilitated the control of the whole study. In addition, the researcher's role as a teacher could be considered to be an effective way of decreasing the impact of the *Hawthorne Effect*, which is a psychological term concerning the effect of awareness of being observed on the behavior of some participants during a research process (Cook, 1962). The best technique for observing the performance of participants in their tasks is the use of field notes, which is a method based on "keeping systematic, complete, accurate, and detailed field notes" (Bogdan, 1973, p. 305). To this end, the observation was based on the field note technique.

Student Diaries

The use of a diary as a research tool is an essential component of a qualitative study, as it enables: a) students to have an objective point of view about daily activities, b) students to self-assess the learning progress, c) teachers to observe the learning progress from students' points of view (Alterman, 1965). In this respect, the researcher used student diaries as a research tool in the present study.

Text Types

All the texts to be used in the main study were translated, firstly by four instructors who voluntarily agreed to translate them, and then by the students taking part in the pilot study. In this process, the researcher analysed the content of the texts in terms of possible shortcomings, relevancy, and whether or not they would meet the micro and macro learning targets in the study. Here, the pilot study enabled the researcher to form the weak and strong samples of the texts which would be used in the second strategy during the main study. While the strong samples of the texts were formed according to the instructors' translations, the weak samples of the texts were formed according to the mistakes that the students commonly made in their own translations. At the end of the pilot study; six text types, which had been selected before the pilot study, were reduced to four text types, in consideration of the students' performance and interests. It was established that these text types met the requirements of the main study. The texts which were selected for the main study were: an article concerning news, a user's manual, a report related to economics, and a sample of advertising terms and conditions.

RESEARCH ETHICS

We declare that "A Formative Approach to Translator Training" was written in accordance with academic rules and ethical values throughout the whole process from the project phase to the end; and that the studies, from which we benefitted by citing, consist of the ones shown in the references.

3 | RESULTS AND FINDINGS

THE STUDENTS' ATTITUDES TOWARDS THE TRANSLATION COURSES

The first step of the study involved the learners' attitudinal changes in the teaching and learning process. Here, the process of data collection was carried out in two phases. In one phase, the qualitative data were gathered; in the other, the quantitative data were collected.

THE ANALYSES OF THE QUANTITATIVE DATA

The following Tables, involving descriptive statistical analyses, show the students' attitudinal changes in terms of the present teaching method, self- and peer-assessment, and negative and positive attitudes towards translation courses.

Table 2. Learner's Attitude towards the Teacher's Teaching Method and Its Effect on His/her own Improvement

Items		Pre-study						Post-study					
		SD	D	NI	A	SA	Mean	SD	D	NI	A	SA	Mean
Item 1. In translation courses, the teacher's way of giving instruction is clear.	f	6	13	2	15	2	2.84	—	5	3	25	5	3.78
	%	15.8	34.2	5.3	39.5	5.3			13.2	7.9	65.8	13.2	
Item 2. The teacher organizes the learning process well.	f	2	15	5	14	2	2.97	—	3	8	20	7	3.81
	%	5.3	39.5	13.2	36.8	5.3			7.9	21.1	52.6	18.4	
Item 3. I find the teacher's teaching method useful for my improvement in translation.	f	3	12	3	13	7	3.23	3	1	5	19	10	3.84
	%	7.9	31.6	7.9	34.2	18.4		7.9	2.6	13.2	50	26.3	
Item 4. I find the teacher's feedback motivating for my improvement in translation.	f	—	16	7	13	2	3.02	—	4	11	12	11	3.78
	%		42.1	18.4	34.2	5.3			10.5	28.9	31.6	28.9	
Item 5. The teacher encourages me to be an active learner.	f	4	17	1	11	5	2.89	—	7	12	13	6	3.47
	%	10.5	44.7	2.6	28.9	13.2			18.4	31.6	34.2	15.8	
Item 6. I find the communication between the teacher and the students positive.	f	1	1	4	21	11	4.05	—	1	8	19	10	4.00
	%	2.6	2.6	10.5	55.3	28.9			2.6	21.1	50	26.3	
Item 7. The content of the translation courses is adequate for me to identify my strengths and weaknesses.	f	9	12	6	8	3	2.57	3	5	9	15	6	3.42
	%	23.7	31.6	15.8	21.1	7.9		7.9	13.2	23.7	39.5	15.8	
Item 8. I think that I have made an improvement in translation.	f	2	8	7	17	4	3.34	1	2	7	19	9	3.86
	%	6.3	21.1	18.4	44.7	10.5		2.6	5.3	18.4	50	23.7	

Table 2 gives the quantitative analyses of the learners' attitudes towards the teaching method and its effect on their own improvement in the translation courses. In Item 1, while nearly half of the students claimed before the study that the teacher's method of giving instruction was clear, after the study a high percentage of them claimed that it was clear. The results for Item 2 revealed that fewer than half of the students agreed that the teacher's organization of the learning process was good. However, the results of the post-study showed that this percentage had increased significantly and that a high percentage of them claimed that it was good enough. When the results for Item 3 were considered, while the results of the pre-study showed that, according to half of the students, the teaching method was useful for their improvement, the post-study revealed that this percentage had increased, with a high percentage of students regarding the teaching method as useful for their improvement in translation. In a similar way, whereas the results for Item 4 in the pre-study indicated that a quarter of the students considered the teacher's way of giving feedback to be motivating, those of the post-study revealed that more than half of them claimed that it was motivating. Another factor affecting the learners' attitudes in the translation courses is how the teacher encourages them to be an active learner in a classroom setting. Here, Item 5 showed that fewer than half of the students claimed before the study that the teacher encouraged them to be active learners. However, the results of the post-study showed that this percentage was higher than previously and that more than half of the students claimed that the teacher encouraged them to be active learners. Similarly, Item 6 supports the claim in Item 5. That is to say, the communication between the teacher and the students mentioned in Item 6 was found to be positive in both pre-and post-studies. In this phase, the last key factor is the students' attitudes towards their own improvement in the translation courses. When Item 7 is considered, originally a small number of the students pointed out that the content of the translation courses was adequate for them to identify their weaknesses and strengths. However, after the study, a high percentage of them considered the content of the translation courses adequate for them to identify their own weak and strong sides. Likewise, Item 8 is related to Item 7 and shows what the students thought about their own improvement. In this respect, the pre-study showed that nearly half of the students agreed that they made an improvement in the translation courses, but in the post-study the proportion was higher than in the pre-study.

Table 3. Learner's Attitude towards Self-assessment

Items		Pre-study						Post-study					
		SD	D	NI	A	SA	Mean	SD	D	NI	A	SA	Mean
Item 9. I like taking an active role in the translation courses.	f	3	9	7	12	7	3.28	2	6	10	12	8	3.47
	%	7.9	23.7	18.4	31.6	18.4		5.3	15.8	26.3	31.6	21.1	
Item 10. I can explore the errors in my translation.	f	4	14	1	14	5	3.05	—	4	7	25	2	3.65
	%	10.5	36.8	2.6	36.8	13.2			10.5	18.4	65.8	5.3	
Item 11. I can determine the level of my performance in translation.	f	4	13	8	10	3	2.86	2	3	11	16	6	3.55
	%	10.5	34.2	21.1	26.3	7.9		5.3	7.9	28.9	42.1	15.8	

Table 3 gives the quantitative results for the students' attitudes towards self-assessment before and after the study. Item 9 asks whether the learners like taking an active role in the activities performed in the translation courses. Here, while the pre-study indicated that nearly half of the students claimed to like taking an active role in the translation courses, the post-study revealed a slight increase in this percentage over that of the pre-study. In relation to this, the students were supposed to explore their errors and to determine the levels of their performance in translation courses. Here, Items 10 and 11 show their attitudes towards these two key components. The pre-study indicated that fewer than half of the students were able to explore the errors in their own translations. In the post-study, a high percentage of them claimed that they could explore the errors. To this end, while nearly one quarter of the students claimed in the pre-study that they could determine their own performance, more than half of them claimed in the post-study that they could determine the level of their own performance.

Table 4. Learner's Negative Attitude towards Translation Courses

Items		Pre-study						Post-study					
		SD	D	NI	A	SA	Mean	SD	D	NI	A	SA	Mean
Item 12. The translation courses make me feel under pressure.	f	4	3	4	12	15	2.18	16	14	2	4	2	4.00
	%	10.5	7.9	10.5	31.6	39.5		42.1	36.8	5.3	10.5	5.3	
Item 13. At the beginning of the translation courses, I am already thinking about failure.	f	3	7	3	11	14	2.31	15	9	10	3	1	3.89
	%	7.9	18.4	7.9	28.9	36.8		39.5	23.7	26.3	7.9	2.6	
Item 14. When I am asked to check my translation, I hesitate for fear of finding my errors.	f	1	9	5	12	11	2.39	16	12	5	4	1	4.00
	%	2.6	23.7	13.2	31.6	28.9		42.1	31.6	13.2	10.5	2.6	
Item 15. I do not like joining in the activities in the translation courses.	f	—	6	8	17	7	2.34	19	13	3	2	1	4.23
	%		15.8	21.1	44.7	18.4		50	34.2	7.9	5.3	2.6	

In this phase, the students' negative attitudes towards the translation courses were taken into the consideration; and here, Table 4 gives the quantitative results. The results of Item 12 indicate that, before the study, a high percentage of the students felt under pressure in the translation courses. This percentage decreased to a low level after the study, when most of the students stated that they did not feel under pressure. For Item 13, the results of the pre-study revealed that, while most of the students accepted failure at the beginning of the translation courses, the post-study showed that virtually none of the students now accepted failure. Item 14 examines whether the students hesitate in finding their errors in the translation courses. Although the pre-study showed that a high percentage of the students hesitated to find their errors when they were asked to check their own translations, in the post-study this percentage had diminished markedly. The results of the factors mentioned above reveal changes in the students' eagerness to join in the translation activities. In other words, whereas, originally, a high percentage of the students stated that they did not want to join in the activities used in the translation courses, the post-study revealed that most of them had become eager to participate.

Table 5. Learner's Positive Attitude towards His/her own Improvement in Vocabulary and Grammar

Items		Pre-study						Post-study					
		SD	D	NI	A	SA	Mean	SD	D	NI	A	SA	Mean
Item 16. During translation, when I find my own mistake in a sentence and correct it, I feel more eager to translate the next sentence(s).	f	2	5	6	10	15	3.81	2	1	4	16	15	4.07
	%	5.3	13.2	15.8	26.3	39.5		5.3	2.6	10.5	42.1	39.5	
Item 17. I have recognized that my grammar has improved in the translation courses.	f	7	17	4	7	3	2.52	4	5	7	17	5	3.36
	%	18.4	44.7	10.5	18.4	7.9		10.5	13.2	18.4	44.7	13.2	

Item 18. Thanks to translation, I have made an improvement in vocabulary.	f	3	8	1	16	10	3.57	—	4	3	20	11	4.00
	%	7.9	21.1	2.6	42.1	26.3			10.5	7.9	52.6	28.9	

This phase of the questionnaire is related to the students' positive attitudes towards their improvements in vocabulary and grammar. Item 16 indicates that more than half of the students claimed to feel eager when they found and corrected their own mistakes in the pre-study. However, the post-study showed that this percentage had increased to a higher level, and that a higher percentage of them claimed to feel eager to translate when they corrected their own mistakes. In this sense, their eagerness to translate had a positive effect upon improving their vocabulary and grammar. In this respect, the results for Items 17 and 18 show the upward swing in the students' attitude towards their improvement in vocabulary and grammar.

Table 6. Learner's Negative Attitude towards Peer-assessment

Items	SD	Pre-study					Mean	SD	Post-study					Mean
		D	NI	A	SA	D			NI	A	SA			
Item 19. I am distracted when my friends correct my mistakes.	f	5	5	7	14	7	2.65	12	16	6	1	3	3.86	
	%	13.2	13.2	18.4	36.8	18.4		31.6	42.1	15.8	2.6	7.9		
Item 20. I do not want my friends to correct my mistake(s) in the translation courses.	f	2	8	3	16	9	2.42	17	11	4	3	3	3.94	
	%	5.3	21.1	7.9	42.1	23.7		44.7	28.9	10.5	7.9	7.9		

Table 6 deals with the students' negative attitudes towards peer-assessment. Here, Items 19 and 20 show that they experienced positive attitudinal changes towards peer-assessment. In other words, whereas a high percentage of the students originally claimed to be distracted when they were corrected by their peers, and so reluctant to participate in activities involving peer-assessment, in contrast, the post-study revealed that they had gained a positive attitude towards peer-assessment. Likewise, the mean scores of these two items support the finding that the students showed positive attitudinal changes over time.

Table 7. Learner's Positive Attitude towards Peer-assessment

Items	SD	Pre-study					Mean	SD	Post-study					Mean
		D	NI	A	SA	D			NI	A	SA			
Item 21. Sometimes, I need my friend's help while translating a text.	f	3	6	1	19	9	3.65	5	4	1	19	9	3.60	
	%	7.9	15.8	2.6	50	23.7		13.2	10.5	2.6	50	23.7		
Item 22. I enjoy working in a group while translating a text.	f	10	7	13	7	1	2.52	9	6	11	10	2	2.73	
	%	26.3	18.4	34.2	18.4	2.6		23.7	15.8	28.9	26.3	5.3		

In contrast to Table 6, Table 7 gives the students' positive attitudes towards peer-assessment. However, the results of the tables support each other in terms of positive attitudinal changes. According to the results for Items 21 and 22, it may be concluded that there was an increase in positive attitude in the process from the pre-study to the post-study.

Table 8. Learner's General Negative Attitude towards Translation Courses

Items	SD	Pre-study					Mean	SD	Post-study					Mean
		D	NI	A	SA	D			NI	A	SA			
Item 23. I do not think that I have made any progress in the translation courses.	f	3	6	4	20	5	2.52	14	16	5	2	1	4.05	
	%	7.9	15.8	10.5	52.6	13.2		36.8	42.1	13.2	5.3	2.6		
Item 24. I do not find the content of translation courses beneficial for foreign language learning.	f	3	10	3	10	12	2.52	18	16	1	2	1	4.26	
	%	7.9	26.3	7.9	26.3	31.6		47.4	42.1	2.6	5.3	2.6		

Table 8 gives the students' general negative attitudes towards their own translation courses. According to Item 23, while in the pre-study most of the students claimed that they did not make any progress in their own translation courses, the post-study showed that nearly all of them had made progress. Similar results are present in Item 24. While more than half of the students originally claimed that they did not find the content of the translation courses beneficial for their foreign language learning, the results of the post-study indicated that nearly all of them found it beneficial. The mean scores reveal that the students' negative attitudes had turned positive.

Table 9. Results of Paired Sample *t*-test

	Mean	N	Std. Deviation	95% Confidence Interval of the Difference Lower	Upper	t	df	Sig. (2-tailed)
Pre-study	2.9013	38	.74326	-1.12369	-.63508	-7.293	37	.000
Post-study	3.7807	38						

To confirm the descriptive results, a paired sample *t*-test, used for the comparison of two paired sample means at intervals (McCrum-Gardner, 2008), was performed to measure the students' attitudinal changes. In this respect, Table 9 gives the results of the *t*-test, indicating that it is significant at *p* value ($p < .05$). That is to say, the students in the study showed an attitudinal change towards translation courses. The mean difference between the pre- and post-studies indicates that this attitudinal change is positive as it shows an upward trend.

ANALYSES OF THE QUALITATIVE DATA

The qualitative data related to the learners' attitudinal changes towards translation courses were handled in terms of teaching method, self-assessment, peer-assessment, and the teacher's role in the teaching and learning process. The data were gathered with pre- and post-interview protocols in which 25 volunteers from among 38 students participated.

THE STUDENTS' ATTITUDES TOWARDS THE TEACHING METHOD AND THE CONTENT OF THE TRANSLATION COURSES

Comparison of the qualitative data from the pre-and post-interviews, in which the participants in the study were observed in terms of attitudinal changes, revealed that, while few students claimed that the teaching method used in the translation courses before the study was effective; after the study, many of them claimed that the teaching method used therein was effective. Likewise, more than half of the students who completed the pre-interview expressed the view that the teaching method was inadequate and time-consuming; but virtually none of those who took part in the post-interview expressed the view that the teaching method was inadequate and time-consuming. Again with reference to the teaching method used in the translation course, the practices used beforehand were claimed by a number of students to be inadequate for them to improve in translation courses. However, the post-interview revealed that this view had changed, as few students claimed that the practices used in the translation courses imbued with a formative approach had been inadequate for them to improve. The following extracts are given to show the difference in learners' attitudes before and after the study.

Pre-study: "The translation courses are not effective as they are taught with a traditional method." (Student 5)

Post-study: "I think that the present method used in the translation course was more fruitful for me." (Student 5)

Pre-study: "I do not think that the method used in the translation course is effective." (Student 6)

Post-study: "I think that the method used in the translation course was effective, because it enabled everyone to take over an active role." (Student 6)

Pre-study: "The teaching method in translation course is inadequate and time-consuming, so a different method might be better." (Student 24)

Post-study: "The teaching method in translation course was effective and well-organized because we made translations to improve our skills in translation." (Student 24)

Similar findings were observed for the content of the translation courses. Although, before the study, fewer than half of the students expressed the view that the content of the translation courses made them active learners, the post-interview showed that this rate had increased to a high percentage, with most of the participants expressing the view that the content of the translation courses in the study was effective in making them active learners. The following extracts show the changes in the students' attitudes.

Pre-study: "I cannot be an active student as I fear to make an incorrect translation." (Student 21)

Post-study: "I think I could manage to be a little more active student in the translation course." (Student 21)

When the text types used before in the translation courses were taken into consideration, most of the students claimed that they were ineffective; but, especially after the study, this rate changed significantly and nearly all of them claimed that the informative text types used in the study were more effective than the previous ones in terms of their improvement in the translation course. The following extracts support this claim.

Pre-study: “I think that the texts which were used in the translation courses were not useful.” (Student 5)

Post-study: “The texts which were used in the translation courses were effective, because I have learnt various new terms by making translations of different kinds of texts.” (Student 5)

In terms of the learners’ attitude towards assessment, while most of the students originally preferred teacher assessment of the accuracy of their translations, the results of the post-interview showed that this rate had decreased, with around half of the students preferring teacher assessment. That is to say, the rate of preference for self-assessment and peer-assessment was observed to be on the increase, indicating that learners had acquired self-assessment and peer-assessment skills by the end of the study. This is supported by the fact that, while more than half of the students expressed the view that the strategies used in the translation courses before the study were useless in terms of improving their assessment skills, the post-interview revealed that the strategies used in the study were regarded by the students as useful in improving their assessment skills, because virtually none of them, with the exception of only a few students, claimed that the strategies used in the study were useless. The following extracts illustrate the participants’ attitudinal changes in this sense.

Pre-study: “I prefer the teacher’s assessment to check the accuracy in my translation, because the teacher knows better.” (Student 2)

Post-study: “I think that my own assessment is also important in checking the accuracy in my own translation.” (Student 2)

Pre-study: “I think that the strategies used in the translation courses might be developed by considering indifferent students and in-class participations.” (Student 6)

Post-study: “The strategies used in the translation course were effective and beneficial along with the given feedbacks.” (Student 6)

THE STUDENTS’ ATTITUDES TOWARDS SELF-ASSESSMENT AND THEIR OWN ROLES IN TRANSLATION COURSES

In this phase, the learners’ attitudinal changes in terms of self-assessment were observed. While the pre-interview revealed that more than half of the students did not know what self-assessment was, the post-interview revealed that nearly all of them knew what it was. Although fewer than half of the students claimed, during the pre-interview, that they were active learners in the translation course, in the post-interview this rate had increased, with half of them claiming that they were active learners. The following extracts show this change.

Pre-study: “I am passive in my translation course. This is because I am a timid student.” (Student 15)

Post-study: “I am an active student in my translation course, because I am getting more and more interested as I join.” (Student 15)

Pre-study: “I am passive in my translation course as I am shy.” (Student 24)

Post-study: “The in-class participation and being active in making translation made me an active student in my translation course.” (Student 24)

When the learners’ proficiency levels are considered in translation courses, they were required to determine their own levels at the end of the teaching and learning process. By doing so, they can identify their strengths and weaknesses in translation courses. The pre-interview showed that nearly half of the students regarded their proficiency levels as poor and insufficient, this rate decreased to a low rate during the post-interview. It was observed that while learners were incapable of determining their proficiency levels in translation courses at the beginning of the study; they had made sufficient improvement to be able to determine their own levels at the end of the study, indicating that they could manage to identify their strengths and weakness. The following extracts illustrate this view well.

Pre-study: “I believe that students cannot evaluate their own proficiency levels, but I can say that my proficiency level in the translation courses was good when I consider my exam scores.” (Student 6)

Post-study: “Thanks to the texts that I translated during the translation courses, I think that I have made an improvement in the translation courses.” (Student 6)

Pre-study: “My proficiency level is insufficient, because I must be better in finding my own mistakes in translation.” (Student 10)

Post-study: “My proficiency level is good, because I could manage to find my own mistakes in translation.” (Student 10)

Pre-study: “My proficiency level is good in the translation course, because I believe that I can make a correct translation.” (Student 19)

Post-study: “My proficiency level is excellent in the translation course. The reason why I think so is that I began to trust myself in translation.” (Student 19)

Pre-study: “I think that I am insufficient in the translation course. (Student 21)

Post-study: I think that I was sufficient in the translation course, because I could observe that I gradually improved.” (Student 21)

As regards the challenges faced by most of the students, the pre-interview showed that these challenges were related to the texts and practices, the teaching method, and the way of assessment. However, the post-interview revealed changes in the students’ attitudes to the challenges mentioned above. In the following extracts, this is neatly observed.

Pre-study: “I think that the teaching method might be designed with various techniques which will provide more information and easiness.” (Student 19)

Post-study: “The teaching method was effective. Sometimes, I could face some difficulties related to the texts and practices in the translation course, but it was not important as I eagerly translated them.” (Student 19)

THE STUDENTS’ ATTITUDES TOWARDS PEER-ASSESSMENT

In this phase, the participants’ attitudinal changes towards peer-assessment were observed. From this perspective, while fewer than half of the students knew what peer-assessment was before the study, nearly all of them stated after the study that they knew what peer assessment was and how it was performed in a classroom setting. In this respect, though half of the students stated before the study that they did not want their peers to correct their own mistakes in translation, most of them stated after the study that peer-assessment was essential for the assessment of their own translations. The following extracts show the attitudinal changes.

Pre-study: “I do not want my peer to correct my mistakes, because I feel irritated when another one sees my mistake.” (Student 15)

Post-study: “I want my peer to correct my mistakes, because we can find our own mistakes together.” (Student 15)

Pre-study: “I do not want my peers to correct my mistakes, because I myself want to determine my own mistakes.” (Student 21)

Post-study: “I want my peers to correct my mistakes, because I can learn a new technique from them.” (Student 21)

Pre-study: “I do not want my peer to correct my mistakes, because s/he knows the same things that I know.” (Student 26)

Post-study: “I want my peer to correct my mistakes, because s/he can find the mistakes that I cannot.” (Student 26)

To support the view mentioned above, the frequency with which the students needed peer-assessment was observed. In this sense, although around a quarter of the students stated before the study that they needed their peers for the correction of their mistakes, in the post-interview more than half of them stressed the need for peer-assessment. When the students’ feelings are taken into consideration, while less than half of them stated before

the study that peer-assessment was disappointing, in the post-interview most of them regarded peer-assessment as motivating. As regards group-work, during pre-interview, a small number of the students accepted group-work as effective. However, after the study, more than half of them stated that group-work was effective. The attitudinal changes can easily be observed in the following extracts.

Pre-study: “Group-work is confusing as different voices emerge in a group.” (Student 5)

Post-study: “Group-work is effective because it provides information sharing.” (Student 5)

Pre-study: “Group-work is ineffective for me as different voices emerge.” (Student 21)

Post-study: “Group-work is effective as it provides different dimensions to the translation.” (Student 21)

Pre-study: “Group-work is ineffective because I cannot make a self-improvement in a group.” (Student 23)

Post-study: “Group-work is effective because we can learn better together.” (Student 23)

When the students’ views of peer-assessment were considered, it was observed that peer-assessment had provided a new perspective for the analysis of mistakes and for sharing information among the learners. The observation in this phase indicated that the participants’ attitudes towards peer-assessment had changed significantly, in a positive way. This was because most of the participants had agreed that peer-assessment was a way of sharing information and gaining awareness of responsibility in a group.

THE STUDENTS’ ATTITUDES TOWARDS THE TEACHER’S ROLE IN THE TEACHING AND LEARNING PROCESS

In this phase of the interviews, the teacher’s role was taken into consideration in terms of the process of pre-study and post-study, as it was believed that this could play an effective role in rendering the teaching process fruitful. With regard to this, fewer than half of the students stated that the teacher’s teaching method was effective in enabling them to improve before the study; whereas, it was observed that the teaching process during the study was enriched by the use of the formative approach. That is, most of the students stated that the teacher’s position in the teaching process was quite effective in facilitating their improvement, in contrast to the teaching process before the study. In this respect, the pre-interview showed that half of the students claimed that the teaching process was under the control of the teacher; but in the post-interview, more than half of them stated that the position of the teacher in the classroom setting was quite encouraging for them in becoming active learners. To create a student-centered learning process, the most significant step is to provide the information about the learning targets before the lesson. With reference to the learning targets given by the teacher, in the pre-interview more than half of the students stated that the learning targets were presented before the translation courses. However, this rate increased after the study. In contrast to the previous interview, most of the students expressed the view that the learning targets were more clearly stated before the translation course, that the instructions given by the teacher were understandable enough for them, and that the learning targets were related to the content of the lesson.

Amongst the steps taken to create a better learning atmosphere in a classroom setting, the method of giving feedback in the translation courses should be taken into consideration. In this phase, a small number of the students in the pre-interview expressed the view that feedback must be given while translating a text; but after the study, this rate increased considerably because almost all of them had started to share this opinion. That is to say, most of the students taking part in the interviews stated that feedback given after translation was not effective in their improvement, whereas feedback given while translating a text was much more effective and permanent for them. The following extracts support this point of view.

Pre-study: “I think the feedback given after the translation is more effective.” (Student 5)

Post-study: “I think the feedback given while translating a text was more effective, because if we can learn better while translating a text, and so we never forget.” (Student 5)

Pre-study: “The feedback should be given during translation.” (Student 10)

Post-study: “The feedback given during translation was quite motivating for me.” (Student 10)

Pre-study: “I think the feedback given after translation is more effective in terms of time.” (Student 18)

Post-study: “The feedback given while translating was better for learning.” (Student 18)

The last but most important factor, which is closely interrelated with the teacher's position and teaching method mentioned above, is the teacher's own role in making the learners active throughout the whole of the teaching and learning process. Whereas in the pre-interview, almost half of the students stated that the teacher encouraged them to be active learners in the learning process, in the post-interview this rate had increased, with nearly all of them stating that they had adopted an active role in the learning process. The following extracts confirm this observation.

Pre-study: "The translation courses used to be carried out with only active students." (Student 2)

Post-study: "The teacher gave enough feedback for each translation activity to enable us engage in the process." (Student 2)

Pre-study: "The content of the translation course is a bit inadequate for me to be an active learner." (Student 10)

Post-study: "The translation course was designed well enough to make me an active learner." (Student 10)

In conclusion, when the data gathered qualitatively and quantitatively revealed that the students' negative attitudes had been transformed into positive ones. In other words, the process between pre-study and post-study showed a tendency to promote a positive attitude.

THE IMPLEMENTATION OF THE SEVEN STRATEGIES OF AFL IN A TRANSLATION COURSE

Where am I going?

Strategy 1: Provide a clear and understandable vision of the learning target

This strategy involves clear learning targets, which are given in student-friendly language. The main purpose, here, is to enable the learners to understand the learning targets before the lesson and to show them the destination at the end of the process. To provide a clear learning target, the types of learning target should be identified in terms of *knowledge*, *reasoning*, *skill*, and *product-levels* (Chappuis, 2015).

Based on the first strategy mentioned above, the learning targets were given in student-friendly language at the beginning of the lesson. While giving the learning target, the phrase '*we are learning*' was preferred to attract the students' attention and to make them feel a part of the learning process. In addition, this phase of the study was associated with *Skopos Theory*. This is because the *Skopos Theory*, which was put forth by Hans J. Vermeer and means "aim" and "purpose" in Greek, was a functionalist theory (Pym, 2010). In this respect, the theory put forth two significant terms: a) *function*, related to the source text and its recipient, b) *intention*, indicating the relationship between sender and receiver (Jabir, 2006). In this sense, the *skopos* of the target text is determined by the initiator of the translation, and the *skopos* here is limited by the target text user in terms of the user's situation and cultural background. Here, two key rules play a significant role: a) the *coherence rule*, involving the coherency of the target-text for the user's comprehension, and b) the *fidelity rule*, based on intertextual coherency. In this respect, the *skopos* of the translation and the role of translator determine the direction of the translation between source-text and target-text (Schäffner, 1998).

Given the information mentioned above, the translation process is carried out by the translator by considering the *skopos* of the target-text, and the initiator's needs and expectations. That is to say, the translator should organize the translation process before starting the translation so as to meet the initiator's needs. To this end, the students in the present study were encouraged to take part in an activity to create a scenario, after the learning targets were given clearly. The activity, the aim of which was to form a background related to the texts to be translated and to raise the students' awareness towards the translation process, was undertaken in the first strategy. Here, the students preferred group-work or pair-work for identifying the *Skopos* of the text to be translated. Here, a scenario was created in terms of the title of the text, the type of the text, the initiator of the translation, the initiator's demand, the purpose of the translation, and the process of translation. This activity was performed in the classroom setting, after the learning targets were given clearly by the teacher and just before the analyses of the weak and strong translation samples.

The first step in Strategy 1 involved the presentation of clear learning targets to the students before they began the act of translation. After the learning targets had been given at the beginning of the lesson, the students were encouraged to engage in an intensive learning process, in which the learning objectives were realized respectively. These were *knowledge*, *reasoning*, *skill*, and *product-levels* (Chappuis, 2015).

In the second step, the activity mentioned above, which aimed at raising text awareness, enabled the students to consider the factors outside the text, as well as the linguistic features. Here, the students were able to create a scenario about the definition of the job before the act of translation, and so they realized that a text involved not only linguistic features, such as words, phrases and sentences, but also other factors outside the text. Consideration of these two elements guided them in the act of translation. As such, they were able to determine the direction of the translation they would make, having comprehended that the translation of a text could gain meaning through the consideration both of its content and of the elements surrounding it. That is to say, the process in this step showed the students that a good interpretation had to take account both of factors outside the text and of linguistic features of the text.

The last step of this phase was to develop a rubric for the next step. During the pilot study, the students were observed to be unable to create adequate criteria for the rubric. Hence, the researcher created the rubric used in the main study with the help of a native expert. In the main study, the students revised this rubric instead of creating a new one. In other words, the rubric was revised with the students to avoid any shortcomings which might affect its usefulness in Strategy 2, in which strong and weak samples of translation would be analyzed. In the process of revising the rubric, the students shared their ideas about the content of the rubric with the instructor. The process showed that studying a rubric prepared in advance was beneficial for the students, in relation to interpreting the criteria and expressing their thoughts about the content of the rubric in terms of assessment. This enabled the time allocated for the lesson to be used effectively and efficiently.

Strategy 2: Use examples and models of strong and weak work

This strategy was the stage involving analyses of strong and weak samples of translation from English to Turkish. The students used a translation rubric which was created according to Mona Baker's book titled *In Other Words*. The implementation of this strategy was as follows:

In the first step, two types of translation were produced, one of which contained translation of a high quality and the other translation of a low quality. Here, the same source texts were used in both the strong and the weak samples; but the target texts involved two translations, in the form of strong and weak samples. Mistakes related to the terms of equivalency were placed deliberately into the weak samples. The objective, here, was to teach these terms by exemplifying them within the texts, as seen in the following extracts. A further aim was to encourage the students to find these mistakes, and to identify which linguistic element was missing from the sentence(s) and how its omission had caused the mistake. In the light of the instructional design of the present teaching method, the anonymous strong sample of translation was given first. Later, the students were asked to analyze the text and to assess the quality of translation according to the analytic rubric developed for the present study. In this process, they gave scores ranging from one to five to determine the quality of translation as *poor*, *inadequate*, *adequate*, *good* or *perfect*. In addition, while analyzing the text for the assessment, the students identified their own strengths and weaknesses in relation to the current translation. The same procedure mentioned was administered for the analysis of the weak sample.

In conclusion, during the implementation of Strategy 2, the process of analysis of the strong and weak samples revealed the issues described below. The challenges that the students faced and the ways in which they overcame these challenges in the process are also given below.

Firstly, it was observed that some of the students had difficulties while using the rubric, particularly with the first text and partially with the second text, because they were experiencing such a teaching process for the first time. However, the process showed that they had overcome this difficulty in the other two text-types. This was because they had made significant progress in learning the terms related to equivalency, which enabled them to use the rubric accurately while analyzing the texts.

Then, the findings in this phase showed that, while most of the students could not identify the source of the mistakes in the weak samples at first, they began to determine the source of the mistakes in the following weeks. That is to say, it was determined that the students had corrected mistakes unwittingly at the beginning of the study; but, later, it was observed that they were able to analyze and assess the texts involving strong and weak samples of translation by considering the source of the mistakes in the sentences. Here, the *back-translation method* was used, when needed, to show the differences between a sentence in the ST and its translated version in the TT. This method was observed to have a significant positive effect upon students' progress in this area. The scores given to

the samples by the students in the study revealed that nearly all of them had gained assessment skills; that is to say, they succeeded in scoring the weak sample as either poor or inadequate, but the strong sample as adequate or good.

Next, observation in the classroom setting showed that the two-types of translation activity, involving strong and weak samples, was sufficient for the students to form a background before they began to produce their own translations. The findings obtained from focus-group interviews, administered to the students after completion of each session, revealed that there was a general a consensus of opinion on the efficacy of the strong and weak samples, in terms of gaining assessment skills. As can be seen in the following extracts, retrieved from the focus-group interviews, the students agreed on the statement that the strong and weak samples, taken together, were sufficient for them to make an improvement, and that a sample of moderate-level translation was not necessary. Here, it is clearly seen that their points of view related to the use of a moderate level of translation did not change in the process.

Extract 1 (retrieved from the focus-group interview about the translation of the text 1):

“There was no need for intermediate level of translation, these two types of translation examples were enough for us to create a background on the text that we translated and to distinguish the differences between a good translation and a low-level translation. Meanwhile, our translations were already a medium-level translation.” (Students 8, 10, 11, 17, 19, 26)

Extract 2 (retrieved from the focus-group interview about the translation of the text 4):

“There was no need for a moderate level of translation. The strong and weak sample of translations were adequate.” (Students 1, 2, 6, 27, 28, 32)

Finally, it was observed that strong and weak samples enabled the students to form a background related to the text type they would translate in the next step and to identify their strengths and weaknesses related to the content of the text that they analyzed and assessed.

Where am I now?

Strategy 3: Offer regular descriptive feedback during learning

In this process, effective feedback is given to help the students to determine the extent of the gap between their existing knowledge and desired performance. Here, the main aim is to help the students to identify their strengths and weaknesses in accordance with the learning targets which they are expected to achieve (Chappuis, 2015).

In the light of the information given above, the feedback was designed not to give the students direct instruction about how to correct a mistake, but to encourage them to correct it by getting to the source of the mistake. By doing so, the students would become aware of their existing knowledge in the translation. In the study, effective feedback was given during the analyses of strong and weak samples, and also on the students' own translation drafts after they had completed them. While analyzing and assessing a strong sample, the students were not given feedback about why it involved a high quality of translation when compared with the weak sample. Instead, the students were supported with oral or written feedback during the analyses of the weak samples. Here, feedback was given on sentences marked in either yellow or red. Here, *the back-translation method* was also used, when needed, because showing the difference between the two sentences proved effective in enabling some students to perceive the source of the mistake and how to correct it.

Based on in-class observation, the data gathered from the students' translation drafts, focus-group interviews, and the diaries which they kept regularly, the following key factors can be said to have come to the fore in the implementation of Strategy 3.

Firstly, the way feedback was given in the present study enabled the students to engage in the process of teaching and learning. That is to say, the feedback made the students think about the source of a mistake, take action to work on it, and ultimately learn the intended learning target through the identification of mistakes.

Secondly, the method of giving feedback made the students identify their weaknesses and become aware of their strengths. Here, the feedback they received made them perceive the extent of their *self-efficacy* in translation courses. That is to say, they began to climb the learning ladder; they overcame one of their weaknesses with each

step; and so they made the improvement permanent in their translation courses. To render the improvement more effective, the researcher gave *next-step feedback (intervention feedback)* to some students in consideration of weaknesses that they were not able to overcome at that moment, and that they would have to deal with in the translation of the next text.

Thirdly, as the students in the study were enabled, through the feedback that they received, to find their own mistakes and correct them, they no longer hesitated for fear of making mistakes. In other words, it was observed that the process helped them to gain *self-confidence* in translation courses. This attitudinal change affected them positively in transferring their knowledge to their peers through peer-feedback. The peer-feedback in the study was given twice, first during the analyses of weak samples and then in the assessment of the students' own translations. While analyzing the weak samples, the students were asked to do pair-work to share their knowledge, and they gave each other oral feedback with a *peer-conference*, in which they discussed the quality of the translation, in accordance with the rubric used in the study. That is to say, one of them gave further information related to the points in which the other remained weak in translation, or vice versa. The second kind of feedback was given during the assessment of the translations that the students produced themselves. Here, written peer-feedback was given. According to the aforementioned findings, attained from semi-structured interviews and focus group interviews, whereas most of the students were hesitant about giving or receiving peer-feedback at the beginning of the study, later they managed to cope with the fear of assessing or being assessed. In other words, it was determined that, originally, the students were constantly hesitant about making mistakes, and that they feared that the mistakes they made would be seen by their own peers. However, it was observed that they overcame this challenge within the process of the study and that, in the assessment, they began to give more importance to their peers' points of view, which they would have ignored at the beginning of the study.

Finally, giving written feedback on the sentences marked in red, and oral feedback on those marked in yellow made the students more willing to learn in translation courses. The reason why oral feedback was given on the sentences marked in yellow was that the students were not sure of the mistake here; but, after receiving oral feedback on the sentences marked in yellow, it was observed that they were able to identify the source of the mistake and correct it easily. On the other hand, the reason why written feedback was given on the sentences marked in red was that the students did not know about what caused the mistake. Here, written feedback was more beneficial for them because it enabled them to see the differences between the sentences in the ST and their translated versions in the TT. In addition, the written feedback was supported by the *back-translation method* to make it easier for the students to understand the mistake or how information was lacking in the translation.

Strategy 4: Teach students to self-assess and set goals for next steps

After going through the previous three stages, the students are oriented to self-assess and set goals for the next steps, in accordance with the learning targets. In this sense, Strategy 4 enables the students to regulate themselves, in accordance with learning targets determined beforehand. To enable students to become self-regulated and self-assessed learners, the impact of self-assessment on a student's achievement is monitored, and all of the students are taught how to monitor and regulate themselves in the process, which has four stages: *self-assessment*, *justification*, *goal setting*, and *action planning* (Chappuis, 2015).

In the light of the prerequisites of Strategy 4, the present study enabled the students to self-assess in order to identify their strengths and weaknesses, to set goals to overcome their own weaknesses and to self-regulate accordingly. In this respect, the students went through two processes: a) analyzing strong and weak samples of translation that let the students practice how to assess a text translated from SL to TL in terms of the level of its quality (Strategy 2), and b) self-assessing their own translations to monitor if they could overcome weaknesses of their own, which they identified in the second strategy, and set goals for the next step. In this strategy, the students were informed that they would give scores to identify their performance level in translation and to identify their strengths and weaknesses in this respect, not to grade themselves.

Assessment of Strong and Weak Samples

In this stage, the assessment activity administered in Strategy 2 was handled in terms of how it affected the students' improvement in self-assessment. From this perspective, the comparison of these two samples gave the students an opportunity to practice assessment before assessing their own translations. In other words, the two samples enlightened the students about how to distinguish a high quality of translation from a low one. After the

assessment of strong and weak samples, the students were asked to identify their own strengths and weaknesses ready for the next step in which they would produce their own translations. Here, the students were oriented to mark the structures which they already knew in green, those about which they were not sure in yellow, and those in which they considered themselves to be weak in red. Later, they were supported with peer-feedback, in which they shared their ideas in a *three-minute conference*, and teacher feedback, enabling them to determine their level of knowledge in the process.

In respect of the assessment of these two kinds of translation sample, the quality of which was not explained when they were distributed to the students, it was observed that nearly all of the students were able to identify which translation sample was weak and which one was strong. However, the process showed that most of the students were not able to identify their own weaknesses, and that they did not consider themselves sufficiently competent to assess the quality of the translation while assessing the samples in the first weeks. As the process progressed, the analyses of the students' drafts and the qualitative data gathered from interviews revealed that the activities involving the assessment of strong and weak samples, performed before each text translation, enabled the students to identify their own weaknesses. In addition, undertaking this kind of assessment, before performing self-assessment, gave the students a background in assessment. In this regard, examination of the students' drafts showed that the majority of the students began to move closer to each other in terms of the consistency of their evaluation in the learning process. Indeed, it was determined that all of the students gave scores of 4 (*Good*) or 5 (*Excellent*), when assessing the quality of the translation in the strong samples. Here, the scores given indicated that consensus existed among the students on the quality of the translation in the strong samples, even though they assessed these samples individually. Similar findings were made for the weak samples. The process showed that the students generally gave scores ranging from 1 (*poor*) to 3 (*adequate*), while assessing the quality of translation in the weak samples. To support the findings attained from the classroom observation and the students' drafts involving the assessment of the weak samples, the following analyses of the scores, which the students gave to the weak samples, were performed to prove the consensus among the student raters.

Table 10. Reliability of the Scores (Texts 1, 2, 3, 4)

Texts used	Mean	Std.Deviation	Cronbach's Alpha	Inter-Item Correlation Matrix			
				User's Manual	Contract	Economy	News
User's Manual	2.3250	.64973	.895	1.000	.355	.915	.791
Contract	2.1250	.64087		.355	1.000	.527	.572
Economy	2.4000	.77828		.915	.527	1.000	.873
News	2.3750	.77414		.791	.572	.873	1.00

As can be seen in Table 10, the value of Cronbach's alpha was found to be .895, which indicates a high level of reliability on the part of the raters. In addition, the mean score for each text was around 2 points, indicating that the raters identified the quality level of the translations in the weak samples as *inadequate*, on the basis of the rubric used in the study. However, although the raters displayed consensus in terms of the assessment of translation quality, it was also necessary to reveal the key factors affecting their improvement in assessment and the changes that they went through in this process.

In the process of doing the assessment practice, the students became aware of the extent of their existing knowledge, and, so, were able to identify what they needed to focus on to achieve a high quality of translation in the next step, in which they produced their own translations. In this step, the students used *traffic lights* to mark the sentences; and here, they marked, in red, the mistakes which made the translation *Poor* or *Inadequate*. After assessing the samples, the students developed a personal plan for overcoming the weaknesses which they deemed themselves to have, and filling the gaps in their knowledge. This activity enabled them to focus on one aspect of translation quality. In addition, their peers and then their teachers expressed their own opinions, which helped the students to identify any weaknesses that they could not find by themselves. In this way, the students were given the opportunity to evaluate their existing knowledge from different perspectives and so to keep track of their improvement in the next step, in which they produced their own translations.

Self-assessment and Goal setting

The next part of this stage required the students to perform self-assessment of their own translations. The previous activity, involving assessment of strong and weak samples, enabled the students to have experience in

assessment. That is to say, they gained a background in assessment before self-assessing their own translations. Here, all the scores gathered from self-assessment, peer-assessment and teacher assessment were computed to show the students' improvement in assessment, particularly in self-assessment. When these three assessments for each text are taken together, the reliability was found to be at acceptable rate among the raters. The value of Cronbach's alpha for text 1 was .844. The value of Cronbach's alpha for text 2 was .906. The Cronbach's alpha value for text 3 was .793. Finally, the Cronbach's alpha value for text 4 was .893.

In conclusion, although the students went through an intense process of text analysis and, so, sometimes felt confused while making assessment, they succeeded in keeping track of their own improvement. In this phase, the process showed that the students were able to make a gradual improvement in *assessment, justification, goal setting, and action planning*.

How can I close the gap?

Strategy 5: Use evidence of student learning needs to determine next steps in teaching

In this strategy, a feedback loop is created by the instructor to identify what learners have or have not achieved in consideration of the intended learning targets. Here, the instructor provides a repertoire approach to diagnose the learners' needs in learning and to identify *incomplete understanding, misconceptions and flawed reasoning* (Chappuis, 2015).

In the light of the information given above, the students in the present study were oriented to return to their own translations to identify what they had or had not achieved until that moment. And here, they were asked to review the strengths and weaknesses which they identified previously and to determine what they had overcome in terms of their weaknesses. While identifying their weaknesses here, they considered the whole process, which covered the feedback they received from the teacher, the scores of the self-and peer-assessments and the teacher's assessment, and their plans to overcome the weaknesses identified previously.

In the study, the students who needed help were determined in two ways. Firstly, based on the assessment scores in Strategy 4, the students who produced a low level of quality in translation were identified and given priority in terms of diagnosing what they needed to improve their learning; and they attempted to remedy the gaps in their knowledge in the translation of that text accordingly. Secondly, the students who asked for feedback were selected and given feedback in terms of weaknesses of their own which they had not yet been able to overcome. While diagnosing their needs, their mistakes and the assessments performed in the process were taken into consideration. This approach was taken because the design of the present study involved the performance of error analysis in the translation courses and the identification of the types of mistake made, as a means to enhancing the students' improvement. Here, the main goal was to prevent an *error* from becoming a *mistake*. Ellis (1997) stated that *error* and *mistake* are different from each other and explained that "Errors reflect gaps in a learner's knowledge; they occur because the learner does not know what is correct. Mistakes reflect occasional lapses in performance; they occur because, in a particular instance, the learner is unable to perform what he or she knows" (p. 17).

In this respect, it might be concluded that if the students were unable to overcome their weaknesses in the process, they would continue showing a low level of performance in their translations because of these weaknesses. To prevent this, the students were given relevant knowledge to enable them to cope with the weaknesses which they had identified while assessing both the samples of translation of a high and low quality and their own translations. In other words, they attempted to identify the gaps in their knowledge with the help of the teacher, in this phase. The following extracts illustrate the students' points of view.

"I can determine more targets for myself every day." (Student 6)

"I could manage to focus on one of my weaknesses which I mostly had. In the next step, I think that my translation will be better, particularly in terms of conjunctions." (Student 8)

As may be understood from the statements in the extracts given above, the students were able to overcome their weaknesses to some extent. However, this achievement was not sufficient for them to be able to reach the level of translation which had been determined previously, in accordance with the intended learning targets. In this respect, as the students were able to identify the aspect of feedback they needed in this step, they were given

enough scaffolding in the next step to enable them to overcome any weaknesses which, up to this phase, they had not been able to overcome alone.

In respect of the errors which caused a low level of translation in the texts which the students translated, the key factors mentioned above, *incomplete understanding*, *misconceptions* and *flawed reasoning* (Chappuis, 2015), guided the process in which the students' learning needs were diagnosed. That is to say, the students' learning needs were classified under these key factors. The *traffic lights*, which they used previously to determine the strengths and weaknesses in their own translations, became beneficial in diagnosing the needs of the students in this process. Here, the sentences marked in the color yellow were classified as *incomplete understanding*; and the sentences marked in red were classified as mistakes stemming from *misconceptions* or *flawed reasoning*. In this way, the students were able to identify the gaps in their knowledge easily, and the teacher also could classify their learning needs by considering this classification.

Strategy 6: Design focused instruction, followed by practice with feedback

Strategy 6 involves scaffolding given by the instructor who narrows the cycle of the lesson in terms of the misconceptions and difficulties identified in Strategy 5. Here, the students were given opportunity to review their own output and performance, in the light of feedback given by the instructor (Chappuis, 2015).

Following Strategy 5, this strategy enabled the learners to take action to overcome their misconceptions or the difficulties that they had experienced previously. To help the students to overcome their weaknesses, the difficulties identified and categorized in the previous strategy were handled with the students, in order to engage them in the process of correcting the errors.

To prevent *incomplete understanding*, the sentences or the specific parts of the text which had been marked in yellow by the students when they were not certain of making a correct translation were chosen. Then, the sentences marked in yellow were analyzed with the student again, and the incomplete translation was completed. The following extract illustrates this improvement.

Extract 1 (retrieved from Text 3 that the students translated):

ST: While financial market conditions remain accommodative in advanced economies,

TT: Gelişmiş ekonomilerde piyasa koşulları akıcı olmaya devam ediyor, ... (Student 24)

In the extract given above, the student marked the conjunction *While* in yellow although she knew the meaning of this conjunction. This was because she could not interpret it in this sentence. In other words, she was not sure whether to give the meaning of this conjunction in this sentence as an adverbial clause of time or as a conjunction linking two different statements and expressing a contradiction. Here, to prevent *incomplete understanding*, the student was given scaffolding to enable her to use it as a linking word to express the contrast between the statements and she interpreted it accordingly. As seen in the following extract, she could give the contrast in the sentence and interpret it better when compared to the previous one given in the extract above.

TT: Gelişmiş ekonomilerde piyasa koşulları akıcı olmaya devam etse de, ... (Student 24)

To prevent *flawed reasoning*, the students were advised not to generalize the rules while making translation. This is because *overgeneralization* causes error (Ellis, 1997). In the light of the students' drafts in translation, it was determined that some students overgeneralized some terms of equivalency, particularly *addition* and *omission* in this study. In the study, the students were encouraged to add or omit some words to produce a high level of translation, when necessary. However, the analyses of the students' drafts revealed that some words or phrases were omitted from the sentences when the students could not manage to interpret those words or phrases according to the content of the text. In other words, they overgeneralized here. Overgeneralization of these terms of equivalency caused a loss of information and a low level of interpretation between the two texts. The *back-translation* method was used to show the errors stemming from *flawed reasoning*, as in the following. Here, it was observed that, when the *back-translation method* was used, the students were able to see clearly the difference between the original form of the sentence in the ST and its translated form in the TT.

Extract 2 (retrieved from Text 2 that the students translated):

ST: ... fires, acts of God or any other circumstances ...

TT: Yangınlar, ____ veya diğer durumlarda ... (Student 5)

ST: The following are certain general terms and conditions ...

TT: Aşağıdakiler Time dergisi...genel koşullarıdır. (Student 5)

Back translated from Turkish: The following are certain general conditions...

The last key factor was *misconception*, which generally caused a low level of translation in the present study. It was determined that *misconceptions* occurred in the analyses of the texts with respect to the terms of equivalency. Here, the students generally could not identify the source of the low level of translation as they were not able to internalize the terms at first. In addition, when the linguistic elements were considered, they had difficulty in translating complex sentences with reduction. While translating sentences involving reduction, they generally translated them by ignoring its function in the sentence. However, the process showed that as they internalized some key rules and concepts, the low level of translation stemming from *misconceptions* was replaced by a higher quality of translation over time.

As regards the implementation of these strategies, one can conclude that Strategy 6 is the continuum of Strategy 5. In other words, a learner should first go through Strategy 5 and then Strategy 6, as this sequence proved effective in constructing a bridge in a feedback loop in which weaknesses were diagnosed and then the students were encouraged to take action to overcome them with the help of the teacher. After the students' needs in the process were diagnosed in relation to those weaknesses which they could not overcome by themselves, some key factors were identified during the implementation of Strategy 6. In this regard, the errors that caused a deficient translation were classified under three categories. Here, the students were oriented to go back to their own translations. In the light of the categorization mentioned above, the weaknesses that the students previously identified in their own translations and could not overcome by themselves were handled together with the teacher. Here, *scaffolding* was provided, when needed, to help the students to overcome their weaknesses. In this context, the following extract, retrieved from student diaries, illustrate the students' points of view.

“I could identify my errors with the help of feedbacks, and I will try not to do the same mistakes in the next translation. This is because I know my errors. In this process, I could manage to overcome my weaknesses with the help of my peer.” (Student 16)

In Strategies 5 and 6 and the *feedback loop* which the students went through, they first identified one aspect of the learning target that they considered themselves to have difficulty with. Next, they specified it as an error to overcome. Then, they took action to close the gap in their knowledge. And finally, they tried to achieve a high quality of translation. The whole of this process was monitored by the teacher and the students were supported with *scaffolding*, when needed. In conclusion, the sequence of Strategies 5 and 6 was found to be beneficial in the present study. It was seen that first diagnosing learning needs and then teaching accordingly had a positive effect upon the achievement of the intended goals of a translation course.

Strategy 7: Provide opportunities for students to track, reflect on, and share their learning progress

Strategy 7 is the last stage of the AfL strategies. Here, learners look back in order to monitor what they have or have not achieved. They keep track of their improvement and reflect on the learning process. In other words, this stage is related to *metacognition* (Chappuis, 2015).

In the light of the information given above, this phase of the study aimed to have the students keep track of their progress during the process. In other words, they were encouraged to develop metacognitive awareness, which would lead them to think about their learning. Therefore, the students kept a portfolio to monitor their improvement from the beginning of the semester to its end. While keeping the portfolio, the students were encouraged to look back and to evaluate what they had or had not achieved up to that time. The following extract, retrieved from students' dairies, shows the students' points of view as regards keeping a portfolio, and reveal that keeping a portfolio was rather effective for them in monitoring their progress.

“I keep my portfolio in my mobile phone. As such, it is easy to reach it and to track my progress.” (Students 8 and 17)

As can be understood from the extract given above, the students maintained their portfolios regularly, and so were able to monitor their improvement in the process. Here, it is obvious that they reflected successfully on their learning and evaluated the rate of their improvement in the process. Moreover, their statements indicate that they managed to fill the gaps in their knowledge in the process. In other words, because they reflected on their learning, the students successfully attempted to self-regulate themselves in the process.

To evaluate their own performance in the process, all of the students were oriented to complete a holistic self-assessment rubric, in which they self-assessed their performance according to each strategy implemented in the study. The scores gathered from their assessments were computed. Here, the mean score for the Strategy 1 was 3.5768; the mean score for the Strategy 2 was 3.8377; the mean score for the Strategy 3 was 3.6338; The mean score for Strategy 4 was 3.603; The mean score for the Strategy 5 was 3.2917; The mean score for the Strategy 6 was 3.7390; The mean score for the Strategy 7 was 3.1601. Given all the scores, one can conclude that the students were able to achieve a performance level over adequacy. This is because, the scores given are clustered above the central line 3 points. This might be interpreted as showing that the students took an active role in the Strategies.

ANALYSES OF THE TEXTS

In this phase of the study, the students' improvements and achievements and the challenges that they faced while translating from SL to TL were identified in the light of analyses of the texts used in the study. To examine this progress, the analyses were handled in terms of five dimensions of equivalence: Word-level, above word-level, grammatical level, textual level, and pragmatic level (Baker, 1992). In this step, the students translated the selected parts of the four text-types and self-assessed their own translations according to the rubric that the researcher had developed for the present study.

In keeping with the instructional design in this step, the students were given the opportunity to form a background before the act of translation. To identify their strengths and weaknesses before the act of translation and to form a background related to the text-type that they would translate here, the students first analyzed two types of translation sample, one of which involved a high quality of translation and the other a low quality of translation. In the process of analyzing these two samples, they assessed them so as to be able to differentiate the quality of the translation as weak or strong, and they identified their strengths and weaknesses. After this process was completed, the students translated the main texts and took an active role in self- and peer-assessment to observe if they had managed to overcome their weaknesses, as identified in the process of strong and weak sample analysis. Here again, they identified their strengths by indicating their improvements, and weaknesses by highlighting any lack of knowledge related to the present text-type. The aim here was to enable the students to overcome the weaknesses that they had previously identified, but that they had not been able to overcome. During the analysis of the texts, the students used traffic lights (green, yellow, and red) to highlight the mistakes and the level of the help they needed. After each session had been completed, the students' analyses and translations were supported by the instructor's oral or written feedback.

To illustrate the improvement in this area, a sample of text analysis was selected from the contract text related to terms and conditions (https://www.timemediakit.com/wp-content/uploads/2018/02/Europe_Print_TermsAndConditions.pdf). The analyses of the texts in terms of information flow were made by considering the two segments of a clause. These terms were *theme*, which gives the information about the clause, and *rheme*, which is related to the information about the theme of a clause (Baker, 1992). As in the steps given above, the students were first asked to analyze two types of translation involving samples of low-level and high-level translation, and then they produced their own translation.

Extract 1:

ST: Advertisers may not cancel orders for, or make changes in, advertising after the closing dates of the Magazine.

TT (retrieved from the strong sample): Reklam verenler, derginin kapanış tarihinden sonra reklam siparişlerini iptal edemez veya değişiklik yapamaz.

TT (retrieved from the weak sample): Reklam yapımcıları, derginin kapanış tarihinden önce reklamda değişiklik yapabilir veya reklam siparişini iptal edebilir.

As seen in the extracts given above, while the first one involves a high quality of translation and interpretation, the second one contains a misinterpretation in terms of *theme* and *rheme*. That is to say, the information transferred from ST to TT is deficient in the second extract. The performance of this type of analysis of strong and weak samples before the students produced their own translation was beneficial for them, because it provided them with a background in identifying the *theme* and *rheme* in a clause. The process followed in the study showed that most of the students did not have difficulties concerning what the texts were about, namely the *theme* of the texts. Here, the preceding activity in Strategy 1, in which a scenario was created and so the *skopos* of the text to be translated was identified, proved effective in enabling the students to comprehend its *theme*. Given all of the texts at clause level, most of the students, with the exception of only a few, were able to identify the *rheme* by considering the intended message in the text. It was observed that those students who had difficulty in determining the *theme* or *rheme* at clause level could be supported effectively with written feedback showing the syntactic differences between the two languages, English and Turkish.

After the analysis and assessment of the strong and weak samples of translation had been completed and feedback given, which gave the students a background in the *thematic structure* of a text, they made their own translations. To illustrate the improvement in managing the flow of information between the two texts, the following extract was retrieved from one of the students' translations.

Extract 2 (retrieved from the text that the students translated):

ST: All pricing information shall be confidential information of publisher and neither advertiser nor agency may disclose such information without obtaining publisher's prior written consent.

Theme	{	All pricing information
Reme	{	shall be confidential information of publisher
Theme	{	neither advertiser nor agency
Rheme	{	may disclose such information without obtaining publisher's prior written consent.

TT: Tüm fiyatlandırma bilgisi yayıncının gizli bilgisi olacaktır ve ne yayıncı nede ajans yayıncının yazılı izni olmadan bu bilgiyi açıklayamaz. (Student 26)

The extract given above reveals clearly that the student was able to produce a high quality of translation. When she was asked to segment the sentence in terms of *theme* and *rheme*, she was able to do so, as seen in the extract given above. This kind of achievement was displayed by most of the students in the study. This is because the analyses of the strong and weak samples in terms of *theme* and *rheme* helped them to produce acceptable translations in the texts they attempted by themselves.

Based on the text analyses, performed according to the five dimensions of the rubric used in the study, the following conclusions summarize the findings of the study in this phase.

First of all, nearly all of the participants in the study had been brought to see that there was not one-to-one correspondence between words. That is to say, the two languages, here English and Turkish, are different in terms of orthography. In addition to this, they now perceived that word-for-word translation was almost impossible, as they felt obliged to interpret the sentences according to the contents of the texts. This brought them to closer to the use of free translation in order to achieve equivalence between the two languages.

Furthermore, nearly all of the participants in the study had acquired the knowledge that the *skopos* of a text should be identified before starting the translation of a text. Here, identifying the *skopos* of the text enlightened the students in terms of how the translation of the text should be made. In another words, the translation process was determined beforehand. In addition, most of the students in the study learnt the key terms related to equivalence between two languages, which helped them to learn the source language better, here English. By considering these terms, they were able to analyze the texts, and to undertake the responsibility of rating both their own and their friends' levels of performance in the translation course.

On the whole, the teaching process provided an opportunity for the students to examine two types of samples that enabled them to form a background in translation and to acquire self-assessment skills before they began to undertake their own translations. In other words, the process of teaching made the students active learners in the translation courses, because this teaching design put them through an intensive learning process involving analyzing and assessing the texts, giving and receiving feedback, and doing back-translation when necessary.

4 | DISCUSSION & CONCLUSION

This part of the study presents a discussion of the findings of the study and reaches a conclusion, in the light of the research context. In this line, the pedagogical implications of the findings are highlighted and reflected upon, and recommendations are made.

The first research question was: “What are the students’ attitudes towards the use of the seven strategies of Assessment for Learning in translation courses?”. The qualitative findings revealed that the students in the study showed positive attitudinal changes towards the teaching method and the content of the translation courses, as most of the students asserted that they became active learners in the process. This finding was also confirmed quantitatively, as the majority of the students showed statistically similar attitudinal changes. Here, when the mean scores and frequencies were compared, a positive trend upwards was observed in the students’ attitudes towards translation courses between the pre-and post-interviews. In this regard, when the teaching method in translation courses was evaluated, it was found to be effective in encouraging the students to identify their strengths and weakness through constructive communication provided in student friendly language. As a result, the students were able to cope with their fear of failure and negative feelings stemming from stress, and it was observed that they managed to overcome these handicaps to a certain extent. In addition, their positive attitude affected their improvement in the translation courses, which is consistent with a similar study asserting that self-assessment affected students’ improvement in translation (Liao, 2006); and with another survey confirming that most of the participating teachers and students had positive attitudes towards self-assessment (Panadero, Brown, & Courtney, 2014). In other words, it may be concluded that the students’ improvement in the courses and their overcoming such negative feelings were interconnected. Furthermore, the use of translation theories also affected the students’ attitudes in a positive manner because they realized that the translation theories could guide them while producing their own translations. A similar study also confirmed that an acceptable translation required the use of translation theories and that the use of translation theories was interrelated with translators’ attitudes (Branch, 2013).

When the students’ attitudes towards self-assessment and their own roles in the translation courses were taken into consideration, the qualitative findings, which were confirmed quantitatively, indicated that the students’ negative attitudes turned positive as they took part in a process in which they continually reflected on their own errors or mistakes. That is to say, the students went through a cognitive process while self-assessing their own translations. This is because the process of self-assessment enables students to improve in terms of metacognitive behaviors and awareness (Shatri & Zabeli, 2018). Also, the ongoing process of self-reflection, and thereafter self-regulation through self-assessment, was found to be effective in enabling the students to gain self-confidence and motivation, and to overcome hesitation and fear while giving scores to identify the level of the translations. This relationship has also been confirmed in previous studies (Brown & Harris, 2014; Schuessler, 2010). Similarly, the students’ attitudes towards peer-assessment changed positively. That is to say, peer-assessment was found to be motivating and effective, as it activated the students desire to work collaboratively in groups. In addition, although peer-assessment had previously been described as distracting by some students, the ongoing process revealed a significant positive change in their attitudes that was confirmed by both the qualitative and the quantitative data. In fact, the positive attitudinal changes towards self-and peer-assessment were found to be linked to the teacher’s role in the courses. That is to say, the students’ positive attitudes towards the teacher’s role in the classroom setting affected their attitudes to self-and-peer-assessment. As a result, the assessment process was observed to be more fruitful and motivating when the teacher acted as a mediator while self-and peer-assessments were performed.

The second research question in the present study was: “What are the contributions of involvement in self-assessment in the students’ translation process?”. From this perspective, the process involving the implementation of the seven strategies of AfL was handled in terms of the effect of self-assessment on the students’ improvement in the study. In terms of the impact of the strategies on learners’ achievement, the first three strategies are

“enablers”, Strategies 5 and 6 are “floaters”, and Strategies 4 and 7 are “destinations” (Chappuis, 2015, p. 14). In this context, the second research question was matched with these key terms to explain how involvement in self-assessment affected the students’ proficiency in the translation courses. In addition, the aim was to improve the students’ self-assessment skills, on the basis that when self-assessment is considered as a skill, it may be developed in a process (Woods, 1987).

Taking the first three strategies in the present study together, the students went through a process in which they gained a background related to self-assessment. In this phase of the strategies, Strategies 1 and 2 enabled the students to gain awareness in respect of the translation process. As they gained awareness, the students became aware of their level of self-efficacy, with the help of the feedback they received in Strategy 3. According to Bandura (1977), the theory of *self-efficacy*, which is defined as people’s beliefs related to their capabilities for the intended level of performance of the events which will affect their lives, hypothesizes the perseverance of people in the face of challenges. When this theory is matched with the present study, the strong and weak samples were found to be highly effective in enabling the students to perceive their level of *self-efficacy* and to identify their strengths and weaknesses accordingly, before the act of translation. Studies carried out on the theory of *self-efficacy* in higher education have showed that learners’ levels of self-efficacy might be enhanced by adjusting the classroom setting for learning by using approaches involving self-reflection, and self-and peer-assessment (Van Dinther, Dochy, & Segers, 2011). On the other hand, the method of giving feedback in the study played a key role in enabling the students to self-assess their performance and to construct new knowledge onto their existing knowledge, as they were encouraged to find the source of mistakes. This method of descriptive feedback is a form of communication between teacher and learners, and involves the learners in reflecting on their learning and identifying their experiences in the learning process, as learners and teachers come together with a common target (Rodgers, 2006). In this regard, the findings of the present study confirmed that the students made a significant improvement in translation courses in which self-assessment was intensively implemented. At the same time, the findings on the process of giving feedback in Strategy 3 showed that the students’ progress in the assessment of the translation samples was facilitated by the descriptive feedback. Here, the scores given to identify the levels of the translation in the strong and weak samples indicated consistency among the students as raters. Having gained a background in assessment and produced their own translations, the students performed a self-assessment procedure in Strategy 4, which brought them to the first destination in self-assessment. In this step, they went through a process of *self-reflection* and *self-regulation*, which were strongly interrelated in the study. According to Zimmerman (2002), *self-regulation* is defined as a person’s belief about his/her own capability to affect the actions which are necessary for the intended goals, and involves two phases of *self-reflection*: a) *self-judgment* involving the stages of *self-evaluation* and *causal attribution* while examining the reasons for one’s error or success, and b) *self-reaction*. When the present study is matched with these terms, the students, first, managed to acquire awareness of their *self-efficacy*; next, they self-reflected on their own errors, by judging their own translations in order to find the source of their errors; then, they went through a *self-reaction* process in order to correct their errors or mistakes and to achieve a higher quality of translation. Guided by this cognitive process, the students were able to continue improving in learning and to raise the quality of their translation, step by step, through self-assessment. The qualitative findings of the study, supported by the statistical analyses, confirm that a reliable degree of consistency occurred between the self-assessment, the peer-assessment and the teacher’s assessment, indicating that the students made a valid assessment of their own translations. In addition, the students were able to make error analyses of their translations, similar to those made in the other two types of assessment, indicating that they got better at identifying the source of their errors or mistakes, with every step. Based on these findings, the study concluded that the use of self-and peer-assessment together with teachers’ assessment could be considered effective. This conclusion is consistent with that of another study carried out on translation training involving self-and peer-assessment moderated by a teacher (Robinson, López Rodríguez, & Tercedor Sánchez, 2006). Furthermore, another finding in the current study was that self-assessment had a positive impact on the students’ self-regulation, which is in accord with the results of other studies in this research context. Similarly, this finding supports the findings of other studies which have underlined the positive relationship between self-assessment and self-regulation in learning (Kostonsa, van Gog, & Paas, 2012; Panadero & Alonso-Tapia, 2013). Moreover, the findings also confirmed that the students gained a sense of responsibility over time, and developed a self-control mechanism through self-assessment, which was similar to the findings of the study carried out by Ndoye (2017).

In Strategies 5 and 6, the qualitative findings confirmed that the students were able to focus on one aspect of the intended learning targets with which they frequently had difficulty. After determining their weakness, they attempted to overcome it, with the help of teacher who provided *scaffolding*, when needed. In Strategy 7, which brought the students to the second destination in their learning, the students succeeded in monitoring their own improvement in the translations which they had made hitherto. Here, they self-assessed their own performance during the process, indicating that they achieved a level of performance ranging from *Adequate* to *Good*. Strategies 4 and 7 may be taken together, to determine whether the students' improvement corresponded with the intended learning targets or not. On this basis, it may be concluded that the process resulted in a steady increase in progress, in terms of translation between SL and TL and learning the source language, here English. This was because the teaching method, which was associated with translation theories *Skopos* and *Equivalency* between two languages, met the students' needs and expectations in the translation courses. That is to say, when the students in translation courses are taught in the light of translation theories, their approach to the texts may become more flexible and they learn the theories practically (Pérez, 2004).

When the whole process in which the students went through self-assessment is considered, the findings are seen to be in accord with Chappuis (2015). In the present study, the aim throughout the whole process was to enable the students to improve in their translation courses, through self-assessment. In this process, the students first became aware of their *self-efficacy*, and then they went through a *self-reflection* process to identify their weaknesses in translation from ST to TT. Finally, they took part in the process of *self-regulation* to overcome the weaknesses in translation which had been identified beforehand. In other words, the process of self-assessment enabled the students to develop significantly in terms of metacognitive behaviours and awareness, as they actively engaged in the learning process. Likewise, a similar study also found that self-assessment helped learners to gain metacognitive behaviours and awareness (Shatri & Zabeli, 2018). In this regard, all of the students in the study were exposed to a metacognitive process, which enabled them to become self-reflective and self-regulated learners. It was observed that the more the students noticed their strengths or weaknesses in each step, the more motivated they became to translate the next text. The findings in this phase are in accord with those of other studies conducted on self-assessment and its positive impact on students' improvement in learning (Brown & Harris, 2014; El-Koumy, 2010; Galan-Manas & Hurtado Albir, 2015; Gedye, 2010; Mican & Medina, 2017; Schuessler, 2010; Thawabieh, 2017).

The third research question in the study was: “What are the challenges that students experience during the Assessment for Learning procedure?”. With reference to the whole process in which the students experienced AfL, some significant challenges were identified when the findings were considered.

The first challenge that the students faced was related to objectivity, while assessing the strong and weak samples and their peers' translations. Here, the qualitative findings showed that some of the students were not sure about the scores which they gave to determine the level of the translations. In this regard, they were observed to hesitate in giving scores. This was because they did not have any background in assessment. Here, informing the students that they would not go through a summative assessment process was found to be effective; and also, informing them that they should score the translations not for grading but for describing their own errors relieved them in the process. In other words, the students had negative attitudes towards scoring in translation courses, as grading produced a negative effect on them. In addition to this, as they improved in respect of the terms of equivalency, and as they gained a background in assessment through the analyses and assessment of strong and weak translation samples, the students realized that they were capable of identifying a low level of translation. The findings obtained from the scoring, and compared with those from the peer-assessment and teacher's assessment, also confirmed that the students provided objectivity. It may be concluded that, to help students to overcome this type of challenge, the teacher should function as a moderator to orient the students while assessing. Importantly, it was observed that, instead of using numbers, using phrases such as *inadequate*, *adequate*, or *good* made the students feel at ease while assessing the level of the translations. In addition, the context of continuous assessment accustomed them to the self-assessment process, and so they made a gradual improvement in self- and peer-assessment. This removed the negative effect of another challenge faced by some students, who preferred working with their close friends and not with others, as they were not completely ready to be assessed. A similar study on assessment also found that continuous assessment contributed to student learning through feedback, and enhanced their motivation in learning (Hernández, 2012).

Another significant challenge that the students experienced was related to the use of the rubric. In the present study, the rubric, which was prepared with the students in the pilot study, was revised by the students. Here, it was observed that the students had difficulty in designing a rubric for formative use, without *scaffolding*. This was because they did not have any background in developing a rubric. Therefore, the students were oriented to work on a rubric which was prepared beforehand. Here, the students revised the rubric with the help of the teacher, and so they engaged in the process of creating a rubric for formative use for themselves. This method was chosen because co-creating a rubric affects the learners' mental process of self-regulation and self-efficacy positively; it enables the learners to discuss the criteria in the rubric and to design it according to their expectations, to perceive it positively, and to show a higher performance in using it because of its student-friendly language (Fraile, Panadero, & Pardo, 2017). On this basis, most of the students did not have any difficulty while using the rubric, as they took an active part in revising it according to the translation courses. However, some of the students had serious challenges while using it. Nonetheless, in the course of the process, collaborative learning enabled them to use the rubric while performing self- and peer-assessment. In addition, it was observed that, as they internalized the rubric, their performance in using it improved during the process. This was consistent with the results of previous studies, in which collaborative learning was found to enhance students' learning abilities when they took responsibility for the learning activity (Sulaiman & Shahrill, 2015; Wakim, 2010). As the students made progress in the use of the rubric, assisted by scaffolding, they provided accuracy in their assessments. This claim is validated by the fact that the self- and peer-assessments and the teacher's assessments were in accord with each other over time. This finding supports other studies conducted in this research context, which revealed that students were able to self-assess accurately when the necessary information about assessment criteria and about the procedure for conducting assessment was given, together with feedback, in the process (Dochy, Segers, & Sluijsmans, 1999; Leahy, Lyon, Thompson, & Wiliam, 2005; Thawabieh, 2017).

In addition to the aforementioned challenges, the last challenge that the students faced while translating from ST to TT was related to text types and practices. A study conducted by Yousofi (2014) focused on three kinds of problem related to texts: linguistic problems, cultural problems, and stylistic difficulties. On this basis, the present study revealed that the students did not have cultural problems, but that they did have linguistic and, to some extent, stylistic problems. In the present study, the texts to be translated were selected from informative text types. When the students were asked to identify the types of the texts and the *skopos* of the translations in strategy 1, most of them were able to identify the types of the texts and to create a scenario for the *skopos* of the translations. However, in spite of being able to do this, the majority of the students had difficulty while translating text 2; as it included the terms and conditions of a contract, which did not interest the students. Consequently, they had linguistic problems with this text. Nonetheless, the provision of scaffolding and feedback proved effective in enabling the students to overcome their linguistic problems in the process. In this regard, the study revealed that students' interests, competencies and domains must not be ignored while selecting texts to be translated in a classroom setting.

In conclusion, the present study drew upon a wide spectrum of AfL in translation courses. In respect of the research questions, the study reached the following conclusions, which were found to be consistent with the research context.

First, it was concluded that the students went through a process of attitudinal change. Their negative attitudes towards translation course were replaced by positive attitudes. Their performance improved, as they overcome their fears, hesitation, and the feeling of being a failure, in the process of learning. At the same time, the students who developed a positive attitude towards translation courses were able to enhance their own motivation through self-assessment. In other words, they became self-motivated learners.

Second, the study highlighted the way in which the students' engagement in the self-assessment process affected their competencies in the translation courses. They made a significant improvement in their translation courses, in which the theories of *Skopos* and *Equivalency* between two languages were embedded. On the basis of these theories, the students went through a process of improvement, in which they first gained a background in lexical, grammatical, textual and pragmatic linguistic elements, and, thereafter, used the knowledge they had acquired, in their own translations. With the help of the AfL process, the students were able to put their knowledge into practice, in a manner grounded in awareness of their own strengths and weaknesses, and to monitor their improvement through self-assessment.

Finally, the students achieved consensus while assessing the quality of translations involving high and low levels of performance. The level of consistency achieved here may be interpreted as evidence that the students had gained evaluation skills for both self-assessment and peer-assessment. In other words, the students made a gradual improvement in evaluation, which enabled them to identify their weaknesses and to make a plan for overcoming them. In the final analysis, the process of AfL helped the students to become learners who were self-reflective, self-regulated, and self-monitored in pursuit of their intended learning goals.

RECOMMENDATIONS FOR FURTHER RESEARCH

The present study was conducted on the basis of a case study, in which the seven strategies of AfL were implemented in translation courses, and the focal point in the study was to explore the effect of the self-assessment process on students' achievements in the translation courses. In this regard, further research could be carried out in different contexts, with different sampling. To this end, action research or a quasi-experimental study might be effective in exploring or examining the impact of AfL on students' improvement in different research contexts.

LIMITATIONS

The present study involves two major limitations that need to be touched upon: the number of participants and the type of sampling. First of all, the number of participants may not be adequate to generalize the findings of the study, as it was a case study involving a limited number of students. Next, the sample in the study was selected only from among students at a state university who were studying in the Department of Translation and Interpretation, the aim of which is to train new translators. Therefore, the findings and the results of the study cannot be extrapolated to all spheres of education. In other words, the research did not cover a wide spectrum of participants from primary school to higher education.

STATEMENTS OF PUBLICATION ETHICS

We declare that the present study was written in accordance with academic rules and ethical values. Ethical compliance approval was received from Istanbul Aydın University Ethics Committee dated 22.03.2019 and numbered 1706.

RESEARCHERS' CONTRIBUTION RATE

Authors	Literature review	Method	Data Collection	Data Analysis	Results	Conclusion
Semih OKATAN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hülya YUMRU	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mine YAZICI	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

The data were collected by the first author. All three authors involved in planning, organizing, and data analyzing procedure.

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CONFLICT OF INTEREST

There is no conflict of interest in the present study.

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Organizational Results of Secondary School Teachers' Formal and Informal Group Relationships in Schools

Ebru Burcu ÇİMİLİ GÖK^{a*}

a* Ph.D, Ministry of Education, Antalya. (0000-0002-7656-4385) ebruburcu@gmail.com

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ABSTRACT

This study aims to determine the organizational results of teachers' formal and informal group relations at schools. Following the holistic multiple case pattern, the research study group has been selected based on volunteerism and maximum diversity sampling out of purpose sampling methods. The group consists of 12 teachers from 3 middle schools, Muratpaşa, Kepez, and Aksu towns of Antalya province, respectively. Descriptive analysis has been used to analyze the qualitative data, and consistency testing has been utilized. The Cohen's Kappa reliability coefficient has been calculated as meaningful with the level of .818. According to the research results, group relations increase organizational commitment and job satisfaction while reducing stress. In addition, good friendship relationships increase school loyalty and reduce the intention of relocation. However, negative results such as conflicts between different groups harm the organizational climate and the resistance of the group members to the administration's decisions by taking power from each other. Emotional commitment levels of teachers were higher than continuation commitment and normative commitment. Relationships with other employees and perceived social support were affected mainly by job satisfaction. The most stressful resource among the participating teachers is school administrators, and it is seen that the participants have been observed emotion-focused coping strategy in the first place.

Keywords: Formal Groups, Informal Groups, Organizational Commitment, Job Satisfaction, Stress

Ortaokul Öğretmenlerinin Okullardaki Biçimsel ve Doğal Grup İlişkilerinin Örgütsel Sonuçları

ÖZ

Bu araştırmanın amacı, öğretmenlerin okullardaki biçimsel ve doğal grup ilişkilerinin örgütsel sonuçlarını belirlemektir. Nitel araştırma desenlerinden durum çalışması ve bütüncül çoklu durum deseni kullanılmıştır. Maksimum çeşitlilik örnekleme yöntemine ve gönüllülük esasına göre seçilen Antalya ili Muratpaşa, Kepez ve Aksu ilçelerinde bulunan üç ortaokuldaki 12 öğretmenle bireysel ve odak grup görüşmeleri gerçekleştirilmiştir. Nitel verilerin analizinde betimsel analiz kullanılmıştır. Nitel araştırmanın iç güvenilirliğini artırmak için tutarlılık incelemesi yönteminden yararlanılmış, Kohen Kappa tutarlılık katsayısı .818 düzeyinde anlamlı olarak hesaplanmıştır. Araştırmadan elde edilen sonuçlara göre; grup ilişkileri öğretmenlerde örgütsel bağlılığı ve iş doyumunu artırırken, stresi azaltmaktadır. Ayrıca iyi arkadaşlık ilişkileri okula bağlılığı artırırken, yer değiştirme niyetini azaltmaktadır. Ancak farklı gruplar arası yaşanan çatışmaların kişileri ve örgüt iklimini olumsuz etkilemesi, grup üyelerinin iş yavaşlatan kişilere uyması sonucu işlerin aksaması, grup ya da grupların birbirinden güç alarak yönetimin kararlarına direnç göstermesi gibi olumsuz sonuçlar da ortaya çıkmıştır. Öğretmenlerin duygusal bağlılık düzeyleri, devam bağlılığı ve normatif bağlılıklarına göre daha sık rastlanmıştır. İş doyumunu en çok diğer çalışanlarla ilişkiler ve algılanan sosyal desteğin etkilediği görülmüştür. Çalışmaya katılan öğretmenlerin çoğu stres kaynağı olarak okul yöneticilerini işaret ederken, stresle başa çıkma stratejisi olarak duygu odaklı başa çıkma stratejisini kullandıkları görülmektedir.

.Anahtar kelimeler: Biçimsel Gruplar, Doğal Gruplar, Örgütsel Bağlılık, İş Doyumu, Stres

1 | INTRODUCTION

Human is a social being and needs to be with others. The inability of human beings to achieve their individual goals alone is a factor in this tendency. He cooperates with others to fulfil these objectives that cannot be achieved individually. People who convey to accomplish shared objectives structure organizations. Aydın (2000) expressed that people join the organization not just with the mental, physiological and character qualities vital for the organization, yet additionally with attitude and behaviour that can be viewed as negative for the organization.

Management considerations and approach to individuals in organizations has changed over the years. With the scientific management theory, the understanding of approaching the organization and the employee with scientific methods has started. The individual has been neglected within the scientific management approach, where productivity growth is aimed, human is perceived as a machine liable for production, and the performance-wage linear relationship is accepted. Although the scientific management approach may be a beginning within the sense of scientific treatment of the concept of organization and management, it's been criticized for ignoring the individual's relations with its environment and therefore the factors that motivate the individual, aside from wages. (Baransel, 1993; Başaran, 2004). These criticisms led to the questioning of the assumptions of classical management paradigms towards humans. Mayo and Roethlisberger's trials, which began within the Hawthorne offices of Western Electric organization in 1924, uncovered the view that "the organization is a social framework and therefore the individual is that the main factor of this framework" (Davis, 1984, p.5).

Hawthorne research has shown that employees do not fit the rational-economic human model. It has been revealed that the employee wants to be accepted and appreciated by other employees, is motivated by moral incentives as much as material incentives (sometimes even more), they do not want to compete with the group members they belong to, and that they care about group pressures (Baransel, 1993). Hawthorne studies mentioned the concepts of social relations, group behaviour and social norms, and led to the emergence of the "social human" model, which considers man as a being with friend relations and social needs rather than physical conditions and material incentives in contrast to the "rational-economic human" model (Schein, 1978).

Beginning with Hawthorne's research and developing with studies, the human relations approach revealed that organizations aren't only a structure consisting of formal organized relationships, but also a social organization shaped by informal relationships created by interactions between employees. Additionally, it has made important contributions in terms of showing the organizational results of human relations in organizations. One among its most vital contributions is that it shows that informal relationship networks (groups) have emerged over time in addition to the formal network of relationships within the formal organization. While individuals join a corporation by accepting the formal rules of the organization, they preserve their own ideas, beliefs and values and maintain their individual expectations. This individual feature, interests and expectations cause individuals to develop informal relationships. This is often an inevitable process. No formal structure has the chance to regulate and manage human relations and communication within the organization only in formal ways (Scott, 1992).

Individuals form small groups within the organization as a results of their personality traits, talents, and specific goals. According to Schein (1978), the group consists of people who understand one another psychologically and perceive themselves as a group. These groups are called formal groups if they're consciously created by the organization for certain purposes. Groups formed by individuals' own choices as a result of their communication and interaction with other individuals, not by the organization, are informal groups (Sabuncuoğlu & Tüz, 2008). Although the authority, power, responsibility, communication channels and hierarchical relations of the formal groups are clearly determined; the boundaries, communication channels and structure of informal groups framed by the individual and social relations system are not clear. The norm, boundary and effectiveness of the informal group of every organization are also different (Atay, 2007). While describing the group, Gönüllü (2001) stated that individuals within the same group perceive one another differently from individuals in other groups and in order for individuals' togetherness to be considered a group, there must be interaction between them. But this interaction isn't always the same, it is rather variable. Even as individuals attempt to survive within the face of latest situations by adapting themselves to the new situation or resisting, they struggle to survive and not disappear in groups.

Groups add to the improvement of socially valid behaviours and attitudes in people by telling the best way to act in specific circumstances. Since people can learn quicker in the group, they take out the challenges they experience all the more adequately when they interface with one another. Groups can be bridges in the acknowledgment of different objectives of their individuals and secure them against others. They can meet the acknowledgment and eminence needs of their individuals (Bulut, 1983).

Formal and informal groups affect each other as well as the organization. While formal groups permit the development of informal groups, regular groups assume a part in the accomplishment, congruity and productivity of formal groups. It tends to be imagined that the points of the formal and informal groups don't struggle with one another and if there is consonance between them, organizationally certain outcomes will happen.

While the formal organizational structure depends on reporting or authority relationship, the informal structure depends on numerous social relations like communication, trust, data sharing and companionship. Likewise, while the announcing relationship relates just to superiors and their subordinates, casual connections can exist between any two individuals from an organization (Hunter, 2016). At the beginning, some of the informal relationship structures that arise in the formal organization in an unusual path might be functional for the organization also as they can have a de-focusing on impact (Scott, 1992).

Groups have important effects on individuals. According to the social identity theory, which presents the impacts of the group on the individual, people's confidence is influenced by the groups they are in. The achievement or failure of the group is significant for the individual in light of the fact that the individual needs to boast for having a place with that group (Bulut & Polat, 2012). As the accomplishment of the group is significant for the individual, the work execution of the individual will increase and add to the productivity of the organization. Efficient and well managed formal groups add to the advancement of the critical thinking abilities of the employees, their transformation to developments, and their collaboration and sub-superior relations, while likewise expanding the quality (Uluğ, 2002).

The studies of Markiewickz, Devine and Kausilas (2000), Morrison (2004), Riordan and Griffeth (1995) have revealed that close friendship relations in the workplace are associated with achieving a good career and job satisfaction, friendship opportunities in the organization has a direct and negative relationship with the intention to quit. Nielsen, Jex, and Adams (2000), in their study to measure the two aspects of workplace friendships, friendship opportunity and the frequency of friendship, also investigated how friendship relationships in the workplace are associated with job satisfaction, job adoption, corporate commitment, and intention to quit. The results of their studies supported the significant positive relationship between friendship relations and effective organizational commitment in the studies of Riordan and Griffeth (1995), and the negative relationship between friendship relations and quit intentions.

Formal and informal groups, as seen above, are the subject of research persistently in various organizations, including educational organizations (Uygaralp Gizdem, 2015; Iliyas, 2016; Ömüriş, 2014; Saylık, 2012 etc.). However, a paradigm change was made during this research. In schools, which are decent example of a social open system, it is thought that it might be more appropriate to adopt the interpretative paradigm that gives the opportunity to explain and interpret the situation in depth, and to understand the views of the participants, rather than researches that provide statistical information and lead to generalizations.

At the top of this study, the determinants within the formation of formal and informal groups in schools, the role of formal group relations on informal group relations, the positive or negative contributions of being a member of a group, the organizational consequences of formal and informal groups (in the context of job stress, organizational commitment and job satisfaction) will be tried to be determined. When the literature is examined, it is seen that there are many studies on informal groups, job satisfaction, organizational commitment and stress in various organizations. However, this research is that the first study to examine formal and informal groups in educational organizations in terms of job satisfaction, organizational commitment and stress with a qualitative research design. So as to realize this aim, answers to the sub-problems given below were sought.

1. What are the teachers' views on formal and informal group relationships?
2. What are the opinions of teachers about the effect of group relations on organizational commitment?
3. What are the teachers' views on the effect of group relationships on job satisfaction?

4. What are the teachers' views on the effect of group relationships on stress?

2 | METHOD

Qualitative research methodology was followed in the study. In qualitative research, the point is to comprehend, clarify, inspect, investigate and explain the circumstances, emotions, discernments, mentalities, qualities, convictions and encounters of a group of people in their own current circumstance, in face-to-face interaction (Creswell, 2016). In the study, it was meant to decide the opinions of educators working in formal secondary schools about what the hierarchical outcomes of formal and informal group relations in terms of job satisfaction, organizational commitment and job stress. For this purpose, the case study design was used as one of the qualitative research design. Case study methods involve the gathering enough information systematically about a particular person, social setting, activity or group by the researcher. Thus the researcher can perceive effectively how the situation works or functions (Berg, 2000; Özçelik & Yıldırım, 2002).

Since the research was applied with teachers working in three different secondary schools, the "Holistic Multi-Case Pattern" was chosen, which makes it possible to evaluate the situations different from the case study designs both individually and comparatively. In holistic multi-case designs, there are quite one situation which can be perceived as holistic on its own. Each situation is taken as a whole in itself then compared with each other. In such patterns, it is important that the researcher, starting from one problem situation, goes to the field or schools with a standard tool (for example, standard interview and observation forms) and collects comparable data altogether three cases. Otherwise, it will not be possible to make a comparison between situations (Yıldırım & Şimşek, 2008).

RESEARCH GROUP

In accordance with the holistic multi-case pattern, the research group which consists of 12 teachers from 3 secondary schools in Muratpaşa, Kepez and Aksu that are situated in central districts of Antalya. One of the school is a central school, the other has a low socio-economic status, and the last one is a village school. Sampling is a statistical process that allows the study group to estimate whether it represents the situation and therefore the reliability of the findings obtained from them (Silverman, 2006). In the qualitative research tradition, researchers use purposive sampling, despite some limitations (general lack of extension), to include people that show certain qualities, which they think will best represent some situations and provides the richest data (Glassner et al. 1983, cited in Berg, 2000). The study group of the research was selected from purposeful sampling methods suitable for qualitative research, based on maximum diversity sampling method and on a voluntary basis. The aim of the maximum diversity sampling method is to create a relatively small sample and to reflect the diversity of individuals who can be a party to the problem studied in this sample (Yıldırım & Şimşek, 2008). Information about the study group is given in Table 1.

Table 1. Demographic Characteristics of the Research Group

School Type	Teachers	Age	Marital Status	Education	Branch	Seniority	Working time at the current school
1st School (Muratpaşa/ at the center)	T1	48	Married	BA	PE	27 ys	5 ys
	T2	33	Married	BA	Turkish	13 ys	4 ys
	T3	42	Married	BA	Science	18 ys	4 ys
	T4	52	Married	BA	Art	30 ys	6 ys
2nd School (Kepez /Low socio-economic level)	T5	32	Married	MA	Primary Sc	6 ys	4 ys
	T6	27	Married	BA	Guidance Cons.	5 ys	5 ys
	T7	35	Married	BA	Social Studies	9 ys	7 ys
	T8	43	Married	BA	Social S.	21 ys	6 ys
3rd School (Aksu/ located at the village)	T9	33	Married	MA	English	11 ys	6 ys
	T10	30	Married	BA	Guidance Cons.	7 ys	4 ys

T11	35	Married	BA	Science	12 ys	6 ys
T12	30	Married	BA	Maths	8 ys	6 ys

First, one-on-one interviews were held with four people from each school, and then focus group meetings were held with these four people. The aim here is to look at the parallelism of the opinions expressed by the individuals in the individual interviews and the opinions expressed in the focus group, and to see whether the group meetings affect the opinions of the individuals. In order for the participants to answer the questions sincerely, their names are not specified, but coded and kept confidential by the researcher. While quoting the opinions of the participants, teachers were coded as T1, T2, T3...

DATA COLLECTION TOOLS

Interview method was used as a qualitative data collection method in the study. In order to create the semi-structured interview form to be used in the interview, firstly, a conceptual framework was created by literature review, questions were prepared within this framework, and then interviews were conducted in a school that was not included in the main study to structure the interview form. Then, semi-structured interview forms based on open-ended questions were created by obtaining expert opinion. Individual interviews were carried out with 12 teachers using these forms. Personal thoughts are mostly reached in individual conversations. Information that cannot be obtained in individual interviews can also be accessed in group interviews. In group meetings, the group will answer the questions with the interaction around a common problem. In the meantime, while the interviewer is taking notes, he is in charge of ensuring that the people in the group progress without deviating from the purpose of the interview, (Tiryaki, 2006). Focus group interviews were conducted with the assumption that the answers to be given by the individual would be different from the individual answers given in the individual interviews and the interaction within the group. Four teachers that have been interviewed face to face previously from the same school were enrolled in focus groups. Interviews were conducted using a semi-structured focus group interview form.

DATA ANALYSIS

Descriptive analysis method was used to analyse the data. Descriptive analysis is a type of analysis in which the sub-goals of the research are predetermined and the themes are attempted to be drawn according to these sub-goals (Hatch, 2002). Descriptive analysis consists of four stages: (1) creating a framework for descriptive analysis, (2) processing the data according to the thematic framework, (3) defining the findings and (4) interpreting the findings / writing the results (Yıldırım & Şimşek, 2008).

In the first stage of the analysis, a framework for data analysis was created based on the conceptual framework of the research. Since it is difficult to form sense of the case studies and stories obtained as a result of individual interviews as a whole, coding is required (Glesne, 2013). The data obtained from the interviews were read and therefore the concepts compatible with the conceptual framework of the research and capable of answering the research questions were coded. Later, within the code list, codes that are close to one another are gathered under one category. Within the research, attention has been paid to giving similar codes to expressions representing identical content and to coding with appropriate definitions. NVIVO 11.00 package program was used in the analysis of qualitative data.

The reliability analysis of the qualitative data was carried out in the second step. The consistency analysis method was used to examine the internal reliability of qualitative research. In order to ensure reliability and consistency in the analysis of the data, the study is carried out in coordination with an assistant researcher who is an expert in the subject area of the research and qualitative analysis. In cases where more than one researcher work together in data analysis, it is necessary to do a study on coding reliability. In this case, researchers encode the same data sets and reach a coding percentage by comparing the results of coding similarities and differences numerically. In such studies, it is necessary to reach a reliability percentage of at least 70% (Yıldırım & Şimşek, 2008).

For this reason, two independent researchers (two educational sciences experts) were asked to code the interview transcripts of two teachers, which correspond to 12.5 percent of the 12 teachers who constituted the study group of the qualitative research, and who were selected by lot, adhering to the coding list. In order to assess

the reliability of the comparative agreement between the codings of the two scholars, the Cohen Kappa accuracy coefficient was measured in the SPSS 13.00 kit software. It is given Table 2.

Table 2. Cohen Kappa Values of the Consistency Coefficient

	Value	Asymp. Std. Error (a)	Approx. T(b)	p
Measure of Agreement Kappa	.818	.117	9.400	0.000
N of Valid Cases	12			

p<0.001

The Cohen Kappa consistency coefficient at level .818 is considered when the Table 2 is examined. The Kappa coefficient is interpreted as the perfect fit between .81 and 1.00. (Landis & Koch, 1977).

By coding the similarities found as a result of the analysis of the data obtained from the interviews and by making a general categorization from the common expressions of these codes, a theme was created without separating the data completely from its context (Creswell, 2005; Miles & Huberman, 1994). In a study with a well-developed theoretical framework, it is important to estimate at least some of the themes in advance using this theoretical framework. The study categories were determined in this context using literature review on "Formal and Informal Group Relationships," "Organizational Commitment," "Work Satisfaction," and "Job Stress."

RESEARCH ETHICS

Ethical principles and rules were followed during the planning, data collection, analysis, and reporting of the research.

3 | FINDINGS

The findings from the qualitative analysis conducted in accordance with the study's objectives were classified into themes based on the dimensions found in the literature on Formal and Informal Groups, Organizational Behaviour, Job Satisfaction, and Stress.

FINDINGS FROM TEACHERS' VIEWS ON FORMAL AND INFORMAL GROUP RELATIONSHIPS

Findings about the formal and informal group relations obtained in the study grouped in eight categories: "Views on the main determinants of informal group friendships", "Views about the time and place where informal groups come together", "Conversation topics of informal groups", "Views on the formation of formal groups", "Views on the effect of informal group relationships on group members", "Views on the approach of school management to informal groups", "Views on the approach of informal groups to informal groups", "Views on informal group norms".

In Table 3 the main determinants that teachers take into account when establishing friendships and groups with others are given.

Table 3. Views on the Main Determinants of Informal Group Friendships

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
A common point of view- a life perspective	√	√	√	√	√		√	√	√	√	√	√	11
Common tastes and hobbies	√		√	√		√	√	√	√	√		√	10
Harmony among children		√			√		√		√	√	√		6
Age					√	√	√		√	√		√	6
Gender					√		√	√	√		√		5
Branches	√	√			√		√	√					5

Working period of time-common history	√	√	√	√										4
Special / important day events	√					√		√				√		4
Neighborhood, close house locations						√						√		2
Work at the same level		√				√								2
Being a resident of the same city						√	√							2

As it is identified in Table 3 there were seven essential determinants of teacher informal groups. The most important factor that effects being a informal group mate is to have a common point of view- a life perspective (f = 11), secondly common tastes and hobbies (f = 10), then the harmony of their children (f = 6), being in close age (f = 6), branch and gender (f = 5), activities on special days (f = 4), working together for long years (f = 4), attending classes at the same grade level (f = 2) and neighbourhood (f = 2) or being a resident of the same city (f = 2) The following are some of the teachers' views on the subject:

"People who look at school and work the same way I do, I believe, are the people I make friends with. The most important characteristics of the people I choose: people who enjoy their jobs, who don't come to work only to work, who care for school and students, who have relationships with them, who don't dramatize small things... I'm around people like this who don't detract my motivation." (T3)

".. Our children are peers and they get along well. Outside of school, we usually meet for the birthday of our children..... Generally for the children. As long as our children get on well with each other, we have a better time." (T5)

"For us, there is a distinct age range. There are teachers who are very young as well as others who are much older. When there is a gap, older teachers group together and so does the younger teachers. (T10)

"First of all, we became closer as a group. Because there would be an exchange of information with each other. In the group we realized that we have common interests and we got along really well. We became close friends because we were also less in number." (T2)

In Table 4 views about the time and place where informal groups come together are given.

Table 4. Views Regarding the Time and Place Where Informal Groups Come Together

	Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Place	Teachers' room				√	√		√	√	√	√	√	√	8
	Whatsapp groups	√		√	√	√		√				√		6
	Consultancy room						√				√			2
Time	Breaks,seminers	√	√		√	√	√	√	√		√	√	√	10
	Extracurricular Activities	√	√		√	√	√	√	√	√	√	√		10

As shown in Table 4 teachers reported having the opportunity to spend time together outside of school (f = 10) and during working hours / seminars (f = 10). It was found that they spent the majority of their time at school in the teachers' room (f = 8). Half of the participants (f = 6) were observed chatting and sharing via WhatsApp, a virtual environment, and some of their views are provided below:

"We usually get together after school and in between courses because we can't get together too much after classes due to the children. If we come, we spend very little time together over the weekend." (T2)

"During the day, we meet in the teachers' room, and sometimes we make plans there to do something after school. We also communicate through a WhatsApp group. We also inform our friends that we will be unable to meet in person." (T11)

"We have a group that meets outside of school and goes out to dinner, picnics, weekend breaks, shopping, and so on. We meet frequently in our daily lives." (T9)

In Table 5 the topics teachers talked about when they got together with their informal group are given.

Table 5. Chat Topics of Informal Groups

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Students and school	√	√	√	√	√	√	√		√	√	√	√	11
Food	√	√			√		√				√		5
Daily agenda			√		√	√					√	√	5
Children	√	√	√							√	√		5
Politics, country agenda, sport					√		√	√				√	4
Shopping					√		√					√	3
Fashion		√				√	√						3
Family issues					√	√							2
Common memoris	√												1
Culture, art										√			1

As can be seen in Table 5 teachers are talking about school and students (f = 11), then their own children (f = 5), cooking (f = 5) and daily agenda (f = 5), politics and the country agenda (f = 4).), shopping, fashion, clothing and beauty (f = 3), family matters (f = 2), common memories and culture and arts (f = 1), and some of their views are given below:

"Things we usually talk about in our spare time are the students. What happens in class, the students' situations... we don't really get into our own personal lives. We usually try to support each other out. If there is a problem we are experiencing, we share it so that the other person does not experience it. If the students are forwarded to the disciplinary committee that will be the topic of the day." (T3)

"We pay special attention to offensive conversations in the group about that person or student." If our child or a friend has a problem, we look for solutions. If we can solve it, we solve it together, and we support the solution. If there are situations that are beyond our abilities, we do not interfere too much. In order to get student's attention back to the lesson, we try to say positive things to the colleague who attends the lesson.

In Table 6 teachers' views about the factors that influence the formation of formal groups in schools are given.

Table 6. Views on the Formation of Formal Groups

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
The effect of informal groups	√	√	√	√	√		√		√	√	√		9
Merit	√		√				√		√	√	√		6
Individual decisions made by admin.	√			√	√					√			4
Agreed decision							√			√	√		3
Volunteering							√			√	√		3
Balanced distribution of tasks	√									√	√		3

As seen in Table 6, the formation of formal groups is mostly due to the effect of informal groups (f = 9), secondly (f = 6) according to teachers' merit, third (f = 4) according to administrators' individual preferences, and finally volunteering (f = 3).), balanced distribution of tasks (f = 3) and agreed decision (f = 3), and some opinions are given below:

"For example, the administration gives a lot of work to people who are close to them. There is also a performance of some of our fellow teachers. The administrators also load workload in line with the performance." (T1)

"Hmm ... let me give an example from myself. At one time, the administration gave me a task, but it was going to be done with a team. It was also clear who the team would be. It just hadn't been notified to them yet. I suggested new names for them. Because I thought we would work better together, and even as we could come together outside of school, we would not have time limits and we would do it easily. When I explained these, our manager agreed to me and the group was composed of people I wanted. "

Table 7 shows teachers' views on the effect of their relationships with the informal groups they are members of.

Table 7. Views Regarding the Effect of Informal Group Relationships on Group Members

	Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Positive Impact	Interms of Organization	√		√	√	√	√	√	√	√	√	√		10
	Professional	√	√	√		√	√	√	√	√	√	√	√	11
	Personal	√	√	√	√	√	√	√	√	√	√		√	11
Negative Impact	Organization	√					√	√				√		4
	Professional									√				1
	Personal				√		√			√		√		4

Table 7 shows how participants are influenced by informal group relationships, both positive and negative, and how this effect differs according to personal, organizational, and professional factors. As a result, though they were professionally positively affected (f = 11), one individual also reported that he was negatively affected at the same time. Participants claimed that the influence of informal group relationships on themselves had a positive effect on the organization (f = 10) and that these relationships had an indirect impact on the organization (f = 4). The personal effect of informal group relationships is positive (f = 11), and the following are some thoughts:

"We learn a lot about the students' personal lives, family circumstances, and financial situations from other teachers. Of course, our perspective on the student shifts often. For example, our student may grow into a broken family child who requires special care and compassion. Or there is a financial issue and they are unable to obtain a test; in this situation, we strive to help them and provide it. Alternatively, we can be frustrated by a student's negative conduct who is otherwise very positive. In this situation, we wonder whether the child made a mistake, if we were unable to provide adequate care for the child, or whether his family was unable to provide adequate care." (T2)

"Similar negative effects are happening. If a few people in the group oppose and think negatively about the same person, they share it, and they can inevitably adopt a common attitude. I, too, experience discomfort from time to time. My friends in my group believe that a task assigned by the director is unnecessary, so they say "let's not do it," "let's object," but I don't always agree. I'm feeling uneasy at the moment. I want to do it without objection, but I also don't want to be separated from the group."(T11)

Table 8 demonstrates the results of the teachers' views on the school administration's approach to informal groups.

Table 8. Views on School Management's Approach to Informal Groups

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Positive approach	√			√					√	√	√		5
Negative approach					√	√	√		√			√	5
Indifferent	√										√		2

Table 8 shows that the positive and negative attitudes of the school administration toward informal groups are equal (f = 5). Two participants believed the administration was unconcerned about the groups, while three others (T2, T3, T8) had no opinion on the topic. The following are some of the participants' views:

"They are not bothered by the presence of groups. Because such groups can occur in almost any sector, anywhere." (T1) "

"I've been at this school for eight years and have seen five different principals. When we evaluate the principal as an administration, we find that our first principal did not allow too much grouping. However, in our later principals, teachers who are politically or syndically close are assigned to distant classrooms or paired with teachers who are not very close in a task. I've seen attempts to cut them into small pieces and make them easier to bite. To be honest, he separated the teachers he regarded as negative." (T12)

Table 9 includes teachers' views on the relationships of informal groups with other informal groups.

Table 9. Views on the Approach of Informal Groups to Informal Groups

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Closed Groups	√	√	√				√		√	√	√		7
Open Groups	√				√			√		√	√	√	6
Conflict between groups	√		√						√				3

As seen in Table 9 seven of the teachers are of the opinion that informal groups are closed to other informal groups, six of the groups are open to each other and to the outside, and three of them think that there are conflicts between groups, and some opinions are given below:

"I see newcomers and former teachers as two distinct categories. There are also three groups of teachers in the school, each from a different school... There are times when they are disconnected, and times when they act in collaboration. They grew closer as they learned more about each other. The two parties began to integrate. They were cooler last year, but this year they got closer." (T1)

"For a time, union organizations dominated the school; they refused to speak to someone who was not a member of their unions," says one participant. "However, after the primary and middle schools were separated, unionism lost its importance in our school." (T9)

Table 10 displays teachers' views on the norms of the informal groups to which they belong.

Table 10. Views on Informal Group Norms

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Loyalty		√			√	√	√		√	√	√		7
Support for each other		√			√		√	√	√			√	6
Compatibility	√			√	√	√		√			√		6
Common sense in problem solving	√	√	√		√						√	√	6
Constructive approach	√	√	√					√		√			5
Patience and serenity approach	√		√									√	3

In Table 10 among the informal group norms, the most significant case is "loyalty" (f = 7) Second place is "common sense in problem solving" (f = 6), "support for each other" (f = 6) and "compatibility" (f = 6), then "constructive approach to issues" (f = 5), and in last row it is seen that "approach with patience and serenity" (f = 3) has come and some opinions are given below.

"What is spoken to with our small group remains within ourselves? But we see that what we talk to with other groups is sometimes heard elsewhere. Therefore, we try to talk more carefully in large groups. Even if it is not there, we definitely hear what is spoken in the teachers' room. Or a group of teachers also smoke outside. Sometimes we hear what is spoken. Sometimes we hear it in conversations, sometimes we hear from the WhatsApp group. For example, even if it is a free day or you are on duty that day, you can hear it anyway if there is an important event. "(T7)

"If what is spoken in the group will be beneficial to other people and if it is something that can be shared, it is shared. "If somebody says "don't share it with anyone" then we don't share it, it remains there." (T10)

FINDINGS OBTAINED FROM TEACHERS' VIEWS REGARDING THE EFFECT OF GROUP RELATIONSHIPS ON ORGANIZATIONAL COMMITMENT

"How does being a part of a group effect your dedication to school?" was asked of teachers in one-on-one interviews. "Would you rate yourself in terms of adopting the goals / thoughts of the group or groups you are in?" and "Would you rate yourself in terms of adopting the goals / thoughts of the group or groups you are in?" "Teachers' views of group relationships in the context of organizational commitment classifications" and "Teachers' views of group relationships in the context of organizational commitment predictors" were two categories for the responses to the questions.

Table 11 shows the distribution of the impact of group relations on teachers' organizational commitment according to organizational commitment classifications.

Table 11. Teachers' Views of Group Relations in the Context of Organizational Commitment Classifications

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Emotional attachment	√	√	√	√	√	√	√		√	√	√		10
Commitment to continue	√	√					√		√				4
Normative Commitment						√		√					2
Moral commitment	√			√					√	√			4

In Table 11, it is seen that the highest organizational commitment type of teachers (f = 10) is "emotional commitment" from Allen and Meyer's Organizational Commitment Classifications, second type (f = 4) is "commitment to continue" from Allen and Meyer's Organizational Commitment Classifications, thirdly (f = 2) is "normative commitment" and in addition to these, "Moral commitment" (f = 4) from the Organizational Commitment Classifications of Etzioni. Some comments on this are given below.

"If I were unhappy here, the school I work in wouldn't mean much to me. But if I didn't like my students, it would make me unhappy. If I didn't like my friends and there were a troubled administrative staff, I wouldn't want to come to this school too much. I would try to change my school as soon as possible. But I do not have such troubles or such conditions, we are very good with my friends, we support each other. That's why we come to school happily. But, if one of our friends has a problem at school, he is free to request appointments. This year, for example, a good, harmonious, and successful friend had an issue with our administrator. And he said he'd ask for an appointment within the first round of appointments. We're trying to persuade him contrary. (T1)

"It all depends on the circumstances. It is not my style to follow a group's ideals without question. Where I am and why I am there is more important to me. For example, if my role in school as a teacher is to serve there and my group is trying to hold me in that position, I will leave without looking back. For example, during a time when we were having a lot of issues with the school administration, the group I was in chose not to perform the duties assigned in order to put the principal in a difficult position by disrupting the school's operation, which was completely contradictory to my beliefs." (T9)

Table 12 shows the effect of job quality and group relationships on teachers' intention to relocate.

Table 12. The Effect of Group Relationships of Teachers in Terms of Relocation Intention as a Predictor of Organizational Commitment

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
The effect of the nature of the job on the intention to relocate	√							√		√		√	4
The effect of group relationships on the intention to relocate				√			√		√	√			4

In Table 12 it was seen that group relationships (f = 4) and the quality of the job (f = 4) had an effect on the teachers' intention to relocate, and some of the opinions on the subject are given below.

"Our region is a village. Our parents are generally engaged in farming. The sentences of our children are very innocent. I am very happy when I see a student who is embarrassed and sometimes blushed. It is not very right to distinguish between city children and village children, but I have not experienced the pleasure I have in this village yet. I don't think about relocation. If there is a rotation or something on the agenda, I think I would like a village school again. "(T12)

"The individual in that group at school is one of the most important factors in my desire to be assigned to a position. First and foremost, if there are no major health issues, health comes first. If there are no health issues, the stability, climate, and friendship relationships at your workplace come first. For example, I worked at a school called Altunova.. I drove two cars, the journey took an hour and fifteen minutes, and I worked there for five years before moving on to work in Akseki, Imam Hatip School. Although there was a way out of these areas, I did not want to do so, both politically and in terms of favoritism." (T4)

"To be honest, I don't have many points, but even if I did, I doubt I'd ask for appointments. Although the school is far from my home and that I have a small boy, I have no plans to move because I am really happy there. My working relationship with the administration and my peers is excellent. I love the students, and the environment." (T10)

FINDINGS OBTAINED FROM TEACHERS' OPINIONS ABOUT THE EFFECT OF GROUP RELATIONSHIPS ON JOB SATISFACTION

Teachers' views on the impact of group relationships on work satisfaction is divided into two groups: "Teachers' views on group relationships in the form of job satisfaction theories" and "Teachers' views on factors influencing job satisfaction."

In Table 13 the role of group relationships in achieving job satisfaction is given in terms of theories related to job satisfaction

Table 13. Teachers' Views of Group Relationships in the Context of Work Satisfaction Theories

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Social needs	√	√	√	√	√	√	√	√	√	√		√	9
The need for self-realization	√							√	√	√	√		5
Need to succeed	√		√						√	√			4
perception of equality					√				√	√	√		4
Need for respect	√							√					2

In Table 13 Maslow's Hierarchy of Needs, "social needs" (f = 9), "need for self-actualization" (f = 5), "need for respect" (f = 2), McClelland's "need to succeed" (the effect of f = 4) and Adams's "perception of equality" (f = 4) on work satisfaction can be seen, and some of the views on the subject are as follows:

"The group's compatibility increases our performance; we are more determined to work, and we can do better work... It improves my success by hundred percent, and it makes me want to come to work every day. I have confidence in my community members. I work in a happy business atmosphere and we do our work without interruption by helping one another... Healthy

friendships, in particular, make us really happy. We are very pleased that we have strong relationships with our children and students." (T1)

"You feel happier and more secure when you join a group. You will not be a part of a group when you first arrive at school. Then you stay away, and you feel lost about what to do or how to behave... But, as I previously said, I have a group with whom I am more relaxed."(T5)

"I'm sure it affects my other mates as well. Often I notice that there are friends who are not part of a group. According to my personal experiences, the group members say, "Let's do a work at school without worrying about it," since it is the group to which I belong, I don't doubt, I don't think whether it is my job or not or if I will be harmed in that task. If there is a student, I and others in my group dismiss ourselves, however out-of-group friends think." (T10)

In Table 14 Factors affecting teachers' job satisfaction are given.

Table 14. Teachers' Views in the Context of the Factors Determining Job Satisfaction

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Relationships with peers, perceived social support, and moral rewards	√	√	√			√	√	√	√	√	√	√	10
Hierarchical structure and administrators		√		√	√		√	√	√	√	√	√	9
Organizational variables		√		√				√		√			4

As it is indicated in Table 14, the aspect that has the greatest impact on teachers' job satisfaction is "relationships with peers, perceived social support, and moral rewards." (f = 10) Then there's "hierarchical structure and administrators" (f = 9) and "organizational variables" (f = 4), with the following points of view:

"When I discussed this with the teachers, I saw those who were really struggling with this issue and those who were experiencing the same stress." "After sharing these, I felt less alone, which made me feel a little better." Our current manager's principle is also good, in the sense that you shouldn't do anything if you don't want to do. He understands that you cannot be successful if you do not enjoy your job. Our manager does not compel those who do not wish to participate." (T10)

"I have no idea about that, but if we come to the curriculum, they ask us our wishes during the seminar time at the beginning of the year." They make every effort to comply with those requests. When they can't, they explain it. As a result, I have no issues. That means they have a solution-oriented approach, they don't back off by saying that "we can't" (T2)

"For example, I work at Altinova School, and my painting workshop is flawlessly organized. I created a one-of-a-kind workshop. Four computers arrived at the school. They converted my workshop into a computer room. They took me to a location in the basement, under the toilet. From there, I requested an immediate assignment although my surroundings were lovely. After five years I wanted to be appointed." (T4)

FINDINGS FROM TEACHERS' VIEWS ON THE IMPACT OF GROUP RELATIONSHIPS ON STRESS

Teachers' views on stress and the impact of group relationships on stress were analysed in two categories: "teachers' views on stress sources" and "teachers' views on stress management."

In Table 15 there are findings regarding stressors that trigger stress in teachers.

Table 15. Teachers' Views on Stress Sources

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
The attitudes and behaviours of administrators	√			√	√	√	√		√	√	√	√	9
Education system	√	√	√	√			√	√				√	7
Relations with other teachers	√		√	√		√	√				√		6
Personality traits	√	√							√		√	√	5
Student and parent relations		√		√	√			√			√		5
Physical conditions	√				√			√					3

As seen in Table 15 the first factor that causes teachers to feel stress (f = 9) is "the attitudes and behaviours of administrators", the second factor (f = 7) is the "education system", the third factor (f = 6) is "relations with other teachers", and the other elements are "personality traits". "(f = 5)," student and parent relations "(f = 5) and" physical conditions "(f = 5), and some opinions on the subject are given below:

"On the other hand, if the subject is work stress, the attitude of the school administration is also important. Can the administration approach groups fairly? Does it distinguish between those who do their job and those who do not? This is very important." (T9)

"The Ministry of National Education constantly puts teachers in a status as good teachers or bad teachers according to their success in exams. In order to get the reward for your labour, you can inevitably regress when you get bad results." (T2)

"For a while, I was extremely stressed. When I saw the situation of young people, I didn't tell many of my friends about it. I had cut myself off from everything. I believe you are isolated from communication and are lonely as a result. I overcame this by seeking psychological help. While I was struggling to allow my children to grow and change, I was also attempting to demonstrate the difference not only as a math teacher, but also as a teacher or teaching as a teacher. Spiritual pleasures, rather than material pleasures, have a greater impact on me." (T12)

In Table 16 the effects of group relationships on teachers' coping with stress are given in relation to stress coping strategies in the literature.

Table 16. Teachers' Views on Stress Management

Codes	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	f
Emotional –focused coping	√	√	√	√	√	√	√		√	√	√	√	11
Problem-solving-focused coping	√	√	√		√	√				√	√	√	8
With the help of his hobbies and interests				√									1

As seen in Table 16 It was observed that teachers mostly act as "emotional –focused coping" (f = 11), then "problem-solving-focused coping" (f = 8). One participant stated that he coped with stress "with the help of his hobbies and interests" and some of his Views are as follows.

"I believe that if you have made good friends at school, all your stress will go away. It happens to me a lot. When I get bored and overwhelmed, I can talk in a coffee break. (T11)

"We pay particular attention to offensive conversations about that person or student in the group. If our child or friend has any problem, we look for ways to solve it. If we can solve it, we solve it together, we support the problem in terms of solution" (T1)

"I find ways of dealing with stress in my own way. For example, I paint simple pictures. Landscape picture. I write poetry, stories, essays and dream. I can direct my dreams. Reading books already relieves my stress. I have different interests. For example, although I had no interest in theatre in

my life, I directed four theatre plays, all of them professional. While I had never written essays in my life, I started writing almost five or six essays.” (T4)

4 | DISCUSSION & CONCLUSION

The results obtained from the research are under the titles "Results related to the formal and informal group relations", "The Results of Formal and Informal Group Relationships on Organizational Commitment", "The Results of Formal and Informal Group Relationships Regarding Job Satisfaction" and "Stress Related Results of Formal and Informal Group Relations"

RESULTS RELATED TO THE FORMAL AND INFORMAL GROUP RELATIONS

The variable that teachers take into account the most when joining a group or getting closer to their colleagues is "having the same perspective/worldview". It was concluded that together with the same worldview/common perspective and the perspective of the teaching profession, the teachers mention about the approach to the student and the job. Similar results were found in Atay's (2007) study conducted with 500 participants in which he aimed to determine the effects of informal groups on job satisfaction in enterprises and in the study of Ömüriş (2014).

The second variable that teachers consider most when joining a group or getting closer to their colleagues is "common pleasure and hobbies". Again, in Atay's (2007) study, this variable was named as "the care taken to form a informal group with people with whom they have common interests", and it had been found as a crucial factor for most of the research participants. As both studies show, when individuals come together while doing things they enjoy, like hobbies, they get closer and feel the need to maintain this intimacy.

It was found that instructors grouped, by becoming acquainted with their partners during break and class periods and built up their companionships in informal organizations like WhatsApp application or outside of school exercises. It has been observed that the Whatsapp application is widely used and has an effect on groupings in subjects such as the topics that are spoken but not completed in the workplace, the planning of the activities considered, the announcements of the school administration.. According to the results of Çetinkaya's (2017) study, in the decision of WhatsApp application; reasons like usability, restricted expense with web charges, simple openness, not needing a pre-preparing, being quick in correspondence, and having the option to communicate with one or more people easily without any problem. Educators may likewise have similar reasons to use this application for communication.

The participants were asked what they thought was taken into account in the formation of formal groups, and it was concluded that it was mostly formed by the "effect of informal groups". The dominant view is that school administrators bring together people who can work in harmony with each other while forming formal groups. In the formation of formal groups, it is important to consider informal groups in terms of creating effective and productive working groups. Individuals who have good communication with each other can perform better by focusing on the work without wasting time in conflicts. A similar result has emerged in Atay's (2007) study. According to the results of this study, informal groups increase the development of mutual understanding and dialogue and thus performance.

According to the opinions of the participants, it was concluded that the second factor considered in the formation of formal groups was merit. Some teachers think that administrators act according to the abilities, education and competencies of the people while forming formal groups and that this is the right approach. Appointments based on merit are perceived as a situation that creates a sense of equality and justice rather than assigning executives based on personal closeness, common background or being from the same union. In addition, people treat their colleagues with work competence more respectfully and do not resist competency-based decisions. They even tend to get closer to colleagues they find professionally successful. A similar result was obtained in Ömüriş's (2014) study. Having researched the main determinants of friendships in the workplace, Ömüriş found the second important dimension of close friendships as work competence. Accordingly, people tend to have friendships with people who have job competence, have gained professional skills and help their own development.

It was observed that almost all of the participants found informal group relationships organizationally useful. The extra effort of other members or intergroup rivalry who wants to support the work of one of the groupmates drives employees to perform better. Mutual assistance and solidarity create a positive synergy. People strive to be better equipped to be accepted within the group. This clearly reveals the influence of the group on people. A similar relationship was found in Triplett's 1898 study on the effects of acting with others on performance, which is regarded as the first experiment in the history of social psychology. Triplett observed the performances of cycling racers in his study; he noticed that when racers competed against time and performed alone, they scored lower than their performance when competing with each other. As a result of this study, scientists have conducted many experimental studies on both humans and animals. In these studies, it has been focused on whether people are affected by the presence of passive viewers while doing a job, and when they are affected by the presence of people doing the same job. It can be said that the results can be classified under two experimental paradigms: (1) audience effect and (2) acting together effect (Köse, Oral, & Türesin, 2012). According to the opinions of the participants, it is seen that group relations have not only positive but negative consequences for the organization. Conflicts between different groups adversely affect individuals and the organizational climate, business disruption as a result of group members obeying people who slow down the work, groups or groups with joint action by taking strength from each other and resisting the decisions of the management are some of them. McShane and GL Now (2016) defined this situation as "social idleness". According to them, social idleness occurs when people try less in a group than when they work alone. As the group grows, the level of social idleness increases as the members think their contributions will somehow go unnoticed.

Another view of the effect of group relationships on group members is the importance of the school's position in these relationships. Some of the participants think that if the school is more rural, people will need each other more because there are no other opportunities in the environment, they will seek support, the smaller the school, the more informal group relationships will have an impact on the person. Direkçi's (2007) study on "What are the perceptions of primary school administrators about informal groups?" has similar results that administrators have concluded that inadequacies in environmental conditions, necessities and psycho-social needs of individuals are effective in the formation of informal groups.

According to the views of the participants, when the approach of the school administration to informal groups is considered, it can be said that the school administration does not take informal groups into consideration at a high level. According to the results from the views of some of the participants, school administrators are aware of informal groups while forming formal groups, take into account informal group relations, and bring together people who will work in harmony. Similarly, Direkçi (2007) reported that school administrators regard informal groups positively, they think that informal groups are born out of necessity and meet the needs of the members to a large extent.

ORGANIZATIONAL COMMITMENT RESULTS OF FORMAL AND INFORMAL GROUP RELATIONSHIPS

It has been concluded that the most important factor affecting the organizational commitment of the participants in the context of the role of group relations in the organizational commitment is the relationships with their colleagues. It is no wonder that the factors such as job security, wages, retirement, social security and promotion opportunities are same and standard for all teachers, the factors that will affect their commitment to the organizations are moral rewards, social support, managers' attitudes and relations with colleagues that can vary from institution to institution.

While the participants' views on organizational commitment did not differ significantly according to gender and age variables, it was seen that the views of graduate students on organizational commitment focused on the dimension of emotional commitment. Azaklı (2011) stated that organizational commitment levels differ according to gender and educational status. It was found that the organizational commitment level of female employees is higher than that of male employees, and the organizational commitment levels of employees with undergraduate education are higher than those with high school education.

According to the frequencies obtained from the expressions of the participants, emotional attachment stands out in connection to the organization. Identification with the organization, which is the main determinant of emotional attachment, was realized for the participants. Participating teachers talked about their love for their

profession, their school, colleagues and students, they did not see teaching as a job, they always strive for the better, ignore the concept of overtime and they stated that they are willing to do things and sometimes spend more time in school although it is not in their job descriptions or in the roles expected from them. It was observed that they thought of working longer at the school they were working in, and they perceived the problems with the school or students as their own problems.

One of the predictors of organizational commitment is the intention to quit. In many studies, an inverse relationship was found between the intention to quit and organizational commitment. In the research conducted by Steers in 1977, it was concluded that organizational commitment was related to the intention to stay and the desire to stay, and then in 1984, in Stumpf and Hartman's study, it was concluded that organizational commitment was a predictor of the intention to quit. In 1997, Davy et al. examined the effect of job security on the intention to quit, and concluded that there was an inverse relationship between organizational commitment and intention to quit.

The teachers participating in this study are teachers working in public schools and they all have the rights and job security given by the civil service. For this reason, it is rare for teachers to leave their jobs. Even when teachers intend to leave their jobs, they often expect to deserve their retirees and continue to work at private schools, so leaving the profession is not a common option. For this reason, the concept of relocation was used in this study while taking teachers' opinions about the intention to quit. As in many studies in the literature, in this study, it was concluded that the participant teachers showed high organizational commitment and low intention to relocation.

In this study, the emotional commitment levels of teachers were found to be higher than their attendance commitment and normative commitment. While it is the highest emotional commitment dimension, it is the lowest normative commitment. The same result was found in Tekingündüz and Tengilimoğlu's (2013) study to determine the job satisfaction, organizational commitment and organizational trust dimension levels of employees, while emotional commitment was found to be the highest dimension and normative commitment is the lowest dimension. According to the results of Samadov's (2006) research on job satisfaction and organizational commitment in a private sector, emotional commitment was found to be the highest, while attendance commitment was found to be below the average value.

THE RESULTS OF FORMAL AND INFORMAL GROUP RELATIONSHIPS ON JOB SATISFACTION

Job satisfaction is very important for organizations that cannot be ignored since it affects the physical and mental health of the employee, his organizational behaviours such as the employee's commitment to the organization, his performance and organizational efficiency. According to Locke (1983), the dimensions used in measuring job satisfaction are as follows: The job itself, promotion opportunities, and wages, working conditions, benefits gained from the job, friend environment, values and beliefs of the person, and the employee's relationship with the managers. Although the factors such as the wages of teachers working in public schools, the benefit they obtain from the job, the job itself and the promotion opportunities differ slightly according to the variables such as seniority, they are almost the same. In addition, the study also examined whether group relations had an effect on the job satisfaction of some of the teachers working in the same school, while others did not.

When asked about the effects of formal and informal group relationships on job satisfaction, it was seen that all participants first associated their job satisfaction with the happiness they felt at school. One of the participants, T1 said, "The compatibility within the group increases our performance, stimulates our determination to work, we can do better jobs ... Especially the good relations with our friends make us very happy." Thanks to the factors that made them feel happy, it was concluded that they achieved job satisfaction as he expressed in his words. According to the conclusion from the opinions of the participants, they feel happy to the extent their needs are met, their motivation increases and they get job satisfaction. It has been revealed that the needs of the participants are social needs, the need for respect, the need for self-realization, the need to succeed in McClelland (1983) and the perception of equality in Adams (1963), which are included in Maslow's (1943) hierarchy of needs in the literature.

As a priority, the teachers stated that belonging to a place makes them feel safe and they get moral strength from the group they have feeling. They stated that good friendship relations in their groups facilitated communication between colleagues, they were able to share knowledge and experience, and they could reach both organizational and individual aims more easily by increasing their personal skills. Being a member of a group,

earning the trusts of friends, giving importance to one's opinions and sometimes consulting with friends, meet the respect needs of people. Although there is not a wide variety of career and advancement steps for teachers in the education system of our country, it has been observed that some teachers who participated in the research are motivated by the need for achievement by improving themselves, goals and the strive to do better. Spiritual awards are important for the participants rather than tangible material rewards such as titles or wage increases. It was concluded that they achieved job satisfaction in these situations: when they carried out a project that had not been done before, when they took action for an innovation in school, or when their students were successful in exams and competitions.

Another requirement that participants feel to ensure job satisfaction is equality. What they mean by equality here is not to show the same attitude and behaviour to every teacher, but to get the attention and praise they deserve and to bring them to the task they deserve. They think that teachers who behave more devotedly for the school, who perform each task at the desired time should be separated from those who see the profession as an ordinary job for which they receive a wage every month, who run away from work or slow down their work. According to Adams' (1963) equality theory, employees compare themselves with other employees. They evaluate their characteristics such as effort, experience, education and talent, and the results of these factors such as the wages, promotions, respectability with the characteristics of other colleagues and what they get in return. If they perceive equality as a result of this evaluation, they feel job satisfaction.

According to the Views of participating teachers, factors affecting job satisfaction are hierarchical structure and organizational factors such as administrators, relationships with other employees, perceived social support/moral rewards and distance, physical equipment, and the number of students. According to the opinions of the participants, it was seen that the most influencing factor on job satisfaction was relationships with other employees and perceived social support. Considering that teachers spend most of the day at school and see their colleagues more than their families, it can be seen that their relationships with them reflect on their relationship with the students, their parents, and sometimes even affect their family life. The closeness and support of other employees is very important in the morale of the participants. Social supports such as get well soon messages and visits, congratulations and celebrations in a success, help offer in hard times motivate them and provide job satisfaction. Wall et al. (1986) found that the presence of informal groups positively affects job satisfaction. Atay (2007) in his study aiming to determine the effects of informal groups on job satisfaction in enterprises found that in terms of relationships, the staff was pleased in low level with other employees and this reduced job satisfaction.

STRESS RELATED RESULTS OF FORMAL AND INFORMAL GROUP RELATIONSHIPS

Stress is an automatic reaction that a person gives in order to protect himself and continue life when he encounters situations that exceed or force him to cope. Many factors have an effect on the formation of stress, which is now known to everyone and is a part of daily life. Every stimulus perceived as a threat to the physical or psychological integrity of the individual can be perceived as a stressor. Because stress is related to a person's perception, the stimulus that creates stress for one individual may not be for another. For this reason, the stress sources of the teachers were determined primarily in the study, and during the interviews the teachers were asked to interpret their thoughts about stress by focusing on their work.

Stress sources of participating teachers were identified as "administrative attitudes and behaviours", "problems arising from the education system", "relationships with other teachers", "teachers' personality traits", "relationships with students and parents" and "physical conditions". Similar results were found by Günbayı and Tokel (2012). According to the stress averages, teachers' "wage and social opportunities", "management", "student qualifications", "supervision", "job responsibility and intensity", "teacher qualifications", "job stress" at "medium" level, "work and quality" on the other hand was at a "low" level in the factor.

The most stressful resources for participating teachers are school administrators and top administrators in national education. The factors that are perceived as stressor are as follows: the perception of injustice arising from the attitudes of school administrators, the fact that administrators do not include teachers in the decisions that concern them, the administrators do not act according to merit in formal task distribution, they do not protect the teacher against pressure from parents, they do not value the solutions of the teachers that they produce for problems, the discriminative attitudes to teachers, the individual's disapproval of the decisions and the regulations that is taken by the education system of higher levels of the hierarchy.

The second source of stress on teachers is that the education system itself. Teachers stated that the ever-changing education system, high school placement exams, regulation of norm staff, and lack of arrangements to seek out solutions to resource shortages in schools caused them stress. Participants stated that they experienced more stress during the periods once they attended classes to eighth graders due to the uncertainty created by the constantly changing examination system.

The third source of stress on teachers was found to be relationships with colleagues. The debates that hurt the individual because of the differences of opinion among the teachers, the rise of the workload of a number of the people within the same formal group by not fulfilling their responsibilities, the very fact that some teachers carry the group speeches to the administrators or other groups through gossip, the conflicts between the informal groups within the school cause stress.

An important source of stress for teachers is that the relationships with parents and students and therefore the physical characteristics of the school. The factors that increase the stress level of teachers are as follows: parents' intrusive behaviour towards teachers, their conflicts with the teacher so as to defend their children, their dislike of the teacher's methods, and their complaints to the school administration or higher administrators for reasons like low grades. Additionally, due to the physical impossibilities of the school the closure of the branches, the crowded classes, the necessity to do double shift schooling, the failure to repair the broken material at school, the shortage of resources or the wrong use of resource increase the level of stress.

The level of stress created by an occasion within the individual also depends on the person's ability to deal with stress. Personality and psychological resilience are important in handling stress. Some individuals tend to ignore things by using defense mechanisms like denial, suppression, and reflection to deal with stress. It had been observed that the teachers participating during this study were first conscious of the stress in their coping strategies, then they sought social or professional support for this, and that they act to regulate themselves and solve the matter. These strategies were found to be compatible with the stress coping strategies that Folkman and Lazarus (1980) collected under two headings, "problem-solving-oriented" and "emotion-oriented" and therefore the findings were organized within this framework.

The emotion-focused coping technique was used by the majority of the teachers who took part in the study. Emotion-focused coping is a passive method of coping. With social support, the person tends to minimize negative emotion. Teachers' lack of control over stressful tools (such as the educational environment, management attitudes, parent behaviour, and physical conditions) may have led them to believe they couldn't solve the problems. For this reason, they may try to cope with ways such as minimizing, underestimating, avoiding, denying, and avoiding the problem. It has been observed that their most significant support for this is the group relationships they are involved in.

In the second place, participating teachers are observed to use a problem-solving-focused coping strategy. The person who uses the problem-focused coping mechanism assumes that he or she can manage the events that trigger stress and takes action. Problem solving is, in this sense, an active stress-coping technique. There are tendencies in this type of coping such as self-control, accepting responsibility, questioning one's role, self-review, and problem solving in a systematic manner. It has been observed that participating teachers prefer to organize the source of stress rather than avoid or ignore the subjects they believe they can control. Their groupmates' relationships are also important in this strategy, but they serve a different purpose. Teachers who use a problem-solving coping strategy seek not only love, tolerance, and empathy, but also the necessary steps, experience and knowledge to solve the problem.

SUGGESTIONS

The study examined the main determinants in the formation of formal and informal groups and revealed the individual and organic results of group relations. As detailed in the research findings, the positive quality of formal and informal relationships helps in stress management while also having a positive effect on organizational commitment and job satisfaction.

The following recommendations for practitioners and researchers have been made in light of the research findings.

Suggestions of the Researchers

1. Since this study is conducted in a qualitative manner, theoretical generalization is the only option. A mixed-pattern research on the problem can be conducted using a quantitative design in order to make statistical generalizations.

2. In order to find an answer to the research problem, a limited theoretical framework was used. Different dimensions of organizational psychology and organizational behaviour can be used to find solutions to the same problems.

3. Teachers were chosen as the research group in this study. By including managers in the research group, the researchers can investigate the relationships between opinions.

4. A certain formal school group has not been chosen and studied in this study, and teachers have been asked to give opinions in all formal groups. The study can be carried out by selecting a specific formal group in schools (eg, class groups).

Suggestions for the Practitioners

The study revealed how teachers' quality of group relationships affect their group commitment, job satisfaction, and coping with job stress. School administrators play a significant role in improving group commitment and job satisfaction. School administrators should determine the most appropriate leadership style based on the profession style of the teachers they work with, the location of the school, and the organizational goals, and then act accordingly.

It would be appropriate to include teachers in the decisions made in terms of both motivation and adoption of the school. In order for teachers to identify with the school, it is important to leave decision areas where they can move freely.

Relationships with colleagues are seen to be essential in achieving teachers' organizational commitment, increasing job satisfaction, and decreasing stress levels. Teachers' equity needs will be met if administrators distribute tasks fairly, avoiding disputes among groups, and form structured groups based on merit and volunteerism. Administrators can help teachers communicate by planning extracurricular events including special day celebrations. Administrators should not view groups as a challenge, but rather collaborate with them to maximize the benefits of the groups.

STATEMENTS OF PUBLICATION ETHICS

This research was produced from the author's doctoral thesis, which was defended before the jury on April 13, 2018, and the said thesis was approved by the jury that it is ethical. As author of the research, I declare that the study has no unethical problem and I observed.

CONFLICT OF INTEREST

There is no conflict of interest for this study

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An Investigation of Middle School 8th Grade Students' Metaphoric Perceptions Regarding Historical Empathy

Sezgin ELBAY^{a*}

a* Dr., T.R. Ministry of National Education, Sakarya/Turkey, (<https://orcid.org/0000-0002-0601-8063>), *sezgin_elbay@hotmail.com

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ABSTRACT

The main focus of research and studies in the field of historical empathy is to understand and analyze historical events in line with the contextual conditions of the era, without adapting them to today's logic. When the subject is viewed from this point of view, it comes to the fore how students who have historical empathy perceive / liken the concept of historical empathy. In this context, the aim of the study is to determine the perceptions of middle school 8th grade students regarding the concept of historical empathy through metaphors. For this purpose, descriptive model was used in the research. The participants of the study consisted of 50 students at the 8th grade of middle school. The research data were collected through the metaphor form. Content analysis was made on the data. When the mentioned metaphors were examined, it was seen that the students expressed the concept of historical empathy with different metaphors and explanations of these metaphors. Among the 19 metaphors, it was determined that the metaphors most expressed by students regarding the concept of historical empathy were listed as "Hot Pepper, Tornado, History and Video". When these metaphors are evaluated together; it was concluded that students were able to focus on the details of historical events through historical empathy.

Keywords: Historical empathy, metaphor, student perceptions.

Ortaokul 8. Sınıf Öğrencilerinin Tarihsel Empatiye İlişkin Metaforik Algılarının İncelenmesi

Öz

Tarihsel empati alanında yürütülen araştırma ve çalışmaların ana odağında, tarihsel olayları günümüzün mantığına uyarlamadan, devrin (tarihsel dönem/ler) bağlamsal koşulları doğrultusunda anlama ve analiz etme etkinliği bulunmaktadır. Konuya bu açıdan bakıldığında, tarihsel empati yapan öğrencilerin, tarihsel empati kavramını nasıl algıladıkları / tarihsel empatiyi neye benzettikleri ön plana çıkmaktadır. Bu kapsamda araştırmanın amacı, tarihsel empati ile ders işleyen ortaokul 8. sınıf öğrencilerinin tarihsel empatiye yönelik algılarını metaforlar yoluyla ortaya çıkarmaktır. Bunun için araştırmada betimsel model işe koşulmuştur. Araştırmanın katılımcılarını ortaokul 8. sınıf seviyesindeki 50 öğrenci oluşturmuştur. Araştırmanın verileri metafor formu (yarı yapılandırılmış görüşme formu) aracılığıyla toplanmıştır. Veriler üzerinde içerik analizi kullanılmıştır. Belirtilen metaforlar incelendiğinde, öğrencilerin tarihsel empati kavramını farklı metaforlar ve bu metaforların açıklamalarıyla ifade ettikleri görülmüştür. 19 metafor arasında öğrencilerin tarihsel empati kavramına ilişkin en çok ifade ettikleri metaforların "Acı biber, Kasırga, Tarih ve Video" olarak sıralandığı tespit edilmiştir. Bu metaforlar birlikte değerlendirildiğinde; tarihsel empati yoluyla öğrencilerin tarihsel olayların ayrıntılarına odaklanabildikleri sonucuna ulaşılmıştır.

Anahtar kelimeler: Tarihsel empati, metafor, öğrenci algıları.

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1 | INTRODUCTION

Empathy, which has a critical place in the disciplines of Philosophy, Psychology and History, has also taken its place in the curriculum as a skill that should be acquired in the education of individuals. The concept of empathy originated in 1909 by psychologist Titchener as a translation of the German word “Einfühlung” (Gallese, 2003: 175). The word *Einfühlung* was first used by Herder (1744-1803) (Matravers, 2017: 77). According to Özlem (2015), Herder does not use the term *Einfühlung* as a psychological reflection; figuratively described it as part of the historical-philological research process. Vischer, on the other hand, conceptualized the term *einfühlung* as the act of projecting oneself into another body or environment in order to understand how one feels to be in another body or environment (Ganczarek, Hünefeldt & Belardinelli, 2018). Based on this etymological origin of the word, the conceptual framework of historical empathy has been constructed.

The conceptual foundations of historical empathy were laid by Leopold von Ranke in the late 19th century (Low-Beer, 1989). In this context, by Herder, the historian first of all, the ideologies that mark the life of a nation or an age, the moral, legal, political norms that pervade that nation or age, etc. It has been argued that they have to 'hear in themselves', 'reconstruct' them in their own thought and imagination through an understanding intuition and *Einfühlung* (empathy). In this way, it has been argued by Herder that the peculiarity of a nation or age, its “integrity within itself” and “unlike any other nation or ages” cannot be grasped without resorting to understanding as an “intuitive, empathetic method” (Özlem, 2010: 83). In this context, historical empathy is defined as grasping the historical context and conditions of the period from their perspective, taking into account the mentality, value judgments, attitudes and beliefs of historical representatives and figures (Endacott & Brooks, 2018).

According to Collingwood (1990), historical empathy is traveling to the past time mentally and spiritually by taking multiple perspectives while reconstructing historical events. At this point, most of the early research on historical empathy was based on the assumption that historical empathy is a purely cognitive skill (Foster, 1999). However, Ashby and Lee (1987) argue that historical empathy consists of cognitive dimensions; on the other hand, they argued that it could also contain emotional elements. They point out that historical empathy with sympathy successfully recreates the beliefs, values, goals, and feelings of historical representatives and figures. Bryant (1982) goes further in discussions about the affective dimension, defining historical empathy as “an affective response to the perceived emotional experiences of others” (p. 413). With recent studies, it has been determined that historical empathy is a skill or history teaching method consisting of cognitive and affective dimensions (Bryant & Clark, 2006; Elbay, 2020; Elbay & Kaya, 2021; Endacott & Brooks, 2013). Along with these discussions, “Historical Empathy” in the teaching of Social Studies and History courses has taken its place in the curriculums as one of the historical literacy skills that students want to gain (National Council for the Social Studies [NCSS], 2013; National Curriculum, 2002; Ministry of National Education [MoNE], 2018).

The process of finding a place for historical empathy skill in the curriculum started with students' seeing historical subjects as meaningless lessons with boring subjects and events (Dilek, 2002). As a result of this, The Schools History Project (SHP) in the United Kingdom stated that the main purposes in history teaching with the new historical approach in 1976 was to gain historical skills rather than memorize historical facts (Lee & Shemilt, 2011). This initiative saw a powerful way of involving the student in historical events in the use of historical empathy in history teaching. At this point, characteristics of historical empathy should be specified.

The characteristics of historical empathy are stated by Yeager and Foster (2001) as follows: Historical empathy does not include imagination, identification and sympathy; Historical empathy includes understanding the actions people have done in the past by considering the conditions of the historical period. At the same time, historical empathy necessarily involves students appreciating that the past is a different place from today; it is necessary to be aware of the conditions of the historical period that shaped the historical decisions and events of historical empathy. Parallel to these, historical empathy includes a comprehensive evaluation of historical events; it includes the ability to understand how the attitudes and behaviors of historical representatives and figures in their past lives were and why they had this kind of attitude and behavior set. In addition to these, historical empathy, complex human behavior and attitudes; it assumes that the historical context, conclusion, and historical evidence can be uncovered with a full understanding. Finally, historical empathy requires understanding the past based on multiple evidence and perspectives, and is based on evaluation and analysis of historical evidence.

As can be seen from these characteristics, historical empathy requires high level mental activities. Historical empathy, which is a disciplined process of reasoning based on knowledge, aims to know the historical context, the conditions of the past period and the historical order of time, to search and examine different sources, to evaluate different perspectives, interpretations and findings, and to act independently from today's rules and value judgments in the examination of past events requires (Çalışkan & Demir, 2019). In this context, there is a four-step process in the application of historical empathy in history teaching. These are: identifying a historical event that requires disclosure of people's activities, examining the historical context and chronology of the event, analyzing different historical sources, findings and interpretations, and creating a historical narrative of how the event developed and how it ended (Yeager & Foster, 2001). As a reflection of this situation, various studies are carried out in the field of historical empathy.

Previous research on historical empathy has primarily focused on several critical issues. First of all, the reflections of historical narratives written about a past period on the dimensions (cognitive and affective) of historical empathy were examined (Aktın, 2021; Altıkulaç & Gökçaya, 2014; Brooks, 2008, 2011; De Leur, Van Boxtel & Wilschut, 2017; Elbay, 2020; Endacott, 2014; Perikleous, 2019; Yancie, 2020). At the same time, the effects of various strategies, methods, techniques and tools for gaining historical empathy skills have been investigated (Bryant & Clark, 2006; Boltz, 2019; Endacott & Brooks, 2013; Güneş, 2019; Kaygısız, 2019; Kosti, Kondoyianni & Tsiaras, 2015; Lydon, 2018; Metzger, 2012; Rantala, 2011; Savenije & De Bruijn, 2017; Sweeney, Newbill, Ogle & Terry, 2018). In some studies, the effects of historical empathy on academic achievement (Demir, 2019) and attitude towards the lesson have been examined (Çorapçı, 2019; Elbay & Kaya, 2021). In addition to these, teachers' views on historical empathy and the strategies they applied were revealed (Harris, 2016; İslam, 2019; Yılmaz & Koca, 2012). As a result, although many studies have been conducted on strategies for the acquisition of historical empathy and their effects, a limited number of studies have aimed to discover what the lessons taught with historical empathy activities mean for students (Doğan, 2019). However, in this study, students' perceptions of historical empathy were not revealed; whether the students liked / disliked historical empathy was questioned.

Apart from these studies, in the literature review conducted with the words “metaphor”, “perception”, “historical empathy”, no research has been found that reveals the perceptions of middle school 8th grade students about the concept of historical empathy through metaphors. For this reason, it is hoped that the lack of a research conducted at the end of this study will add valuable information that will bring a remarkable and different perspective to the literature in terms of understanding how historical empathy is represented in student perceptions and choosing strategies, methods, techniques and tools in this direction. In this context, the aim of the study is to reveal the metaphorical perceptions of 8th grade students regarding the concept of “historical empathy”.

The following sub-questions were determined within the scope of this general purpose in the study:

1. What are the metaphors students have about the concept of historical empathy?
2. Under which conceptual categories are the specified metaphors in terms of common features?

2 | METHOD

RESEARCH DESIGN

This research, which aims to identify the metaphors that 8th grade students use to explain their perceptions of historical empathy, is a research in a descriptive model. To avoid a methodological discussion, 8th grade students were preferred. Because, when the historical empathy literature is examined, it has been determined that contradictory findings regarding the competence of students to make historical empathy before the age of 14 were reported (Barton & Levstik, 2004; Davis, 2001; Dillenburg, 2017; Dulberg, 2002). In addition, since this research was conducted at the end of an experimental study on historical empathy with 8th grade students, 8th grade students who participated in the experimental study and knew what historical empathy meant participated in the research.

The descriptive model is defined as research in which the opinions, perceptions and attitudes of the individuals in the study group about a phenomenon and event are determined, and cases and events are tried to be described (Karakaya, 2012). In other words, a descriptive model is a statistical process that allows collecting, describing and presenting numerical values for a variable (Büyüköztürk et al., 2014). In this study, the descriptive model was

used as it was tried to analyze the students' metaphorical perceptions of 'historical empathy' over numerical values. For this purpose, first of all, students were provided with knowledge and opinions on historical empathy through an experimental study, then a “metaphorical form on historical empathy” was created to determine students' existing perceptions of historical empathy, students were provided to fill this form, and then these forms were analyzed, the existing situation (metaphorical perception towards historical empathy) is presented through numerical values in the findings section as well. Metaphors are very useful in presenting a creative and rich picture regarding the subject studied (Yıldırım & Şimşek, 2013).

STUDY GROUP

The research was conducted in January, February and March in 2020. A total of 50 students enrolled in state a middle school in the city of Sakarya participated in the study. Participants were selected based on the criterion case sampling method. The basic criterion determined is “teaching lessons with historical empathy before”. In this way, students who know historical empathy were included in the study. To put it more clearly, the students who made up the study group became the participants of an experimental study in which lessons were taught with historical empathy. At the end of an experimental study on historical empathy, it was tried to learn the metaphorical perceptions of students participating in the experimental study about historical empathy. 29 of these students included in the study are female and 21 of them are male. Some demographic conditions of the study group are presented in Table 1.

Table 1. Some Demographic Characteristics of the Study Group

Demographic features		f	%
Gender	Female	29	58
	Male	21	42
Age	13	13	26
	14	36	72
	15	1	2
Mother's education level	Illiterate	4	8
	Literate	1	2
	Elementary school	26	52
	Middle school	17	34
	High school	1	2
Father's education level	University	1	2
	Illiterate	-	-
	Literate	1	2
	Elementary school	19	38
	Middle school	21	42
Monthly income level of the family	High school	9	18
	University	-	-
	Below 2080 Turkish Lira* (TL)	7	14
	Between 2080-3000 TL	17	34
	Between 3501-4000 TL	17	34
Technological products belonging to students	Between 4001-4500 TL	3	6
	4501 TL and above	6	12
	Smartphone	27	42
	Computer	19	30
	Tablet	18	28

DATA COLLECTION TOOL

METAPHORICAL FORM

Metaphors are frequently used as a data collection tool on subjects such as developing creative and critical thinking, planning teaching, developing curricula, and directing teacher practices (Vadeboncoeur & Torres, 2003). While preparing the data collection tool of the research, related studies were examined in which metaphors were used as a tool to reveal students' perceptions (Aktepe, Uzunöz & Sarıçam, 2020; Çatak, 2018; Kırmızı & Tarhan,

2020). After reviewing the literature, it was determined that although different data collection tools were used in metaphor research, semi-structured questions were generally preferred. For this reason, this question form has been molded in this research. In other words, in this research, the data were collected from the semi-structured question using a metaphor form. In the form, each student was asked to complete the following sentences in order to determine students' perceptions of the concept of historical empathy.

“Historical empathy is similar to Because.....”

In this questionnaire, the concept of “similar” is often used to more clearly evoke the link between “the source of the metaphor” and “the subject of the metaphor”. Because it is stated that in order for any phenomenon to be a metaphor, it must be able to answer the following questions (Forceville, 2002):

What is the subject of the metaphor?

What is the source of the metaphor?

What are the features that are considered to be attributed to the subject of the metaphor from its source?

In this study, the concept of “Because” was used, and the participants were asked to state a “justification” for their metaphors. Yıldırım and Şimşek (2013) state that metaphor itself cannot reveal the descriptive and visual power of metaphor sufficiently, and the question of “why” must be asked. For this reason, it was aimed to determine the perceptions of the students towards the concept of historical empathy in detail by asking the question “Because” in order to explain in what sense the students used their metaphors. These points can be described more clearly when exemplified as follows:

Example:

<u>Subject of the metaphor</u>	<u>Source of metaphor</u>
Historical empathy is similar to a tornado.	Because both tornado and historical empathy focus people on themselves

DATA ANALYSIS

Content analysis was performed on the data in order to answer the sub-questions of the research. Content analysis, one of the indispensable methods of social science research, used to analyze a large number of content; it is mostly used to identify and analyze the parts of the content that are considered to be important, such as themes, categories, patterns, and frequent words (Bogdan & Biklen, 2007). In this study, content analysis was used after gathering similar data within certain categories and concepts, organizing this data and interpret them in a way that the reader can understand. Content analysis was carried out in four stages:

1. Naming Stage:

It was checked whether the forms given to the students were written appropriately, and those that were filled in appropriately in both the subject of the metaphor and the source parts of the metaphor were evaluated. In other words, the papers where no metaphor was defined, the participants did not write anything, or the metaphor was not explained logically was marked as “no metaphor” (to be eliminated later). In this context, the forms were numbered from 1 to 50. Then, the metaphor that each student expressed on paper was simply coded (eg tornado, closet, fun, and scenario).

2. Classification Stage:

In the classification stage, each metaphor was subjected to a parsing process through content and metaphor analysis (Yıldırım & Şimşek, 2013). The metaphors obtained in this context were analyzed in terms of technical similarities or common features. In this framework, Forceville (2002) stated that in order for anything to be accepted as a metaphor, at least the following three questions should be answered. These:

- What is the subject of the metaphor?
- What is the source of the metaphor?
- What are the features that are considered to be attributed to the subject of the metaphor from its source?

For this purpose, after reading and analyzing the metaphors written by the participants one by one and taking the necessary notes, each metaphor was evaluated in terms of various criteria. These criteria are:

- (1) The subject of the metaphor,
- (2) The source of the metaphor, and
- (3) Is the relationship between the subject of the metaphor and the source of the metaphor (Chenail, 2012: 248-251).

Afterwards the forms of 50 students in the study group were listed according to their order numbers, along with their metaphors and justifications.

3. Category Development Stage:

At this stage, it was aimed to examine the metaphors generated by the students in terms of their common features regarding “historical empathy”. In line with this goal, firstly, especially in the second stage, each metaphor image was analyzed based on the sample metaphor list and associated with a certain code.

4. Validity and Reliability Stage:

Three criteria were determined in order to ensure the validity of the study. These:

- a) The coding of the data and the data analysis process are explained in detail (Hruschka et al., 2004),
- b) For each of the categories obtained in the study, samples from the student descriptions that are supposed to represent him best were selected, and these explanations were included in the findings section (Yıldırım & Şimşek, 2013),
- c) The literature was searched in detail to ensure consistency between related studies (Ratcliff, 1995).

In order to ensure the reliability of the research, the two researchers worked in harmony at every stage from the beginning to the end of the study (for example, at the stages of creating the research design, writing research questions, collecting data, developing conceptual metaphor categories and interpreting the results). Then, the matches made by these two researchers were compared with their own categories. The number of consensus and disagreement was determined in all comparisons, and the (internal) reliability of the research was calculated using Miles and Huberman's (1994: 102) formula ($\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Disagreement}}$). According to this formula, if the agreement between expert/inter-researcher evaluations approaches 90% or exceeds 90%, it can be claimed that the reliability rate is at an acceptable level. In the reliability study conducted specifically for this study, a consensus was reached by 92%. The experts independently classified the expressions (metaphorical forms) in the data set under various categories. Then, these categories determined by the experts were compared considering the criteria of “the meaning of the category and the passages in which it was marked”. As a result of the comparison, a rate of 92% was obtained.

RESEARCH ETHICS

Ethical principles and rules were followed during the planning, data collection, analysis, and reporting of the research. Ethical compliance approval was obtained for this research in accordance with the decision of Anadolu University Ethics Committee dated 08.03.2019 and numbered 20556.

3 | FINDINGS

THE METAPHORS STUDENTS HAVE ABOUT THE CONCEPT OF HISTORICAL EMPATHY

The metaphors students have about the concept of historical empathy are presented in Table 2.

Table 2. Students' Metaphors about the Concept of Historical Empathy

Item	Metaphors	f	Item	Metaphors	f
1	Hot pepper	5	11	Ocean	3
2	Tornado	4	12	Liking	2
3	History	4	13	Camera	2
4	Video	4	14	Time traveler	2
5	Space	3	15	Going back in time	2

Space: “Historical empathy is like space. Because both are unlimited and infinite.” (Şule)

Closet: “Historical empathy is like a closet. Because when you open the doors of the closet, other issues arise from there. When you have historical empathy, you have to address other issues.” (Mürüvvet)

Bottomless pit: “Historical empathy is like the bottomless pit. Because when you have historical empathy, nothing is enlightened. We always go into more detail.” (Hamiyet)

Whirlpool: “Historical empathy is like a whirlpool. Because historical empathy is like a whirlpool. When we are in the detail, we go into more detail and go into detail from detail.” (Hasan)

Ocean: “Historical empathy is like the ocean. Because it starts from a beach. It grows, it grows... Now it comes to such a point that you are in the middle of the ocean. And when you miss a clue somewhere, you get lost in the ocean. Then it will not be so easy to arrive at the totality of the subjects. It's the same thing to do historical empathy.” (Melis)

To be involved in life experiences

Hot pepper: “Historical empathy is like hot pepper. Because the more we eat the hot pepper, the more our mouth burns. The more we show historical empathy, the more we see the events, the more it burns.” (Emine)

Scenario: “Historical empathy is like an actor playing a character in a script. Because when I teach with historical empathy, I define the lesson as a scenario. In this scenario, the historical representatives / figures are the characters of the event. With historical empathy, I put myself in the shoes of historical representatives.” (Raziye)

Camera: “Historical empathy is like a quality camera. Because it's like historical empathy on camera. You press the button, it will shoot what you see. So is historical empathy. If you picture it, you can imagine everything there.” (Zehra)

Uncovering contextual thinking

History: “Historical empathy is like history. Because in historical empathy, people who lived in ancient times and events are told. What would I do if I was in his place, whether I wanted to I'm asking questions like.” (Emrah)

Time traveler: “Historical empathy is like time travel. Because historical empathy makes me feel like a time traveler and takes me back. I put myself in the shoes of historical actors.” (Osman)

Going back in time: “Historical empathy is like going back in time. Because when I learn about historical issues through historical empathy, I feel like I have gone back in time.” (Burhan)

A curious scholar: “Historical empathy is like a curious scholar. Because both scholars and students with historical empathy are curious about many things.” (Ela)

To be in an affective connection

Entertainment: “Historical empathy is like entertainment. Because both historical empathy and entertainment make one feel very good feelings.” (Zarife)

Interest: “Historical empathy is like interest. Because I am interested in commenting, more precisely being able to interpret, understanding our history, and most importantly, feeling our history thanks to historical empathy.” (Reyhan)

4 | DISCUSSION & CONCLUSION

In this research, it is aimed to determine the metaphors generated by 8th graders regarding the concept of historical empathy. For this purpose, the results obtained from the research are as follows:

In the study, students developed a total of 19 metaphors related to the concept of historical empathy; they have stated a total of 50 opinions for this. When these stated metaphors were analyzed, it was seen that the students expressed the concept of historical empathy with different metaphors and explanations of these metaphors. Among the 19 metaphors, it was determined that the most stated metaphors of the students regarding the concept of historical empathy were listed as “Hot pepper, Tornado, History, and Video”. These metaphors highlighted in the

study were collected in 4 different categories at the end of the analysis. These categories are listed as “get into the details of the matter, to be involved in life experiences, uncovering contextual thinking, to be in an affective connection” in terms of the most metaphorical coverage. When these metaphors, categories for metaphors and student descriptions are evaluated together; through historical empathy, it has been concluded that students can be heavily drawn into historical events.

Get into the details of the matter was identified as the category with the most metaphors. These metaphorical perception results; it is interpreted as the students entering into the details of historical events through historical empathy. In parallel with this, it was found that students examine historical events in detail through historical empathy (Brooks, 2008; Endacott, 2014; Kosti et al., 2015; Perikleous, 2019).

Secondly, the category to be involved in life experiences was obtained. This category is interpreted as students perceive the difficulties experienced in the historical period through historical empathy. In the same way, it has been determined that students understand the difficulties in historical periods through historical empathy (De Leur et al., 2017; Elbay, 2020; Elbay & Kaya, 2021). Thirdly, uncovering contextual thinking category was obtained. This category shows that students can perceive the contextual conditions of the period. Similarly, it was found that students understand the historical context through historical empathy (Aktın, 2021; Elbay, 2020; Elbay & Kaya, 2021; Rantala, 2011; Yancie, 2020). Finally, the category to be in an affective connection was obtained. Based on this category, it can be said that students enjoy lessons taught through historical empathy. Similarly, in the studies conducted, it was found that students enjoyed the lessons taught through historical empathy (Çorapçı, 2019; Elbay & Kaya, 2021).

Although it is stated in living metaphors for the concept of historical empathy by students, it has been determined that mostly inanimate metaphors have been developed. This shows that the students generated metaphors by thinking in the direction of the application purpose, process and results of the concept of historical empathy in the metaphors they stated. In addition, it can be evaluated as an indicator that students are aware of the historical concept of empathy and have a certain cognitive structure in this regard. In conclusion, it is possible to say that the metaphors students developed about the concept of historical empathy reveal their rich, creative and affective perspectives. Because the students expressed many metaphors on the subject. It has been determined that metaphors have various kinds of meanings and have features that evoke abstract and concrete situations (history, video, scenario, time traveler, going back in time, dialogue, a curious scholar). In addition, in the mentioned metaphors; it is striking that students tend to perceive the details of historical events. This may indicate that students tend to clarify the background of historical events. As Barton and Levstik (2011) point out, a student with historical empathy should interpret historical events, taking into account emotional factors such as purpose and intention behind historical events. From this point of view, it can be said that it is important for students to use emotional factors as one of the main elements in the perception of historical events in interpreting historical events.

In light of the results, the recommendations are as follows:

- ✓ Similar studies to this research can be carried out with the participation of teachers and the results can be evaluated comparatively.
- ✓ This research can be carried out by supporting different data collection methods, especially interviews and historical narratives.
- ✓ The research process can be planned to explain the causes of negatively perceived metaphors (such as hot pepper and tornado) that students express to the concept of historical empathy.
- ✓ It is recommended to use historical empathy by teachers to add depth to the understanding of historical subjects and to establish a cognitive and sensory (affective) connection to the contextual conditions of the period.

STATEMENTS OF PUBLICATION ETHICS

As author of the research, I declare that the study has no unethical problem and I observed research and publication ethics. Ethical principles and rules were followed during the planning, data collection, analysis and reporting of the research. Ethical compliance approval was obtained for this research in accordance with the decision of Anadolu University Ethics Committee dated 08.03.2019 and numbered 20556.

RESEARCHERS' CONTRIBUTION RATE

The whole process of the research was carried out by the first author.

CONFLICT OF INTEREST

There is no conflict of interest for this research.

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Preschool Teachers' Opinion on Active Learning İpek ÖZBAY^{a*}

a* Asst. Prof. Dr., Yozgat Bozok University, (<https://orcid.org/0000-0002-0996-5496>) ipek.ozbay@bozok.edu.tr

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ABSTRACT

The study was aimed to determined preschool teachers' opinions about active learning. The phenomenological pattern was preferred within the framework of the qualitative research methodology. The data of the study were obtained through semi-structured interviews. The study group of the study consists of 10 preschool teachers being selected through easily accessible situation. Descriptive analysis method was used in the analysis of the data. As a result of the study, it was seen that teachers defined active learning as a process in which the learner is active, that activates the senses, in which the learning skills develop, in which learner obtain learning experience by doing and living. Teachers stated that in active learning, the teacher has responsibilities to know the individual and developmental characteristics of children, to be a good observer, to plan learning processes that attract the attention and interest of children, to support children as much as necessary when they need help, and to include children in planning the learning process. Teachers stated that the prominent behavioral characteristics of children in active learning are being active in the learning process, establishing positive relationships with their peers, asking questions, being willing to research, question and learn. It was seen that they stated the small size of the class, crowded class size, classroom management problems, lack of materials and being closed to the learner as barriers to active learning. It was seen that the practices of teachers regarding active learning are asking interesting questions, encouraging children to ask questions, designing activities that stimulate the senses, creating a collaborative classroom environment, and using different teaching techniques.

Keywords: Active learning, constructivism, preschool teachers

Okul Öncesi Öğretmenlerinin Aktif Öğrenmeye Yönelik Görüşleri ÖZ

Bu çalışmada okul öncesi öğretmenlerinin aktif öğrenmeye ilişkin görüşlerinin belirlenmesi amaçlanmıştır. Araştırmada nitel araştırma yöntemi çerçevesinde fenomenoloji deseni tercih edilmiştir. Araştırmanın verileri yarı yapılandırılmış görüşmeler yoluyla toplanmıştır. Çalışma grubu kolay ulaşılabilir örnekleme yoluyla seçilmiş 10 okul öncesi öğretmeninden oluşmaktadır. Yarı yapılandırılmış görüşmelerden elde edilmiş olan verilerin analizinde betimsel analiz yönteminden faydalanılmıştır. Araştırma sonucunda öğretmenlerin aktif öğrenmeyi öğrenenin aktif olduğu, duyguları harekete geçiren ve öğrenenin becerilerinin geliştiği yaparak yaşayarak öğrenme deneyimi olarak tanımladıkları görülmüştür. Öğretmenler aktif öğrenmede öğretmenin çocukların bireysel ve gelişimsel özelliklerini bilme, iyi bir gözlemci olma, çocukların dikkatini ve ilgisini çeken öğrenme süreçleri planlama, çocuklara yardıma ihtiyaç duydukları zamanda gerektiği kadar destek olma ve öğrenme sürecini planlamaya çocukları da dahil etme konularında sorumlulukları olduğunu belirtmiştir. Öğretmenler aktif öğrenmede çocukların öne çıkan davranışsal özelliklerinin ise öğrenme sürecinde aktif olma, akranlarıyla olumlu ilişkiler kurma, sorular sorma, araştırmaya, sorgulamaya ve öğrenmeye istekli olma olarak ifade etmişlerdir. Sınıf büyüklüğünün küçük olması, sınıf mevcudunun kalabalık olması, sınıf yönetimi sorunları, materyal eksikliği ve öğrenenin içine kapalı olmasını aktif öğrenmenin önündeki engeller olarak ifade ettikleri görülmüştür. Okul öncesi öğretmenlerinin aktif öğrenmeye ilişkin yaptıkları uygulamalar arasında ilginç sorular sorma, çocukları soru sormaya teşvik etme, duyguları harekete geçiren, araştırma yapabilecekleri, düşündürücü, merak uyandırıcı ve dikkat çekici etkinlikler tasarlama, işbirlikçi çalışma ortamı yaratma ve farklı öğretim tekniklerini kullanma olduğu görülmüştür.

Anahtar kelimeler: Aktif öğrenme, yapılandırıcılık, okul öncesi öğretmenleri

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1 | INTRODUCTION

In Turkey, radical changes occurred in education programs due to the reforms made in the field of education in 2005 (Aksit, 2007). These reforms ensured that the constructivist approach that puts the learner in the center instead of the traditional understanding of education is taken as a basis in learning. With the adoption of the constructivist approach, the implementation of an original and more flexible education program has come to the fore and the roles and responsibilities of the teacher and learner have changed. The teacher has left behind the role of transmitting knowledge, taking a guiding and facilitating role in learning. On the other hand, the learner had the role of constructing the information instead of receiving it passively. In this context, with the adoption of the constructivist approach, active learning understanding has become dominant in learning.

The constructivist approach emphasizes that learners construct their own learning using their existing knowledge and experience (Bransford, Brown, & Cocking, 1999). According to Piaget's learning theory, learning is an active process that learner fitting new information into existing their understanding or mentally restructuring the new information (Schaffer, 2004). In other words, the learner must establish a connection between new information and existing knowledge and expand his understanding. However, according to Vygotsky, social interaction plays a fundamental role in the learning process (Rogoff, 2003; Vygotsky, 2004). In addition to actions, cultural resources have an impact on learning.

Active learning, based on the constructivist approach, is a process that includes peer-to-peer interaction that encourages the learner to develop cognitive activity and more advanced mental models. In general, active learning can be defined as a teaching method that effectively involves the learner in the learning process in a way that requires the learner to do meaningful learning activities and to think about what they are doing (Bonwell & Eison, 1991). In short, active learning is the process of making learners the center of their own learning (Warren, 1997).

Active learning in early childhood is important for the creation of a learning environment that offers developmentally appropriate learning opportunities for the full development of the child's potential. Children learn by occurring a new understanding in interaction with objects, peers, adults, ideas and developing events (Stephen, Ellis, & Martlew, 2010). Based on this definition, active learning depends on the active use of materials (natural materials, toys, etc.) in the learning environment. Active learning begins with children manipulating objects using their bodies and senses. These experiences gained through the materials offer concrete and direct learning to children (Flavel, 1963). In addition, active learning includes physical activity, which includes interacting with objects to generate new knowledge, as well as mental activity, which includes interpreting this interaction. In this context, the existence of peer or adult support that enhances the learning experience that begins with interacting with objects is also important for learning to take place (Klein, 1991). The power that drives the child to learn comes from within. The child's interest and curiosity stimulate him to develop new knowledge and understanding. Active learners are explorers who ask questions and investigate using this interest and curiosity within them.

In active learning environments, children decide what to do based on their own interests and desires. In line with this decision, they make discoveries using all their senses by deciding what materials to use and what to do. Thus, they gain concrete learning by directly interacting with objects, ideas, peers and adults (Açıkgöz, 2011; Koç, 2000; Harminn, 1999). In such a learning environment, the teacher provides the children with a variety of materials they can work on. In addition, it creates a suitable place and sufficient time for children to use these materials. In this learning process, it follows children's own planning, listens to their thoughts and encourages them to ask questions (Açıkgöz, 2011; Öztürk, 2014; Zembat, 2012). In such a learning process, the child has an active and meaningful learning experience.

According to Demirtaş and Sucuoğlu (2009), group activities involving active learning carried out in early childhood positively affect children's individual learning and group work, their ability to produce more alternatives, and their decision-making skills. Pramling-Samuelsson and Johansson (2006) stated that children should be active participants in the learning process because of learning is triggered by their life experiences. In other study, conducted by Hännikäinen, and Rasku-Puttonen (2010) investigated the contribution of primary and pre-school teachers to children's participation in learning process, and found that preschool teachers focus on active participation and interaction, whereas primary school teachers emphasized more clearly on academic learning. Also, the findings indicated that active participation and friendly relationships enrich children's curiosity,

and nourish children's motivation for and interests in academic learning (Hännikäinen, & Rasku-Puttonen, 2010). In another similar study on how first-grade primary school teachers interpret active learning in daily practice, it was determined that they adopted a teaching focused on "planned, purposeful play" instead of spontaneous play and activities based on individual interests of children (Stephen, Ellis & Martlew, 2010). Johansson and Sandberg (2010) in their study of the views of pre-service preschool teachers and preschool teachers about learning and participation revealed that the majority described learning as gathering information through interactions, experiences and play. According to another study on examining the views of preschool teachers about learning, teachers mostly emphasized the importance of active learning in children's learning by emphasizing learning processes that support children's social development and initiatives as well as play activities (Broström et al., 2015). Additionally, a study on exploring active learning practices in preschool education based on pre-service preschool teachers' views, it was indicated that pre-service preschool teachers thought that active learning practices guided and supported children learning (Pekdogan & Kanak, 2016). Also, in this study, pre-service preschool teachers stated that varied activities should be carried out in a balanced and holistic way in well-equipped classrooms that provide children with an area of movement.

It is vital in early childhood education that children were directed to learning processes in line with their interests and needs and support their active participation in the learning process. Since, it is stated that the active, interactive and collaborative learning experiences that will be obtained in the preschool period will have a positive effect on the future years of children's lives (Alexander, 2009; Department for Children, Schools and Families [DCSF], 2007, 2009). Also, in Turkey, the necessity of creating an education approach based on play and active learning is emphasized in the preschool education program (Ministry of National Education [MEB], 2013). In developing active learning experience for children in classrooms, teacher's ideas and experiences are also important issue. An examination of the related literature reveals that there are limited studies on the views of preschool teachers about the concepts of active learning. Therefore, there is a need for such studies. Furthermore, considering the contribution of the active learning method and the educational environments designed based on this to the development of children, it can be said that determining the opinions of preschool teachers on this subject will contribute to the progress of the education system and most importantly to the vision of how to provide a better learning experience for children. In this context, it was aimed to determine the opinions of preschool teachers on the concept of active learning. Within the framework of this main purpose, answers to the following questions:

1. How do teachers perceive the concept of active learning?
2. What are the teachers' views on the roles of teachers and learners in the active learning process?
3. What are the teachers' views on the barriers to active learning?
4. What are the practical experiences of teachers regarding active learning?

2 | METHOD

RESEARCH DESIGN

In the study, qualitative research design was preferred to reveal the opinions of preschool teachers about active learning. The phenomenology design was preferred within the framework of this research method. Phenomenology is a qualitative research method that allows people to express their understanding, feelings, perspectives and perceptions about a particular phenomenon or concept and is used to describe how they experience this phenomenon (Patton, 2018). In this research, it is aimed to reveal the perceptions and experiences of the participants regarding active learning by focusing on the perspectives and experiences of the participants.

STUDY GROUP

The study group of the research consists of 10 preschool teachers who were selected from the non-probabilistic sampling types through easily accessible situation sampling methods. This sampling method was preferred because it is a method that accelerates the research by choosing a situation that is close and easy to access (Creswell, 2016). Demographic information about the study group are given in the Table 1.

Table 1. Demographic Information of the Study Group

Participant Code	Gender	Age	Educational Level	Professional Experience
T1	Female	38	Bachelor	12
T2	Female	32	Bachelor	10
T3	Female	31	Bachelor	8
T4	Female	47	Bachelor	24
T5	Female	38	Bachelor	9
T6	Female	29	Bachelor	6
T7	Female	41	Bachelor	16
T8	Female	35	Bachelor	14
T9	Female	40	Bachelor	17
T10	Female	35	Bachelor	12

DATA COLLECTION TOOL

The semi-structured interview form developed by the researcher was used as the data collection tool in the study. Interview is a way of collecting data with the participants for a specific purpose, revealing the participants' thoughts, perceptions and evaluations about the research subject (Greasley & Ashworth, 2007). In this study, it was preferred to obtain data through semi-structured interviews because it is a more convenient way to reveal the different perspectives of preschool teachers regarding active learning. The semi-structured interview form included six open-ended and easy-to-understand questions to reveal teachers' perceptions of active learning. The following questions were asked to the teachers: (1) How do you define active learning in preschool education period? (2) What do you think should be the responsibilities of a preschool teacher who has adopted an active learning approach? (3) What kind of responsibilities do you think a teacher who has adopted an active learning approach should expect from the children in her/his class? (4) What do you think about the barriers to learning based on active learning in schools and your own teaching? (5) What do you do to activate children in the learning process? (6) Can you describe in detail the best active learning experience you have had with children in your classroom?

While preparing the semi-structured interview form, the relevant literature was used based on the research questions. After the interview form was created, it was presented to the opinion of two field experts, one of whom has completed a master's degree and the other a doctorate in early childhood education. Thus, the suitability of the questions in the interview form for the purpose of study was evaluated through the experts' opinions by the researcher. At the same time, the form was sent to a language expert and it was checked whether the questions consisted of clear and understandable expressions. With the interview form created by making arrangements in line with the expert opinions received, firstly pilot interviews were made with two preschool teachers. In line with the feedback obtained from the pilot interviews, the interview form was finalized and the data of the research started to be collected.

DATA COLLECTION PROCESS

The data of the research were collected from the teachers who volunteered to participate in the study through online interviews due to the Covid-19 pandemic. Before starting the interview, each teacher was informed about the subject and rights of the research. After this information, the approvals of the teachers that they participated in this interview voluntarily were obtained. Then, at the beginning of the interview, after the teachers answered questions about their demographic status, they answered the semi-structured interview questions. Interviews with teachers vary between 15-20 minutes. The data collection process was completed in January of the 2020-2021 academic year.

DATA ANALYSIS

The teachers' responses to the semi-structured interview questions were analyzed via descriptive analysis method. Descriptive analysis is the summarization and interpretation of the obtained data based on predetermined themes and often using direct quotations to reveal the views of the interviewees in a striking way (Yıldırım & Şimşek, 2013). According to Yıldırım and Şimşek (2013), descriptive analysis is mostly used in research in which

the conceptual structure of the research is clearly determined beforehand. The data can be organized according to the themes revealed by the research questions or the questions used in the interview and observation processes. In other words, the data are summarized and interpreted according to predetermined themes. In addition, direct quotations are frequently included. The purpose of descriptive analysis is to present the findings in an organized and interpreted way.

In the research, the data were arranged according to the themes revealed by the research questions. After the transcription of the audio recordings of the interviews with the participants, the transcripts were read several times by the researcher. First of all, a framework for data analysis was created based on the research questions, and thus it was determined under which themes the data would be organized. Then, the obtained data were read and organized according to the created frame. In the next stage, the organized data were defined and supported with direct quotations. Finally, the identified findings are explained and interpreted.

VALIDITY AND RELIABILITY

This research is a qualitative research and the data obtained were collected through interviews. Reporting in detail the data obtained in a qualitative research and explaining how the findings were obtained are important criteria for validity and reliability (Yıldırım & Şimşek, 2013). In qualitative studies in which the interview technique is used, the interview protocol should be piloted before starting the actual study (Silverman, 1993). In this study, it was tried to increase the reliability of the research by ensuring consistency in the interview protocol with the pilot study conducted before the actual study. Also, in studies in which the interview technique is used, the way the interviewer asks questions affects the content and quality of the data obtained (Silverman, 1993). In this context, the researcher asked the same question with the same words and in the same way to each participant included in the research during the interview. In addition, another way was preferred in the research to increase the reliability of the transcribe what participants say from audio recordings during the interviews. The researcher transcribed a portion of the audio recordings at two different times and calculated the consistency in both transcription processes. For this, he used the agreement percentage formula ($\text{Agreement percentage} = \frac{\text{amount of agreement} \times 100}{\text{amount of agreement} + \text{amount of disagreement}}$) (Bakeman & Gottman, 1997). According to the calculation based on this formula, it was determined that the percentage of agreement between the audio recording transcription made by the researcher at two different times was 100%. The validity of the study was tried to be ensured by participant confirmation and supporting the findings with direct quotations.

RESEARCH ETHICS

In the study several ethical principles take into account. These ethical principles were followed as: Firstly, the participants were informed about the purpose of the research and their rights in the research. Then consent of the participants that they participated in the study voluntarily was obtained. In order to protect participants' anonymity and confidentiality, the preschool teachers were coded as Tx: T: teacher and x: the order in which the interview was made. For example, T5 means the teacher who was interviewed was in the fifth rank. In addition, during the writing process of the study, ethics and quotation rules were followed by the researcher, and the collected data were analysed without making any changes.

3 | FINDINGS

The findings obtained from the interviews with the preschool teachers were gathered under the themes created within the framework of the research questions (Figure 1). These themes are concept of active learning, teacher responsibilities, learner responsibilities, obstacles to active learning, classroom practices based on active learning.

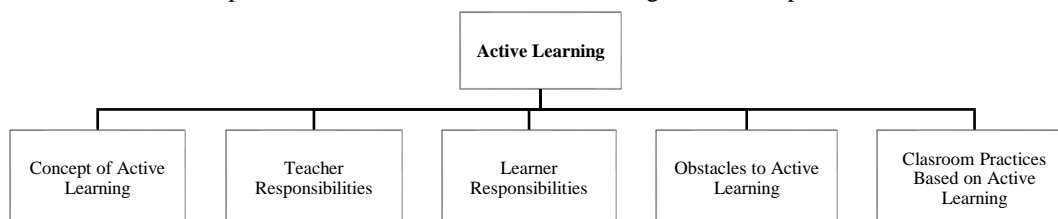


Figure 1. Themes

CONCEPT OF ACTIVE LEARNING

It is seen that preschool teachers define active learning as a learning process in which the children learn by experiencing (n=9), activate children (n=5) and their senses (n=5) and develops their skills (n=4). Sample expressions related to the active learning concept theme are given in Table 2.

Table 2. Teachers' Expressions Related to Active Learning Concept Theme

Theme	Codes	Teachers' Expressions
Concept of Active Learning	Learning by experiencing	"Obviously, we can say that it is an experiential learning." (T4) "They learn by doing and experiencing" (T8) "Learn by doing and experiencing." (T10).
	Activating the learner	"It is an educational process in which children are active in the learning process" (T8) "It activates them in the learning process both affectively and intellectually." (T4)
	Activating learning senses	"It is a learning process that appeals to every sense of children" (T4) "It is a learning method in which children actively use all their sense organs through activities they participate one-on-one" (T10)
	Developing the learner's skills	"It is a learning process in which children are active and therefore have the opportunity to develop their various skills." (T2) "It is a learning where children can develop many skills such as listening, self-expression and communication." (T7) "In active learning, children are active in the classroom. Thus, they can learn by doing and living. In group work, children can establish positive relationships with their peers and thus their communication skills improve." (T4) "Since all the children in the classroom are in a collaborative way, their social skills, especially their ability to establish social positive relationships, are also supported." (T10)

According to the teachers, a learning process based on active learning; It is understood that it is an environment based on learning by doing, where the learner is active, uses all his senses and has the opportunity to develop various skills in this process.

TEACHER RESPONSIBILITIES

According to the findings, in the active learning process, the teacher has responsibilities to know the individual and developmental characteristics of children (n=5), to plan learning processes that attract the attention and interest of children (n=5), to be a good observer (n=4), to support children as much as necessary when they need help (n=3), and to include children in planning the learning process (n=2). Sample expressions related to teacher responsibilities theme are given in Table 3.

Table 3. Teachers' Expressions Related to Teacher Responsibilities Theme

Theme	Codes	Teachers' Expressions
Teacher Responsibilities	Should know the individual and developmental characteristics of learners well	"First of all, the teacher should know the developmental characteristics of the children in the classroom very well. If they know their developmental characteristics well, they can evaluate the developmental levels of children correctly and design activities suitable for their developmental level." (T5)
	Should design learning processes that attract children's attention and interest	"It should do activities that attract the attention of children." (T6) "Teachers should plan the activities according to the child's interest and apply them in a way that draws their attention." (T9)
	Being a good observer	"Being a good observer also helps you gain information about children's individual characteristics and developmental levels. You can also use this information to keep children active." (T7) "As a preschool teacher, you must be a good observer if you want to activate all children in the learning process." (T8)
	Only should support children when they need help in learning process	"For children to be active, the teacher needs to help children only when they need help. For example, instead of cutting and painting for the child in art activities, it is necessary to help the child to complete his / her own activity by helping the child when the child demands." (T2)
	Should include children in the planning process	"Teachers should include children in the planning phase in the learning process." (T1)

According to preschool teachers, in active learning, teachers should know well the individual and developmental characteristics of the children in their class. Regarding this, one teacher expressed her views as

follows: *“Besides, teacher should know the developmental characteristics of children very well. Thus, it can organize activities suitable for the development levels of the children and easily ensure the active participation of all children in the activities.”* (T1). In addition, T7 coded teacher emphasized that the teacher should be a good observer for knowing the individual and developmental characteristics of children with the statement as follows: *“Being a good observer also helps you gain information about children's individual characteristics and developmental levels. You can also use this information to keep children active. You can offer different activity options for the individual differences of the children or you can support their self-confidence by having activities that they can achieve in accordance with their developmental level.”*

At the same time, preschool teachers stated that in active learning, teachers should design learning processes that attract children's attention and interest. Regarding this, the preschool teachers expressed their views as follows: *“If teacher knows the individual characteristics of the children well, for example, if teacher knows the favorite cartoon character of the group, he/she can write various activities on this character and draw the attention and attention of the children to the learning process.”* (T1), *“While designing activities suitable for the developmental levels of children, they should also make plans considering the interests and needs of the children.”* (T5). In addition, T5 coded teacher emphasized that it should stimulate children's curiosity in designing activities that attract children's attention with the statement as follows: *“It should design activities that will attract the attention of children. Thus, children can participate in activities actively.”* On the other hand, T8 coded teacher emphasize the importance of the teacher being a good observer in planning activities that attract the attention and attention of children with the statement as follows: *“As a preschool teacher, you must be a good observer if you want to activate all children in the learning process. If you are a good observer, you can understand what children are doing in your classroom, what they like to do or what they get bored with very quickly. Thus, you can plan activities that will attract the attention and attention of children with the information you get from your observations.”*

In addition, some preschool teachers stated that teachers only should support children when they need help in learning process. Regarding this, the preschool teachers expressed their views as follows: *“Instead of thinking for children, responding for them, or doing for them, we should let the kids do it. For this reason, we should not replace him in the name of helping the child.”* (T4) and *“We have to let the kids do something by themselves. I'm not talking about doing everything themselves here. They will necessarily need the help of the teacher, but the help of the teacher should ensure the child do the work he is helping to do on his own.”* (T6)

Finally, T1 coded teacher said that *“Teachers should include children in the planning phase in the learning process. Thus, the child is given the opportunity to make a decision about his own learning. Thus, the child can be activated at every stage of the teaching process by participating not only in the implementation phase but also in the planning phase.”* and T7 coded teacher said that *“Asking children questions such as what kind of activities would you like to do tomorrow will enable them to participate more actively in the activities. Similarly, questions such as what you want to do today may be asked when starting the day.”* Considering two of the teachers (T1, T7) opinions expressed, it was determined that in active learning, teachers stated that they should include children in the planning process.

LEARNER RESPONSIBILITIES

While preschool teachers expressing opinions about children's responsibilities in active learning, they made various statements about the positive effects of active learning on children and the behavioral characteristics that children exhibit prominently in active learning. Regarding this, sample expressions related to learner responsibilities theme are given in Table 4.

Table 4. Teachers' Expressions Related to Learner Responsibilities Theme

Theme	Codes	Teachers' Expressions
Learner Responsibilities	Should be active	<i>“In active learning, children are active in the classroom.”</i> (T4) <i>“In summary, children are active in all matters in active learning.”</i> (T8) <i>“When it comes to active learning, the first thing that comes to mind is that learners like teachers are also active.”</i> (T10)
	Should establish positive relationships with their peers	<i>“Children can establish positive relationships with their peers”</i> (T4)

	<i>"This learning does not only proceed through academic knowledge. Since all the children in the classroom are in a collaborative way..." (T10)</i>
Should ask questions	<i>"They ask questions and work together." (T8) "Children who are active in the learning process constantly ask questions." (T10)</i>
Should research and questioning	<i>"They discover new information through continuous research and inquiry" (T8) "They are curious and learn while investigating and questioning." (T10)</i>
Should be willing to learn.	<i>"Children are more active when they are most enthusiastic. Their willingness to learn makes them more active participants." (K5) "The child who wonders what he does not know is more active in the learning process if he is willing to learn what he does not know." (K2)</i>

When table 4 was evaluated, in active learning, it was determined that children should be active (n=6), establish positive relationships with their peers (n=4), research and questioning (n=3), ask questions (n=2), and be willing to learn (n=2).

OBSTACLES TO ACTIVE LEARNING

Preschool teachers stated that there are obstacles in front of active learning, especially related to the physical characteristics of the school. From the opinions of the teachers, the obstacles depending on the physical conditions of the school were determined to be the size of the class being small (n=6), the number of children in the class being high (n=5), and the lack of material (n=1) and learner's introversion (n=1). Regarding this, sample expressions related to obstacles to active learning theme are given in Table 5.

Table 5. Teachers' Expressions Related to Obstacles to Active Learning Theme

Theme	Codes	Teachers' Expressions
Obstacles to Active Learning	Small class size	<i>"I think the prominent thing here is the physical conditions. For example, I think it is difficult to practice active learning with a small classroom and a large group of children." (T1)</i>
	High number of children in the class	<i>"The high number of children in the classroom prevents them from working effectively." (T5) "Although a process in which children are active will create an effective learning environment, it is not possible to achieve this in large class groups." (T3)</i>
	Lack of material	<i>"There is also not enough variety of materials in our classes to support the independent work of children." (T7)</i>
	Learner's introversion	<i>"Also, because some children are very reserved, it can be difficult to include them in such an active learning process" (T3)</i>

T3 coded teacher emphasized that the high number of children in the classroom is an important obstacle to active learning with the statement as follows: *"Although a process in which children are active will create an effective learning environment, it is not possible to achieve this in large class groups. We have a large number of children in the classroom environment and unfortunately it is not possible for us to monitor, observe, evaluate and support the independent work of each child. You know that it is not possible for you to only teach in the classroom and to reach everywhere in such an environment. Also, because some children are very reserved, it can be difficult to include them in such an active learning process."* In addition, T3 coded teacher stated that with this statement, some of the children being introvert was a child-related obstacle to active learning. Similarly, T4 coded teacher emphasized that the high number of children also brings about class management problems with the statement as follows: *"In active learning, the teacher should follow the class continuously and guide the studies. This job is challenging for the teacher in class groups with a large number of children. In the classroom, there will be loud speech sounds rising from small group work, on the other hand, the sounds of another group of children trying to carry out different activities, and a continuous movement. In this case, it can create a distracting effect. Both children will have difficulty focusing on their studies, and the teacher will have problems guiding the children's work. For this reason, it is difficult to apply active learning in groups with a large number of children."*

CLASSROOM PRACTICE BASED ON ACTIVE LEARNING

Preschool teachers expressed that asking interesting questions (n=5), encouraging children to ask questions (n=3), designing activities that stimulate the senses (n=3), designing intriguing activities (n=3), designing research-based activities (n=3), create a collaborative environment (n=2) and use different teaching techniques (n=1) as examples of their experiences based on active learning. Sample expressions related to classroom practice based on active learning theme are given in Table 6.

Table 6. Teachers' Expressions Related to Classroom Practice Based on Active Learning Theme

Theme	Codes	Teachers' Expressions
Classroom Practice Based on Active Learning	Asking interesting questions	<i>"In short, it is very important to ask interesting questions, to have children ask questions and do research in this period."</i> (T5)
	Encouraging children to ask questions	<i>"By the way, let me add that I would try to encourage children to ask interesting, maybe sometimes absurd questions"</i> (T5)
	Create a collaborative environment	<i>"I have planned and implemented various activities throughout my teaching life. However, I have observed that children are most active when interacting with each other."</i> (T9)
	Use different teaching techniques	<i>"Besides, I use different techniques. For example, I use the scampers technique."</i> (T3)
	Designing activities that stimulate the senses	<i>"I observe that activities that appeal to the senses, especially hearing and visual, activate children in the learning process."</i> (T7)
	Designing intriguing activities	<i>"I always start activities with an interesting, attention-grabbing stimulus"</i> (T5) <i>"In order to ensure the active participation of children, the activity should attract the attention of children and arouse curiosity."</i> (T3) <i>"Therefore, in my activities, I plan activities that attract the attention of children, arouse their curiosity and especially appeal to their hearing and visual senses."</i> (T7)
	Designing research-based activities	<i>"In short, it is very important to ask interesting questions, to have children ask questions and do research in this period."</i> (T5) <i>"For example, by designing various science activities, I design activities that allow children to do one-on-one experiments and researches, especially with science activities in which children are active."</i> (T3)

4 | DISCUSSION & CONCLUSION

In this study focuses on the perceptions and experiences of pre-school teachers towards active learning, it was determined that most of the preschool teachers emphasize that the learner is active in the learning process in active learning. In addition, preschool teachers stated that the learning process based on active learning appealed to the senses of the learners, and that they gained learning experiences by doing. Preschool teachers emphasized the principle of "learning by doing and living" in the active learning process. Johansson and Sandberg (2010) in their study of the views of pre-service preschool teachers and preschool teachers about learning and participation concluded that the majority described learning as gathering information through interactions, experiences and play. Similarly, Pramling-Samuelsson and Johansson (2006) stated that children should be active participants in the learning process because of learning is triggered by their life experiences. The emphasis that preschool teachers placed "learning by doing and living" in the active learning process is parallel to these studies results in the literature. Also, when the definitions of active learning are examined in the literature, active learning is primarily defined as the learning process in which learners are active (Bonwell & Eison, 1991; Hohmann & Weikart, 1995; Levine & Munsch, 2010). In addition, active learning is defined as a process in which the learner learns by interacting with his environment and learning by doing (Hohmann & Weikart, 1995). In active learning, learners continue their own learning by taking an active role in their own learning (Lim-Ratnam, Atencio, & Lee, 2016). In summary, active learning is defined as everything that involves learners doing something and thinking about what they do in the learning process (Bonwell & Eison, 1991). In this study, it is seen that the perception of

preschool teachers regarding active learning are similar to the definitions of active learning in the literature. The fact that the perception of the preschool teachers in the study group of the study are similar to the relevant literature may indicate that these teachers' level of knowledge about active learning is sufficient.

Preschool teachers emphasized that teachers should be good observers and facilitator in active learning approach. In addition, preschool teachers stated that they have the responsibility to design learning processes that attract the attention and interest of learners and to include learners in this planning process. In a study conducted with pre-school teacher candidates by Pekdoğan and Kanak (2016), it is seen that pre-service teachers stated that teacher should be a guide and a good observer in the active learning process. In another study conducted by Akay and Kocabaş (2013) with primary school teachers, it is seen that teachers express the role of being a guide in active learning as a teacher's role. When active learning practices for preschool and child care programs are examined, it is emphasized that teachers should observe and interact with children in order to discover how each child thinks and behaves (Hohmann & Weikart, 1995). In addition, Hohmann and Weikart (1995) state that in the active learning process preschool teachers should design activities that take into account children's abilities and interests, and include materials suitable for children's age and interests in the learning process. Similarly, Açıkgöz (2011) states that, in the active learning process, teachers should guide learners, offer learners opportunities to learn by doing and experience, and observe their development. In this study, when the perceptions of teachers towards teachers' role in active learning are examined, it is seen that they are similar to the behaviors expected from the teacher in the active learning process in the relevant literature.

Another important finding obtained from the research is teachers' opinions on learner responsibilities in active learning. Preschool teachers stated that learners in active learning should be active, establish positive relationships with their peers, ask questions, acquire learning based on research and inquiry and are willing to learn. When the literature is examined, the learner has an active role in constructing the information, not a passive recipient (Anthony, 1996). When the findings of the study conducted by Akay and Kocabaş (2013) with primary school teachers are examined, it is stated that the student's active participation in active learning, learning by doing and experiencing, being the researcher, taking responsibility, and being willing to learn are among the learner's roles in active learning. Basically, in active learning, it is emphasized that the learner is active in the learning process (Kalem & Fer, 2003). In addition, in the study conducted by Sivan, Leung, Woon and Kember (2000) on the effect of active learning on learners' learning, it was observed that learners learn by actively participating in the research and problem-solving process in the active learning process. In another experimental study conducted by Aydede and Kesercioğlu (2012), which examines the effect of active learning practices on students' self-learning skills, it has been determined that learners learn with interaction with each other and with establishing positive relationships in a collaborative way. Learners are people who plan their own learning and are responsible for their own learning (Saban, 2000). The responsibilities of the learner in active learning in the literature are similar to the findings obtained from the research.

When the obstacles to active learning according to preschool teachers were examined, it was seen that the teachers mostly stated that the class size was small and the class size was crowded. In addition, material deficiencies, and being introverted learners were also stated as obstacles to active learning-based teaching. As a result of the research conducted by Akay and Kocabaş (2013) on how teachers perceive active learning, it has been determined that teachers see crowded classrooms, insufficient equipment, and the physical structure of the classroom or school as obstacles to active learning practice. In addition, in this study, it is seen that the learners' difficulty in expressing themselves, shyness problems are expressed by the teachers as barriers to active learning due to the learners. In another study conducted by Niemi (2002), it was stated that the size of student groups, and poor learning conditions and materials the important obstacles to educators' use of active learning methods. Also, in the study of Bulut (2005), it was stated that the implementation of active learning was negatively affected due to problems such as the inadequacy of the physical structure of the schools, the lack of equipment and guide resources. In addition, when the relevant literature is examined, it is stated that there are various obstacles to active learning. While especially large classes make it difficult to use active learning, it has been stated that the lack of necessary materials, equipment, or resources is an important obstacle to active learning (Hohmann & Weikart, 1995; Michael, 2007). The findings obtained from the opinions of teachers about the obstacles in front of active learning show parallelism with the results of this research in the literature.

In addition, it was determined that preschool teachers' practice experiences based on active learning include asking interesting questions, encouraging children to ask questions, create a collaborative environment, use different teaching techniques, designing activities that stimulate the senses, designing intriguing activities, and designing research-based activities. According to the results of a study conducted by Akay and Kocabaş (2013), it was determined that the teachers preferred the discovery learning strategy and mostly used the question-answer technique as an active learning strategy-technique. In Hohmann and Weikart's (1995) study on active learning practices for preschool education programs, to support active learning, teachers should organize learning environments and activities, should support positive social communication in the learning environment, should encourage problem solving and verbal thinking by observing children, and should design activities based on children' interest. In the light of these principles, it is suggested that the teacher guides children to plan their days in a daily routine, support positive communication, make daily observations, enable children to interact with materials by using all their senses, and make children think and talk about their experiences by asking questions (Bean, 2011; Saylor & Ganea, 2018; Scottish Executive, 2007; Levine & Munsch, 2010).

In conclusion, in this study, it is seen that active learning in preschool education is expressed as a process based on learning experiences by doing, where the teacher guides the learning of the children, and in which children are active in an equipped learning environment that includes rich and diverse materials. In addition, in preschool education, especially the crowd classroom and lack of materials are seen as obstacles to active learning. Applications based on active learning in preschool education are considered possible by designing learning processes based on research and inquiry by using different teaching techniques that activate the child.

Considering these results of the research, studies can be conducted to increase the equipment features of preschool education classes. However, in order to balance the size of the classes and the number of children, arrangements should be made in accordance with the instructions. In addition, by conducting qualitative research based on active learning practices in preschool education, the research subject can be examined in more detail. In addition, experimental studies based on active learning practices for preschool children can also be conducted.

STATEMENTS OF PUBLICATION ETHICS

Ethical compliance approval was obtained for this research in accordance with the decision of Yozgat Bozok University Ethics Committee dated 03.12.2020 and numbered 28571837-604-E.30649.

CONFLICT OF INTEREST

There is no conflict of interest in the study.

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Reflections on the Emergency Remote Teaching in the Pandemic: Experiences of Pre-Service Teachers

Hatice GÖKÇE BİLGİÇ^{a*}

^{a*} Dr., Faculty of Education, Ondokuz Mayıs University, Samsun, Turkey, (<http://orcid.org/0000-0002-3925-2497>) *hgokcebilgic@gmail.com

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ABSTRACT

The aim of the study is to find out the experiences of pre-service teachers in Ondokuz Mayıs University during the emergency remote teaching process. The study was designed as a case study. Data was collected using an "Evaluation Form" which was developed by the researcher. This form is a survey which was consisted of both open-ended and closed-ended questions. Additionally, observation notes and course records were used to verify the survey data. Quantitative data was analyzed with descriptive statistics including frequency and percentage. Qualitative data was analyzed with content analysis. Participants were 60 pre-service teachers attending Computer and Instructional Technology Teacher Education Program offered by the Faculty of Education. Based on the results, organization, methods, competency level of the instructor, regular announcements/information, qualified asynchronous content, asynchronous course activities, continuous communication and effective live courses were the issues that support the emergency remote teaching. On the other hand, deficiency of face-to-face interaction, technical problems, deficiency of motivation, homework and courseload were the issues that obstruct the emergency remote teaching. Finally, although the students mentioned that they learned effectively during the emergency remote teaching, they preferred to continue with face-to-face education. Moreover, they preferred to continue with distance education only for some of the courses.

Keywords: Distance education, emergency remote teaching, online learning environments

Pandemi Dönemi Acil Uzaktan Eğitim Sürecinden Yansımalar: Bilişim Teknolojileri Aday Öğretmenlerinin Deneyimleri

Öz

Bu çalışmada 2019-2020 bahar döneminde Ondokuz Mayıs Üniversitesi Eğitim Fakültesinde yaşanan acil uzaktan eğitime geçiş sürecinin öğrenci görüşleri çerçevesinde değerlendirilmesi amaçlanmıştır. Çalışmanın birincil verileri araştırmacı tarafından geliştirilmiş "Süreç Değerlendirme Formu" ile toplanmıştır. Bu form kapalı uçlu ve açık uçlu sorulardan oluşmaktadır. Elde edilen nicel verilerin analizinde yüzde ve frekans gibi tanımlayıcı istatistikler kullanılırken nitel veriler içerik analizi ile analiz edilmiştir. Ayrıca gözlem notları ve ders kayıtları formdan elde edilen verilerin açıklanmasında kullanılmıştır. Çalışmanın örneklemini Ondokuz Mayıs Üniversitesi Eğitim Fakültesinde Bilgisayar ve Öğretim Teknolojileri Eğitimi bölümünde öğrenimlerine devam eden 60 bilişim teknolojileri aday öğretmeninden oluşmaktadır. Araştırma sonucuna göre düzen, kullanılan yöntemler, öğretim elemanının yetkinliği, düzenli bilgilendirme ve duyurular, kaliteli asenkron içerik, ders dışı aktiviteler, sürekli iletişim ve etkili canlı dersler acil uzaktan eğitim sürecine katkı sağlayan hususlar olarak ifade edilmiştir. Öte yandan yüz yüze etkileşim eksikliği, teknik sorunlar, motivasyon eksikliği, ödevler ve oluşan iş yükü acil uzaktan eğitim sürecinde öğrencileri zorlayan hususlar olarak öne çıkmıştır. Son olarak, öğrencilerin acil uzaktan eğitim sürecinden katkı sağlamalarına rağmen geleceğe yönelik tercihlerini yüz yüze eğitimden yana kullandıkları, ancak bazı derslerin çevrimiçi verilmesini de destekledikleri görülmüştür.

Anahtar kelimeler: Uzaktan eğitim, acil uzaktan eğitim, çevrimiçi öğrenme ortamı.

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1 | INTRODUCTION

Developing technologies and life-long learning increase the interest to distance education and being an online learner (Alsabawy, Cater-Steel, & Soor, 2016; Islam, 2016; Rizvi et al., 2019). Especially, the COVID-19 pandemic carried distance education in the center of education world. Based on the International Association of Universities (IAU) report, after the COVID-19 pandemic was declared in March 2020 in the world, 85% of Europe, 72% of America, 60% of Asia and Pacific, and 29% of Africa transferred face-to-face teaching and learning activities over distance education technologies. Furthermore, in some of the regions face-to-face teaching and learning activities was suspended to develop alternative solutions. Finally, 24% of Africa, 3% of America, Asia and Pacific and Europe cancelled teaching and learning activities (IAU, 2020).

In Turkey similarly, when the first COVID-19 case existed in the country in March 2020, to limit the COVID-19 dispersion face-to-face teaching was carried out in online learning environments with the opportunities provided by distance education tools. In universities, after the decision to suspend face-to-face teaching for 3 weeks, it was decided to continue teaching with distance education opportunities. During this period, Council of Higher Education (COHE) developed a platform called “COHE Courses Platform” in which universities could share digital course contents. The platform facilitated the share of existing digital course contents in the universities as an open courseware (COHE, 2020a). Additionally, COHE prepared a guide for universities with the title “The New Normalization in the Global Pandemic” in which alternative ways of distance teaching were presented (COHE, 2020b). Universities transformed their face-to-face education to distance with their existing opportunities, facilities, and effort. Moreover, existing distance education infrastructure, experience, competencies of the instructors, and competencies of the support personnel affected the way how universities adapted to distance education during the pandemic. Universities who were using educational technologies before the COVID-19 pandemic, had a comparative advantage over those who did not use technologies in their education system (ILO, 2020).

In the literature, distance education was defined as time and place independent learning activities (Moore, 1989; Moore & Kearsley, 1996). During the COVID-19 pandemic, by the quick transformation of face-to-face teaching to distance teaching, a new discussion point emerged about whether the emergency remote teaching differs from the usual distance education concept. During the pandemic, since universities moved their face-to-face courses over distance education environments in a short time, some points of planned and structured distance education were missing (Bilgiç, 2021). It was mentioned that a structured and well-planned online learning experience is different than distance courses that developed as a quick answer to an unplanned crisis (Hodges et al., 2020). In addition to this, a new concept emerged into distance education literature called “Emergency Remote Teaching” (Bozkurt et al., 2020; Hodges et al., 2020; Shisley, 2020). In the emergency remote teaching that occurs in the pandemic, students who could not come to the physical classroom environment were put into an alternative and unplanned teaching environment (Shisley, 2020). Thus, although the emergency remote teaching in the pandemic was a way of teaching online, and it had some common points with distance education, it could not be evaluated in the same way (Bozkurt & Sharma, 2020). The main aim of distance education is to provide an alternative and flexible way of learning, but in the pandemic the emergency remote teaching was an obligation for both instructors and students. Students participated to the emergency remote teaching as obligatory, and instructors also had to support the teaching with alternative ways and strategies. Another important point is that support personnel who provide one-to-one assistance in the existing distance education programs, could not provide the same level of assistance during the pandemic (Hodges et al., 2020). However, for instructors to transfer their face-to-face experiences to distance education, it is important to receive the right and needed support (Bilgiç & Tüzün, 2020; Hodges et al., 2020). Therefore, it is important to understand that the emergency remote teaching was different from a structured and planned distance education, and to evaluate the emergency remote teaching as a new concept in the post-pandemic (Bozkurt & Sharma, 2020; Hodges et al., 2020). Success in the distance education is associated with planning and qualified thinking process (Palloff & Pratt, 2007). In the pandemic, universities did not have enough time to plan the distance education and this situation caused differences based on universities’ readiness to distance education. In the post-pandemic process, while the negative experiences of the pandemic were evaluated, it should be considered that the emergency remote teaching was different than a structured and well-planned distance education experience.

Many studies and reports were published to evaluate the emergency remote teaching process. In the report of the International Association of Universities (IAU) the transition process was presented with three interconnected dimensions: (1) technical infrastructure and accessibility, (2) distance education competencies and pedagogies, and (3) the field of the study (IAU, 2020). These dimensions were affected by different challenges and advantages in different conditions. In the report, it was mentioned that in low- and middle- income countries, students have much more problems to access the Internet to follow the distance courses. On the other hand, since a different pedagogy is required in distance education, the readiness level of teachers might be a challenge for universities. Furthermore, different fields of studies necessitate different needs such as laboratory practices which might be a challenge for universities. Huang et al. (2020) presented “Disrupted Classes, Undisrupted Learning” movement, which developed based on the Chinese experience during the pandemic to maintain undisrupted learning and to facilitate flexible learning, in the handbook that they prepared. In the handbook, the strategy that followed to provide hundreds of millions of students participating in flexible online learning environments, were presented. Based on the strategy seven core elements of effective online education were emerged: (1) reliable network infrastructure, (2) friendly learning tools, (3) interactive suitable digital learning resources, (4) effective learning methods, (5) effective methods to organize instruction, (6) instant support services, and (7) the partnership between governments, enterprises, and schools. Ali (2020) investigated how teaching and learning were supported during the COVID-19 pandemic, in the meta-analysis study. Resources, readiness of the personnel, reliance, access status of the students, and motivation were mentioned as the important components to integrate technology into learning environments. Moreover, in the study, the importance of technology integration into the teaching and learning except an obligation like pandemic, was emphasized. Almaiah et al. (2020) explored the critical challenges and factors that influence the e-learning systems during the COVID-19 pandemic. Moreover, some of the studies focused on mental problems that students faced during the pandemic (Islam et al., 2020; Son et al., 2020). In these studies, it was mentioned that many of the students experienced depression and anxiety disorders during the pandemic. On the other hand, it was stated that academic success of the students might be affected with mental problems.

In Turkey, many studies were done in which the experiences of higher education institutions were examined. Kahraman (2020) explored how the applied courses was conducted with distance education during the COVID-19 pandemic. In this study, students stated that it was not difficult to learn 3-dimensional design tools during the emergency remote teaching period. On the other hand, it was seen that difficulty in model making was higher. According to the results of the study, instructors mentioned that it was hard to observe physical circumstances like how students hold a pencil in model making or drawing lessons. Finally, it was stated that due to the lockdown during the COVID-19 pandemic, students had difficulties to supply materials in model making. Akgün (2020) stated that based on the study conducted with students who were attending to accounting course, the emergency remote teaching minimized the cost of photocopying, printing, and transportation of female students as advantages. On the other hand, male students presented the disadvantages of distance courses during the pandemic as deficiency of face-to-face on-site lectures on whiteboard. Ak et al. (2021) examined the effect of distance education trainer program on self-efficacy and benefit perceptions of the instructors towards distance education. As a result of the study, the distance education trainer program had a significant effect on self-efficacy and benefit perceptions of the instructors towards distance education. Keskin and Özer-Kaya (2020) assessed the feedback of students who continue their education with the emergency remote teaching courses. In this study, most of the participants of the study reported that the emergency remote teaching was not as effective as face-to-face education. Moreover, not communicating comfortably with the instructors and technical problems during the courses were mentioned as difficulties. Karadağ and Yücel (2020) conducted a study which aimed to identify problems encountered during the emergency remote teaching process. The data was collected from 17.939 students in 163 universities with a survey. In this study, satisfaction of the students was explored related to Council of Higher Education, university and faculty management, digital content/instructional materials, synchronous/live courses, and technical infrastructure. Based on the results of the study, highest satisfaction score was for Council of Higher Education, and lowest scores were for university and faculty management, and for digital content/instructional materials. Mor-Dirlik et al. (2021) adapted the Coronavirus Anxiety Scale (CAS) into Turkish in the context of higher education. The adapted scale was found highly reliable and valid. Based on the results of the study, psychological and behavioral consequences of the spread of the COVID-19 might last longer. In addition to these, in a study in which reflections of the COVID-19 pandemic to the world of education were presented, it was emphasized that radical

and strategic plans should be developed to provide continuity in education in the new world of education (Bozkurt, 2020). In another study, the danger of the digital divide that emerged during the COVID-19 pandemic was evaluated and recommendations were presented (Sezgin & Fırat, 2020). Erkut (2020) discussed the effects of the COVID-19 pandemic to the world of higher education and developed suggestions to renew online learning environments. This study also stated that the pandemic created an opportunity for higher education institutions to develop and renew themselves.

In the literature about COVID-19 pandemic, many of the studies focused on satisfaction of the students or problems/challenges which were evaluated through survey studies. However, there are not enough studies in which students evaluated the components that contribute to the emergency remote teaching process, and the challenges that result with negative experiences with open-ended questions, and also together with the instructors' observation. Moreover, experiences provide a preliminary data to make decisions for new circumstances. Therefore, this study aimed to find out the experiences of pre-service teachers during the emergency remote teaching process, and to investigate how the students' current experiences of the emergency remote teaching process affected their views about distance education.

RESEARCH QUESTIONS

The purpose of this study is to find out the experiences of pre-service teachers who are the students of Computer and Instructional Technology Teacher Education Program offered by the Faculty of Education in Ondokuz Mayıs University. To accomplish the aim of this study the following questions will be addressed:

1. Which components/issues support the emergency remote teaching process?
2. Which components/issues obstruct the emergency remote teaching process?
3. What is the comparative view of the students (pre-service teachers) on pre-pandemic face-to-face teaching and the emergency remote teaching experiences?
4. What are the preferences and views of the students (pre-service teachers) about distance education after their emergency remote teaching experiences?

2 | METHOD

RESEARCH DESIGN

The study was designed as a case study in which a fact or an experience was deeply examined (Yin, 2009). Case studies differ from other research models with the data including interviews, documents, recordings, or observation notes rather than just a questionnaire. In this study, the primary data was collected through a survey in which there were both open-ended and closed-ended questions. Moreover, the researcher involved to all courses of all participants as the instructor. Observation notes and course records were obtained by the researcher and used to verify the survey data. Thus, the emergency remote teaching experiences of the students were evaluated based on the survey data and verified with the data obtained by the researcher such as observation notes and recordings. Furthermore, the quantitative data gathered from the close-ended questions in the survey was also supported with the qualitative data gathered from the open-ended questions.

PARTICIPANTS AND CONTEXT

When the COVID-19 pandemic worsened in Turkey, the Ondokuz Mayıs University paused face-to-face teaching at first. Then, the Council of Higher Education published an official declaration in which universities encouraged to transfer face-to-face teaching over distance education technologies. Thus, participants of the study attended 5 weeks of the 14-week in 2019/2020 spring semester with face-to-face teaching, and then attended the remaining 9 weeks of the semester with distance education called the emergency remote teaching. The university has a Distance Education Center which has been delivering distance education programs since 2009. The Distance Education Center are delivering 28 programs including 9 associate degree program, 2 bachelor's degree program, 10 master's degree program and 7 certificate program (Ondokuz Mayıs University, 2021). Since the University has 51871 students and 7360 courses delivered face-to-face before the pandemic (Ondokuz Mayıs University, 2020), it was hard to deliver these courses over existing distance education services of the Distance Education

Center during the emergency remote teaching. Thus, all courses transferred to Google Classroom which provides all necessary services to users, and live courses were done on the Meet Application of Google.

The study was focused on 60 pre-service teachers who were attending Computer and Instructional Technology Teacher Education Program offered by the Faculty of Education in the Ondokuz Mayıs University. Before the emergency remote teaching in the first 5 weeks of the semester, the participants were using a Learning Management System (LMS) to follow shared course materials, and homework. Also, LMS was used to upload homework files by the students. During the pandemic, participants attended weekly live courses. Additionally, all course materials, announcements and homework/project files were shared in the virtual course area created on Google Classroom. As it is seen in Table 1, 45% of the participants were female and 55% of the participants were male. Moreover, 13.33% of the participants were 1st grade (year) students, 18.33% of the participants were 2nd grade students, 25% of the participants were 3rd grade students, and 43.3% of the participants were 4th grade students.

Table 1. Demographic Profiles of Participants

	Number of students (n)	Percentages (%)
Gender		
Female	27	45
Male	33	55
Total	60	100
Grade		
1	8	13.33
2	11	18.33
3	15	25
4	26	43.33
Total	60	100

DATA COLLECTION

Data was collected with multiple methods including survey, observation notes of the researcher and course records (including live courses and virtual class area). Survey data was the primary data of the study. Observation notes and course records were used to verify the survey data. Survey called “2019/2020 Spring Semester Evaluation Form” was developed by the researcher. Survey has 4 sub-sections with 27 questions. In the first sub-section, 5-likert 4 questions were asked to investigate the emergency remote teaching experiences of the participants. In the second sub-section, 5-likert 12 questions were asked to compare and evaluate the first 5 weeks of the 2019/2020 semester which delivered with face-to-face teaching and remaining 9 weeks which delivered with distance education. In the third sub-section, 5-likert 5 questions were asked to investigate the attitude and views of students about distance education after they experienced the emergency remote teaching process. Finally in the fourth sub-section, 6 open-ended questions were asked to analyze the experiences and views of students in a more detailed way.

Content validity was used to investigate the validity of the data collection tool (survey). Survey called “2019/2020 Spring Semester Evaluation Form” forwarded to 2 academics by e-mail to receive feedback whether the questions were compatible with the research questions. After the feedback received, it was seen that 90% of the survey questions were compatible with the aim of research. Based on the feedback, in the third sub-section 1 question was removed, and in the fourth sub-section 1 question was deleted and 1 question was revised.

Data was collected with the online form. Survey form called “2019/2020 Spring Semester Evaluation Form” which was developed by the researcher transferred onto Google Forms. The online form was shared with the students in the virtual class of the course. Students attended to survey voluntarily. The researcher involved to both face-to-face and online courses with the students. The researcher generated the recordings (the live course records) and observation notes during the emergency remote teaching process. Observation notes were obtained weekly by the researcher including the positive and negative points of the course process.

DATA ANALYSIS

Quantitative and qualitative methods were used to analyze the data. Quantitative data derived from the first three sub-sections of the survey was analyzed with descriptive statistics including frequency and percentage. Qualitative data derived from the final section of the survey was analyzed with content analysis. The aim of content analysis is to reveal the categories and meaningful relationships between these categories through conceptual coding which are not directly visible in the data set (Yıldırım & Şimşek, 2011). At first, answers to final section of the survey were transferred into MS Word document. Then, preliminary coding was conducted by marking possible codes while the answers to open-ended questions were read. The researcher conducted the coding process together with an academic to ensure the reliability of the results. After sufficient amount of codes was revealed with 100% agreement of the researchers, the codes were grouped under categories. After the agreement of the researchers about the categories, the conceptual categories were finalized. Finally, observation notes and course records were used to evaluate the survey data which was the primary data of the study.

RESEARCH ETHICS

Ethical principles and guidelines were followed during all phases of the study. Participants attended to study voluntarily. The participants informed about the aim of the study. The data of the participants stored with anonymous identities. Furthermore, ethical permission was obtained from the Ethics Committee of Social Sciences and Humanities of Ondokuz Mayıs University (date: 23 September 2020 and number: 2020/554).

3 | FINDINGS

This section presents the research findings within the framework of the research questions.

ISSUES THAT SUPPORT THE EMERGENCY REMOTE TEACHING PROCESS

The issues supporting the students' emergency remote teaching process were evaluated with the data obtained from one closed-ended and one open-ended question. First, students were expected to choose the three most important issues that contributed the most to the emergency remote teaching process. Their answers are presented in Figure 1.

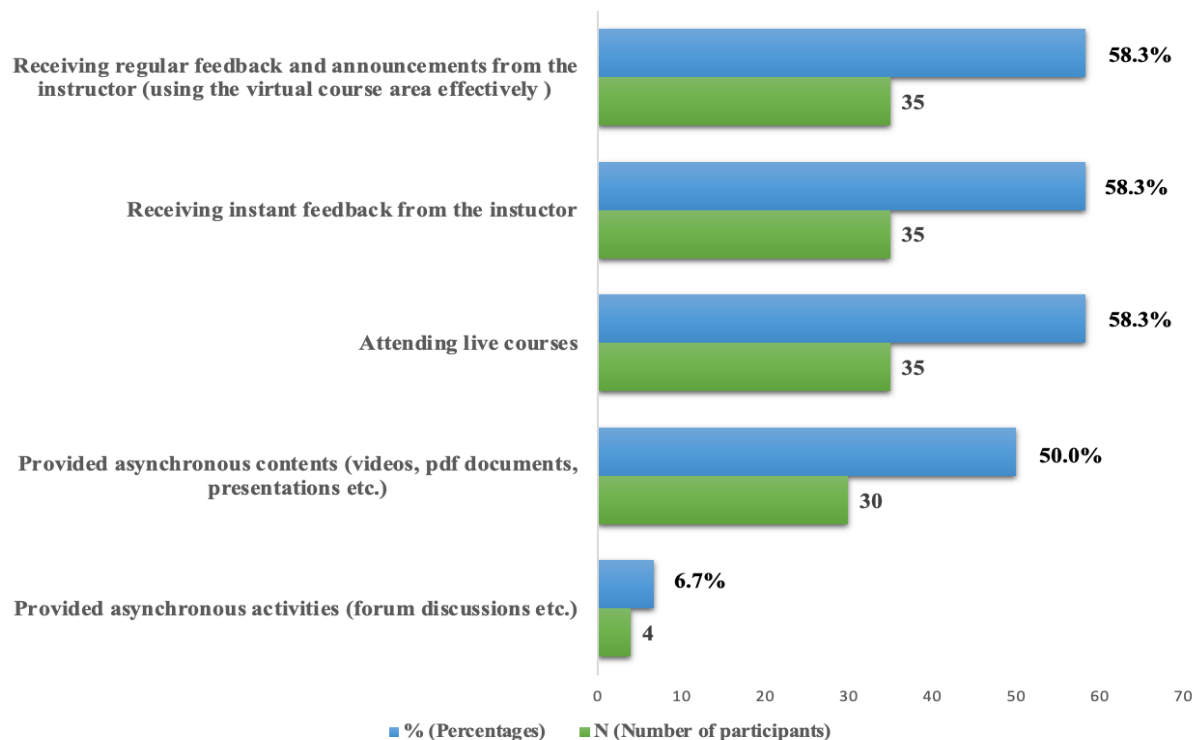


Figure 1. Issues that Support the Emergency Remote Teaching Process

Figure 1 shows that students mentioned receiving regular feedback and announcements from the instructor (58.3%), receiving instant feedback from the instructor (58.3%), and attending live courses (58.3%) as the most important issues that supported the emergency remote teaching process. Furthermore, 50% of the participants reported that the asynchronous contents provided were among the issues that supported the emergency remote teaching process (See Figure 1).

Additionally, students were asked to write down positive aspects of the courses that they attended in the emergency remote teaching process in their own words. To this end, the student answers were analyzed by content analysis, and the positive components in the emergency remote teaching process were explained within the framework of 67 unique codes and 15 categories consisting of these codes. These categories include the following: organization, methods, regular announcement and information, supportive activities after live course sessions, effective live course sessions, continuous communication, instant feedback, competency level of the instructor, similarity to face-to-face course, the attitude of the instructor, effective use of the virtual class area, the quality of the content, number of students, flexibility, and clarity (See Table 2).

Table 2. Issues that Support The Emergency Remote Teaching Process

Categories	Coding	Frequency (f)
Organization	Regular lectures every week	2
	Being clear and planned	1
	Clear announcement of assignment deadlines	1
	Timely start of the live course sessions	2
	Announcement of assignments well before deadlines	1
	Following the course plan	1
	Systematic course teaching	1
	Keeping track of the syllabus	1
	Teaching the courses without interruption	1
	Sharing resources	1
	Uploading live courses	1
	Regular meetings of the instructor with the project groups	1
	A clear progression	1
Methods	Ways of presentation	2
	Effective lecturing	2
	Easy to take notes	1
	Explanation of the presentation one by one	1
	Course management	5
	Group work	1
	Screen sharing	3
	Exactly the same as the face-to-face course	1
Regular Announcement/Information	Timely in-class information	2
	Information at the specified parts	1
	The adequate level of announcements	5
	Regular and continuous announcements	2
	Information about the course flow before the lesson	1
	Announcement of live lessons	1
Timely information of necessary disclosures	1	
Supportive Activities After Live Course Sessions	Giving assignment	5
	Reinforcement of the course with additional activities	3
	Creating supportive course activities	1
	Active participation in assignments	2
	Sufficient number of assignments	1
	Excessive and detailed assignments and activities	2
Continual sharing of assignments and materials related to the course	1	
Effective Live Course Sessions	Quality of live courses	4
	Explaining everything in live courses	1
	Interactive course teaching	2
	Effective live course sessions	2
	Screen sharing	3
	The adequate sound level of the instructor	1
Clear tone of voice of the instructor	1	
Continuous Communication	Understanding that the instructor is following the process	1
	Keeping the student on track	1
	Regular and constant communication of the instructor	1
	A fast and detailed response to messages	2

Instant Feedbacks	Instant feedbacks	9
	Chance to receive positive and negative feedback on what was taught in the course	1
	Regular meetings of the instructor with the project groups	1
	Giving feedback	4
Competency Level of the Instructor	Technologically competent instructors	1
	The dominance of remote education of the instructor	1
	Competency level of the instructor	1
Similarity to Face-to-Face Course	Similar to face-to-face teaching	1
	Same as a face-to-face course	4
The attitude of the Instructor	Lecturing with dedication	1
	Optimistic and positive approach	1
	The interest level of the instructor	4
Effective Use of the Virtual Class Area	Sharing course-related instructions in the virtual class area	1
	Active use of the virtual class area	1
	Active use of the class board	4
The Quality of the Content	Quality of content offered	6
	Preparation of slides suitable for the topic	2
Number of Students	A large number of students attending classes	1
Flexibility	The flexibility of assignment deadlines	1
Clarity	Clarity of the instructions for the assignments	2
	Explanatory statements	1

In terms of positive issues supporting the process, code density distribution suggest that the codes are mainly focused on the organization (13 codes), method (8 codes), regular announcement/information (7 codes), supportive activities after live course sessions (7 codes) and effective live course sessions (7 codes).

Firstly, the codes indicate students expect a systematic and regular course in the distance education process. The fact that the courses are taught weekly, they start on time, the assignment deadlines are shared clearly, the process proceeds in a clear, understandable, and planned manner reflect positively on the emergency remote teaching process for the students. Students also noted that the active and regular use of the board in the course area is a positive feature. They emphasized the positive aspects of the organization of the course they attended during the emergency remote teaching process with the following examples:

“Each week, live course sessions were done regularly, and the assignment was given ...” (Student 3)

“Live course sessions and information were sufficient. Everything was clear and planned; the virtual class area was used clearly.” (Student 5)

“First of all, I think that announcements of the live class sessions, informing about course issues, clear explanation of the assignment are positive issues that distinguish this course from others.” (Student 21)

“One of the distinguishing aspects of the course is that the instructor used the virtual area actively.” (Student 4)

“Each week, live course sessions were done regularly, and sessions started on time.” (Student 34)

“... Informing the students about the planning of the live course session and then following consistency with the shared plan in the live course sessions was an important point.” (Student 1)

Besides, the students presented the instructor’s use of tools such as screen sharing in the management of the live class sessions, the preparation of presentations suiting to course content, and detailed lectures in live lessons, among the methods that contributed positively to the emergency remote teaching process. The positive contribution of the methods used by the instructor was expressed as in the following example:

“In this live course, the instructor shared his computer screen and prepared a slide presentation suitable for our topic. It was useful for us to explain the presentation one by one. If we had just given the presentation and were expected to understand, we would have had a bit of a hard time. There was no such explanation in other courses.” (Student 1)

On the other hand, students stated that the instructor’s mastery of the subject, correct guidance, approach to students, and regular feedback and interviews in the process were among the motivating issues for them. One of

the students expressed that the instructor's awareness of being involved in the process is an encouraging issue in terms of participation in the course as follows:

"The instructor's directions, approach, and mastery of the subject are perfect. Their feedback is very accurate and fast. His meetings with the project groups before and after the course are motivating. You understand that he is following the process, and you always keep your eyes open." (Student 42)

Students also asserted that when they were informed about the process in detail, their anxiety decreased, and the live course sessions progressed better:

"Our assignments were clearly explained to us. There was fast feedback. Our instructor explained everything in the live course. Our anxiety about how to do our assignment has decreased. In general, this course was more understandable than other courses." (Student 37)

Another issue that supported the emergency remote teaching is the assignment. Some of the students pointed to the assignments' role to ensure active participation in the course process and following the activities. They underlined that sharing assignments and materials related to the course constantly encourages them to stay active towards the course as follows:

"Given assignments ensured our active participation. The content presented was useful and sufficient. The teaching instructor was in regular and constant communication with us." (Student 3)

"We were more active in this course; we were constantly given assignment-related material, which kept us motivated about the course." (Student 42)

As a result, in the emergency remote teaching process of the students, they emphasized meeting their needs in subjects such as organization, continuous communication, feeling that the instructor is in the system with them, communicating, getting regular feedback from the instructor, being supported with alternative activities and materials, participating in live course sessions, and experiencing a live class learning similar to the face-to-face courses.

ISSUES THAT OBSTRUCT OR CHALLENGE THE EMERGENCY REMOTE TEACHING PROCESS

The issues that obstruct or challenge the emergency remote teaching process of the students were evaluated with the data obtained from one closed-ended and one open-ended question. Firstly, students were expected to choose the three most important issues that obstruct the emergency remote teaching process. Their answers are shown in Figure 2.

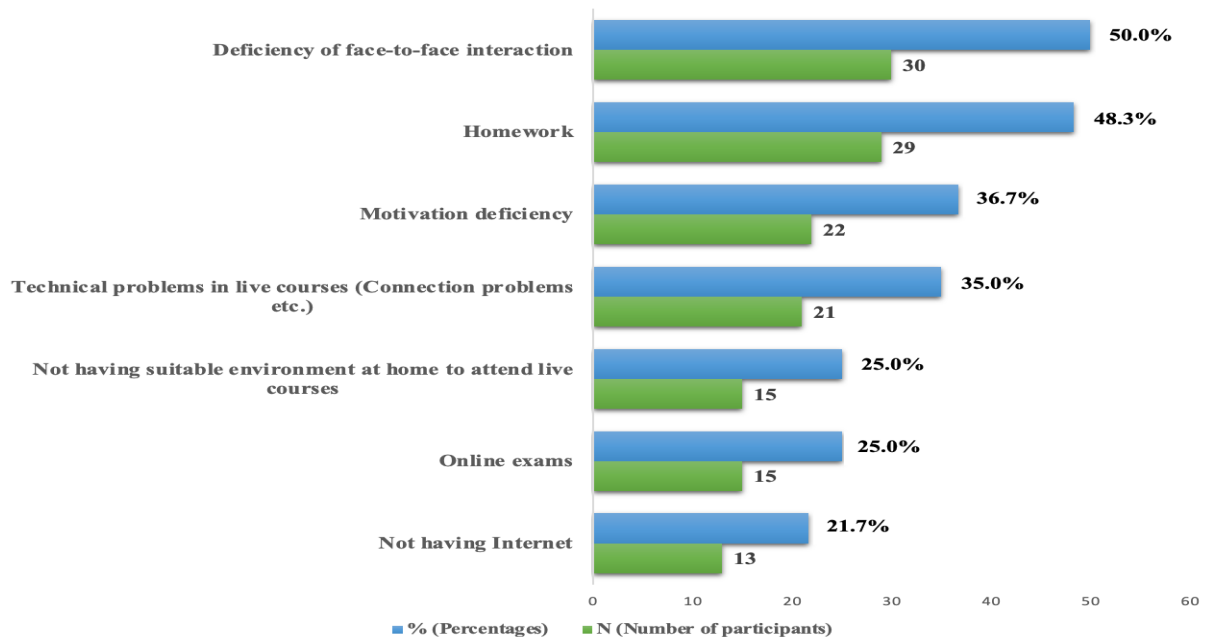


Figure 2. Issues that Obstruct or Challenge the Emergency Remote Teaching Process

Students, respectively, stated the deficiency of face-to-face interaction (50.0%), homework (48.3%), and motivation deficiency (36.7%) as the issues that negatively affect the emergency remote teaching process. Additionally, 35% of the students stated the technical problems in live courses, 25% expressed the online exams, and 25% stated not having a suitable environment at home to attend live courses among the obstructing components of the emergency remote teaching (See Figure 2). While the students focused on interaction in the issues that support the emergency remote education, they also highlighted the deficiency of face-to-face interaction in the obstructing issues. Moreover, sudden changes in the pandemic process and concerns about health problems negatively affected their motivation.

Furthermore, students were asked to write down the negative features of the courses they attended during the emergency remote teaching process. According to the findings, the issues that obstruct the emergency remote teaching process were explained within the framework of 14 codes. These 14 codes were grouped under seven conceptual categories: (1) Technical problems, (2) Interaction constraints, (3) Courseload, (4) Online exams, (5) Deficiency of information, (6) Personal limitations, and (7) Group work (See Table 3).

Table 3. Issues Obstructing Students in the Emergency Remote Teaching Process

Categories	Coding	Frequency (f)
Technical Problems	Internet connection problem	1
	Voice problems in live course sessions	1
Interaction Constraints	Lack of camera in live course sessions	2
	Limited interaction	1
Courseload	Too many assignments	7
	Too many additional activities	1
	Challenging and difficult assignments	3
	Short deadlines for assignments	1
Online Exams	Online exam	2
Deficiency of Information	Not sharing recorded lecture videos after the course	1
	Late notification of the course time	1
	Insufficient instructions for some assignments	1
Personal Limitations	Inability to access the internet	1
Group Work	Final examination as a group assignment	1

In the category of technical problems, students expressed their difficulties in accessing the internet and the sound problems that occurred in live class sessions. The students emphasized that they had difficulty in constantly providing internet access to fulfill the requirements during the course and access the live course sessions:

“Due to the constant demand for material, it was difficult for me not to always have access to lectures and internet access.” (Student 51)

In the category of interaction constraints, the students talked about the lack of interaction and the lack of cameras in live course sessions. While they reported that not turning on the camera by the instructor as a negative situation, on the other hand, they emphasized that this situation did not have a negative effect on following the lesson due to the instructor’s use of understandable language and screen sharing:

“... I listen to my instructor’s gestures and mimics, giving importance to them. The camera was not turned on in the live course sessions, but the lesson was still explained in an understandable language, so I do not see this as a significant negative.” (Student 3)

“It’s just that the webcam wasn’t on. But since it is screen sharing, this has not had a negative effect on me.” (Student 5)

While some students listed homework assignments in the emergency remote teaching process as one of the positive issues, the others stated that the course load was challenging, mainly because the homework was too much and difficult. A student who reported that the homework is challenging among the obstructing features, however, claimed that getting feedback from the assignments and rearranging them together contributed positively:

“I have to keep up with the homework for each class because the homework is a bit too much.” (Student 7)

“Obviously, one of the negative aspects was that the homework was not too much, but that it was challenging. But getting feedback and rearranging the assignment has been one of its positive aspects.” (Student 53)

One of the students presented the lack of internet among the issues that obstruct the emergency remote teaching process. Whether or not students have internet access individually is a factor that personally affects the emergency remote teaching process. 15 of the students (25%) shared that the lack of a suitable environment to attend live course sessions is among the components that negatively affect the process. Thus, the problems students experience in the environment in which they attend the course or in the situation of accessing the internet can be an obstacle to their participation in the remote education process.

In addition to these, one student noted issues where insufficient information was given by the instructor during the emergency remote teaching process, including late notification of the course time, insufficient explanations of some homework, and not sharing recorded lecture videos after the course.

COMPARATIVE OPINIONS OF STUDENTS ON PRE-PANDEMIC FACE-TO-FACE EDUCATION AND PANDEMIC PERIOD EMERGENCY REMOTE TEACHING EXPERIENCES

In this study, students were requested to compare their experiences in the emergency remote teaching process and their previous face-to-face education process in the context of the course contents, lectures, and live lessons. The findings for the comparisons of the students are presented in Table 4.

Table 4. Comparative Opinions of Students on Pre-Pandemic Face-to-Face Education and Pandemic Period Emergency Remote Teaching Experiences

	Strongly disagree (1)		Disagree (2)		Partially agree (3)		Agree (4)		Strongly disagree (5)		Mean
	N	%	N	%	N	%	N	%	N	%	\bar{X}
I do not think there is a difference between the course content provided in face-to-face courses and the emergency remote teaching process.	6	10	7	11.7	17	28.3	14	23.3	16	26.7	3.45
I do not think that there is a difference between the lectures in face-to-face lessons and the lectures in live lessons during the emergency remote teaching process that makes it difficult for me to understand the lesson.	10	16.7	13	21.7	13	21.7	10	16.7	14	23.3	3.08
I do not think there is a difference between attending face-to-face classes and attending live classes in the emergency remote teaching.	24	40	10	16.7	11	18.3	8	13.3	7	11.7	2.40
I feel more comfortable in face-to-face lessons compared to live lessons in the emergency remote teaching.	6	10	10	16.7	14	23.3	8	13.3	22	36.7	3.50
I feel more comfortable participating in the interaction in face-to-face classes.	6	10	6	10	16	26.7	12	20	20	33.3	3.56

While 50% of the students stated that they do not think there is a difference between the course content provided in face-to-face courses and the emergency remote teaching process, 28.3% partially supported this opinion. Moreover, students were asked to evaluate the course content within the scope of all materials that support the lecture, such as presentations and pdf documents. It was found out that only 21.7% of the students thought there was a difference between the content provided in face-to-face courses and the emergency remote teaching process (See Table 4).

The students were also asked to compare the live lessons in the emergency remote teaching process with the lectures in the face-to-face lessons. It was discovered that 40% of the students do not think there is a difference between the lectures in face-to-face lessons and the lectures in live lessons during the emergency remote teaching process, making it difficult to understand the lesson. 21.7% of the students partially supported this opinion. On the other hand, 38.4% of them did not support this opinion and claimed that there is a difference between the lectures in face-to-face lessons and the lectures in live lessons during the emergency remote teaching process, which makes it difficult to understand the lesson (See Table 4).

On the other hand, 25% of the students do not think there is a difference between attending face-to-face classes and participating in live lessons in the emergency remote teaching, while 18.3% partially supported this opinion. It was seen that 56.7% of the students thought that there was a difference between attending face-to-face classes and participating in live lessons in emergency remote teaching (See Table 4).

Finally, the students were expected to compare their state of being comfortable while participating in face-to-face lessons and the lessons in the emergency remote teaching process and while participating in the interaction. It was indicated that 50% of the students felt more comfortable in face-to-face lessons compared to live lessons in the emergency remote teaching. On the other hand, 23.3% of the students partially agreed with this opinion, while 26.7% disagreed with it. However, 53.3% of the students emphasized that they felt more comfortable participating in the interaction in face-to-face lessons. While 26.7% of the students partially agreed with this opinion, 20% disagreed with this opinion (See Table 4).

Consequently, these findings deduce that students feel more comfortable in face-to-face lessons, although there is not a huge difference when comparing the course contents or lectures provided in the emergency remote teaching process to face-to-face lessons.

STUDENTS' PREFERENCES AND OPINIONS ON DISTANCE EDUCATION AFTER THE EMERGENCY REMOTE TEACHING EXPERIENCES

In this study, students were also inquired about their preferences and opinions about distance education after their emergency remote teaching experiences during the pandemic. Firstly, the students' opinions about participating in the distance education experience in the future within the framework of their current experiences are given in Table 5.

Table 5. Students' Preferences for Distance Education After Their Emergency Remote Teaching Experiences

	Strongly disagree (1)		Disagree (2)		Partially agree (3)		Agree (4)		Strongly disagree (5)		Mean \bar{X}
	N	%	N	%	N	%	N	%	N	%	
I may prefer to continue my university education with distance education after the emergency remote teaching experience.	22	36.7	1	18.3	8	13.3	7	11.7	12	20	2.60
I may prefer to continue some courses with distance education during my university education after the emergency remote teaching experience.	2	20	8	13.4	12	20	14	23.3	14	23.3	3.16
I would prefer to attend a course given by distance education method on any subject after the emergency remote teaching experience.	2	20	4	6.7	19	31.7	12	20	13	21.7	3.16
I think that I can learn in the courses given by the emergency remote teaching.	5	8.3	4	6.7	11	18.3	24	40	16	26.7	3.70
I would rather take face-to-face exams than take online exams.	7	11.7	9	15	16	26.7	8	13.3	20	33.3	3.42

Table 5 indicates that while 31.7% of the students stated that they would prefer to continue their university education with distance education experience after their emergency remote teaching experience, 13.3% partially agreed with this opinion, and 55% of the students did not support this opinion. According to the mean score ($\bar{X} = 2.60$) given to this item, it can be suggested that the majority of the students do not prefer to continue their university education entirely with distance education (See Table 5). On the other hand, 46.6% of the students reported that they might prefer to continue some courses with distance education during their university education after their emergency remote teaching experience. 20% of the students stated that they partially agreed with this opinion, while 33.4% did not support it (See Table 5). The mean score ($\bar{X} = 3.16$) given to this item demonstrates that some students prefer to continue some courses with distance education. This data also suggests that students may prefer to attend some of their courses online, even if not completely distance education. Besides, 41.7% of the students asserted that they would prefer to participate in an education given by distance education method on any subject after their emergency remote teaching experience (See Table 5). Thus, after the experience, it was seen that some of the students could show interest in different courses conducted with distance education. Furthermore, 66.7% of the students stated that they thought they could learn in the courses given by distance education. While 18.3% of the students partially supported this opinion, only 15% opposed this opinion. Considering the students' preferences for the exam, it was seen that 46.6% of them preferred to participate in the face-to-face exams instead of taking the online exams. While 26.7% of the students partially agreed with this opinion, 26.7% did not agree and added that their preference was for online exams.

In addition to these, students were also asked about their preferences for the use of cameras in live lesson sessions after their experience in the emergency remote teaching process. Data on camera usage preferences in live lesson sessions are presented in Table 6.

Table 6. Students' Preferences for Live Lesson Sessions and Exams After The Emergency Remote Teaching Experience

	Strongly disagree (1)		Disagree (2)		Partially agree (3)		Agree (4)		Strongly disagree (5)		Mean \bar{X}
	N	%	N	%	N	%	N	%	N	%	
I'd prefer the instructor to turn on the camera in live lesson sessions in distance education.	5	8.3	4	6.7	19	31.7	9	15	23	38.3	3.68
I'd prefer my fellow students to turn on the camera in live lesson sessions in distance education.	19	31.7	12	20	21	35	2	3.3	6	10	2.40
I'd prefer to attend live lesson sessions in distance education by turning on my camera.	25	41.7	10	16.7	14	23.3	3	5	8	13.3	2.32

53.3% of the students reported that they preferred the instructor to turn on the camera in the live lesson sessions in distance education. While 31.7% of the students partially agreed with this opinion, only 9% disagreed (See Table 6). In the course recordings kept by the researcher and in the observation notes, it was seen that the student interaction was higher in the courses where the instructor's camera was on. On the other hand, only 13.3% of the students expressed that they preferred other students to turn on their cameras in the live lesson sessions in distance education. While 35% of the students partially supported this opinion, 51.7% stated that they did not prefer their other friends to turn on their cameras (See Table 6). Regarding the students' preference whether or not to turn on their own cameras, only 18.3% of the students said that they preferred to attend the live lesson sessions with the camera on. While 23.3% of the students partially agreed with this opinion, 58.4% disagreed (See Table 6). Thus, while students prefer the instructor to turn on their camera in live lesson sessions, they do not prefer their friends or their own cameras to be turned on. In the course recordings created by the researcher, it was observed that only one student in two courses each turned on the camera, while the rest of the students did not. Additionally, in the

observation notes, the reasons why the students did not turn on the camera in the live lesson sessions were related to the reasons such as not being in a suitable environment at home, being connected from the phone, and being connected from the workplace.

4 | DISCUSSION & CONCLUSION

During the pandemic in the world, face-to-face education in higher education institutions was carried out in online environments with the opportunities provided by distance education tools. This process is expressed as the emergency remote teaching experience for both instructors and students. The effects of the emergency remote teaching experiences after the pandemic in the current education world are discussed. While examining these effects, the students' opinions and perspectives, one of the biggest stakeholders in the process, are vital. Hence, this study analyzes the transition process to the emergency remote teaching through the opinions of Information Technologies pre-service teachers who continue their education in the Department of Computer and Instructional Technologies at Ondokuz Mayıs University Faculty of Education during the COVID-19 pandemic. Thus, by evaluating the important components that contribute to the emergency remote teaching experience and the issues that obstruct the process, suggestions are presented to higher education institutions for similar situations that may be experienced.

Distance education provides learners the flexibility of time and space. In traditional education, the face-to-face interaction established by the learning and teaching parties in physical classrooms is realized through technology in distance education. Therefore, interaction is one of the most prominent issues in distance education. Moore (1989) examines interaction in distance education under three headings: (1) learner-learner, (2) learner-teacher, and (3) learner-content. In this study, it is seen that student choices for the issues that support the emergency remote teaching process highlight these interaction types. To this end, 58.3% of the students emphasized getting regular and quick feedback from the instructor. Similarly, 58.3% of the students emphasized the importance of live lessons in the emergency remote teaching, where they can interact with both other learners and the instructor. Besides, 50% of the students mentioned the asynchronous content provided by instructor, which implies the importance of learner-content interaction. Moreover, the students claimed that associating the provided asynchronous content with supportive activities is a key factor in attendance and monitoring of the course process. This situation reveals that learner and content interaction should be supported with appropriate learning activities. Thus, the design for the interaction of students with other learners, instructors, and the content provided in distance education can be expressed as one of the crucial points that will support the distance education process.

One of the most important issues for students in the emergency remote teaching process was organization. Under this topic, regular feedback from the lecturer, regular announcements, timely announcements of activities such as homework, and live lessons routinely taking place every week and at the same time are noteworthy items. In addition to these, regular and continuous use of the class board by the instructor, regular meetings with the students, following the course syllabus, and clarity are also placed under the organization component. Likewise, the level of student motivation increases with a regular and timely lesson plan and regular and on-time feedback from the instructor (Xiao & He, 2020).

Higher education institutions must have the necessary ICT infrastructure for an effective transition to distance education (Ali, 2020; IAU, 2020), but the ICT infrastructure alone is not sufficient for a successful teaching process. In the distance education process, the readiness of the instructors and students should also be understood, and the necessary support should be provided accordingly (Ali, 2020). Instructors with high readiness levels and previous distance education experience show a significant difference in course design, communication, and time management during the pandemic process (Bolliger & Halupa, 2021). The training that the instructors have attended before or their competencies in distance education enables them to start the process more confidently. Also, instructors with high self-confidence are more open to support their adaptation to the emergency remote teaching process (Bolliger & Halupa, 2021). On the other hand, instructors with low self-confidence in distance education generally find the support provided insufficient (Scherer et al., 2021). In this study, the instructor's competencies in distance education were mentioned among the issues that support the process in the emergency remote teaching, as well.

Along with these, the adaptation of distance education environments is not only a technical issue but also a pedagogical and instructional element (Ali, 2020). It is different from the fact that the instructors know how to use an online tool and utilize this tool skillfully in their lessons (Xiao & He, 2020). Although instructors need to be able to use an online tool, it is emphasized that there will be problems in the effectiveness of the course if they cannot use it in their lessons and integrate it into their lessons (Xiao & He, 2020). In this study, the methods used by the instructor, the management of the live lesson, and the materials provided were among the other vital components that supported the emergency remote teaching process. In similar studies in the literature on the effectiveness of the emergency remote teaching process, sharing of appropriate learning materials, the competence of the instructor, the teaching methods used (Sharma et al., 2021), live lessons, simultaneous communication (Gaba et al., 2021; Xiao & He, 2020), the instructor's skillful use of online tools and the effective integration of online tools into lessons (Xiao & He, 2020) are regarded as prominent points in the effectiveness of the process. Previous studies in the literature suggest that academic disciplines contain different instructional practices and beliefs about how students learn; therefore, it is necessary to conduct studies on the pedagogical approaches of instructors in the process of transition to distance education (Scherer et al., 2021).

In the emergency remote teaching process, students highlight problems such as deficiency of face-to-face interaction, technical problems, course load, homework, and deficiency of motivation. In many studies, technical problems are seen as a crucial problem experienced by students (Xiao & He, 2020; IAU, 2020; Sharma et al., 2021). Additionally, a different course load from the face-to-face education process in the emergency remote teaching process is also expressed among the changes and difficulties experienced by the students (Elfirdoussi et al., 2020). During the pandemic, most students experienced mental problems such as depression and anxiety disorder beyond educational problems (Islam et al., 2020; Rotas & Cahapay, 2020; Son et al., 2020). Conditions such as the sudden interruption of face-to-face education during the pandemic process, the fact that students have to continue their education from distance education environments in a way they are not used to, problems with computer and internet access to attend live lesson sessions, the absence of suitable environment for participation in live lesson sessions in the environment where students live, and the emergence of health problems of themselves or their family members also affected students' stress and anxiety. While these problems decrease student motivation, they also negatively affect the learning process. Strong motivation is among the important components that support the students' learning process (Simonson et al., 2008). In this study, 36.7% of the students stated the lack of motivation among the components that obstruct the emergency remote teaching process. Besides, the instructor's approach to the students, the one-to-one communication, and interviews with the students are among the essential components that support the emergency remote teaching process. The students expressed that the one-to-one interviews with the instructor and the instructor's approach throughout the process motivated them. Thus, the positive approach and support of the instructor are significant for the students to overcome the lack of motivation they experience in this process and adapt to the process.

In order for students to re-participate in an educational process, it is a must that they benefit from the process they participated in and that their motivation is high (Alsabawy et al., 2016). This study examined students' perspectives on new distance education experiences after their current emergency remote teaching experiences. Although most students do not prefer to continue their education completely distant, some students prefer to continue some courses online. This shows that some courses in higher education can be encouraged to be taught blended. Despite the shortcomings and difficulties in the emergency remote teaching process in the literature, it is suggested that higher education institutions should continue with innovative studies under the influence of positive online experiences (Bozkurt, 2020; Cirlan & Loukkola, 2021; Nworie, 2021) and that a new blended model could take place in the future of the education world. (Li & Lalani, 2020). To this end, it was observed that most of the students thought that they could realize learning in the courses they attended during the emergency remote teaching process. This finding shows that with a well-managed process, students receive contributions from the education they attend.

This study revealed that students feel more comfortable in face-to-face lessons, although there is no high difference when comparing the course contents or lectures provided in the emergency remote teaching process to face-to-face lessons. A previous study reported that most students think that distance education is not as effective as face-to-face education (Keskin & Özer-Kaya, 2020). Nevertheless, this study found out that although the students thought that they contributed to the process and that there was no difference between the lecture and the

content of the course, they preferred face-to-face education for the future. Similarly, it was observed that the preferences of the students in the exams were in line with the face-to-face exams. Besides, there is an emphasis on similarity with face-to-face lessons among the positive features that the students listed for the lessons. This can be expressed as the desire of students to continue their current habits.

As a result of the study, students need qualifications such as organization, interaction, regular feedback from the instructor, regular announcement, live lessons, the quality of synchronous content, supporting the learning process with asynchronous activities, continuous communication, the use of effective instructional methods, the competence of the instructor, the approach of the instructor, and having similar features to face-to-face lessons in the emergency remote teaching experience. Besides, the lack of face-to-face interaction, technical problems, unusual online exams, and excessive assignments were the issues that forced students into the emergency remote teaching process.

SUGGESTIONS

In line with these results obtained from the study, the following suggestions are made regarding the teaching process that should be planned in a similar situation, based on the experiences in the emergency remote teaching process:

- Interaction in distance education should be supported in three ways. The interaction between the learner and the teacher should be assisted both with live lessons that offer the opportunity to meet synchronously and with asynchronous communication opportunities. Interaction between learners should also be supported by collaborative activities to be held both during and after live lessons. In this regard, it can be ensured that online tools where students can meet and work can be included in the activities. Finally, students should plan activities/assignments in which they will use course materials and contents, and they should be guided on how to benefit from these materials.
- To support the students' motivation and facilitate adaptation, they should be prevented from being alone in the system. For this, regular live lessons should be organized, and students should be encouraged to communicate with other students and instructors during these lessons. Moreover, apart from the live lessons, the instructors should provide instant feedback to the student through the system. The virtual lesson area should be used actively, and the student should be informed about the process regularly.
- Students are looking for organization in distance courses. For this reason, they should be informed regularly and continuously at the beginning of the lesson and throughout the lesson. It is important that live lessons are regularly planned on the same days and hours, students are informed in detail before responsibilities such as homework, and communication channels such as the class board in the virtual lesson area are used actively and routinely. Students should know how to benefit from the shared content, their responsibilities in the course process, the deadline they need to complete activities such as homework, and how they can communicate with the instructor.
- The readiness of the instructors is a must in the transition to distance education. Instructors should also benefit from the opportunities offered by technology in their face-to-face lessons. Additionally, teaching staff in higher education institutions should gain competencies to continue the education and teaching process with alternative methods and technologies. Thus, the continuity of the education and teaching process with alternative tools and methods in cases like the transition to emergency remote teaching can be ensured.

In addition to these suggestions, higher education institutions should enrich their teaching processes with alternative methods provided by technology. The flexibility provided by distance education should be included in face-to-face teaching environments, and learning environments enriched with blended learning should be designed. Consequently, in situations like the pandemic process experienced, the adaptation of higher education institutions, instructors, and students to the process could be more comfortable and trouble-free.

STATEMENTS OF PUBLICATION ETHICS

The study received ethical approval from the Ethics Committee of Social Sciences and Humanities of Ondokuz Mayıs University (date: 23 September 2020 and number: 2020/554).

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Are Special Education Teachers Ready for Distance Education? Experiences and Needs During the Covid-19 Outbreak

Sinan HOPCAN^a, Elif POLAT^{b*}, & Mehmet Emin ÖZTÜRK^c

a Dr., Istanbul University - Cerrahpasa, (<https://orcid.org/0000-0001-8911-3463>) sinan.hopcan@iuc.edu.tr

b* Dr., Istanbul University - Cerrahpasa, (<https://orcid.org/0000-0002-6086-9002>) *elif.polat@iuc.edu.tr

c Assist. Prof. Dr., Erciyes University, (<https://orcid.org/0000-0002-8868-5520>) memozturk@erciyes.edu.tr

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DÜZELTME

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a Dr., Istanbul University - Cerrahpasa, (<https://orcid.org/0000-0001-8911-3463>) sinan.hopcan@iuc.edu.tr

b* Dr., Istanbul University - Cerrahpasa, (<https://orcid.org/0000-0002-6086-9002>) *elif.polat@iuc.edu.tr

c Assist. Prof. Dr., Erciyes University, (<https://orcid.org/0000-0002-8868-5520>) memozturk@erciyes.edu.tr

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