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JOURNAL OF SOCIAL SCIENCES AND EDUCATION (JOSSE)

Opinions of Prospective Teachers Raised in Eastern and Southeastern Anatolia Regions on Regional Educational Problems

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Opinions of Prospective Teachers Raised in Eastern and Southeastern Anatolia Regions on Regional Educational Problems

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Abstract	Research Article
The aim of this study is to analyze the experiences of prospective teachers living in East and Southeast Anatolia who have completed their primary and secondary education in these regions in relation to the educational problems in East and Southeast Anatolia. In accordance with this aim, the phenomenological design, one of the qualitative research designs, was used in the research. The research group of the study consists of 9 prospective teachers who are continuing their education in different departments of the Faculty of Education during the academic year 2021-2022. The study used a semi-structured interview form prepared by the researchers as a data collection tool. The data obtained during the study were analyzed using content analysis. As a result of the research, the prospective teachers stated that the most important problems in education in Anatolia's eastern and southeastern regions are general transportation, housing, and family's economical problems. Other important problems are language, social gender, unawareness of parents, and socio-cultural problems. Under the heading of educational problems, the prospective teachers mentioned the problems of school opportunities, teachers' behaviors/attitudes, and the lack of teachers. **Keywords:** East and Southeast Region, prospective teachers, educational problems	

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Introduction

Education is one of the most effective tools societies use to pass on their cultures and experiences to future generations. It is an important tool to prevent unrest that may occur in different societies and countries worldwide due to their own transfer processes. On the other hand, it helps people with the potential to improve their skills based on specific levels according to their needs. If we look at education from a general point of view, we can say that it aims to grow ideal people.

As societies developed, there were also differences in the perception of education. Education, which was more readily available with the invention of printing, became more common with the increased need for educated labour after the Industrial Revolution (Tunç, 2012). In the last one or two hundred years, education has acquired a structure that embraces all individuals (Tabak, 2019). In 1948, the 26th article of the Universal Declaration of Human Rights made the 'right to education' binding in the legislation of most countries (TEDMEM, 2019). Equal opportunities in education began with the increasing number of schools in our country in the last years of the Ottoman Empire and then continued in the republican period based on fundamental principles. The article on equal opportunities in the Basic National Education Law numbered 1739, issued on 24 June 1973, reads as follows: "To ensure that successful students who lack financial resources receive an education up to the highest levels of education, the necessary assistance shall be provided through free accommodation, scholarships, loans, and other means" (MoNE, 1973). This article, which is an important basis for equal opportunities in education, cannot be fully implemented in some cases. Income inequality has continued to increase and worsen since the 1980s (TEDMEM, 2019).

In addition to this economic inequality in the world, equality of opportunity in education can be disrupted by the internal dynamics and geopolitical differences of countries. In our country, some regions have socioeconomic rural characteristics due to their geopolitical location, climate, and macroeconomic variables (Özdemir and Erol, 2021). The socio-economic and geographical characteristics of rural areas (Turan and Garan, 2008; Donuk and Palavan, 2016), can create disadvantageous situations. In our country, the regions of Eastern Anatolia and Southeast have rural characteristics in terms of geopolitical features, geographical conditions and level of socio-economic development. Due to these characteristics, these regions, which have the characteristics of a disadvantaged region compared to other regions, have some problems with equal opportunities in education. Due to this characteristic, it was found that the enrolment rate in our country decreases from west to

east (Taşkaya, Turhan, & Yetkin, 2015). If this situation continues, it can lead to social imbalance and problems in the country. Problems with education and schooling can lead to child labour, early marriage and children drifting into criminal groups (Watkins & Zyck, 2014).

For the future of the society and the country, it is important to recognise the problems in the East and South-East and make adequate provisions. Looking at the relevant literature, there are many studies on rural areas and disadvantaged regions. Abroad, there are studies about the teaching experience in disadvantaged areas (Poppleton et al., 1987) and the schools in disadvantaged areas (Muijs, 2003; Lupton, 2004). In Turkey, there are studies on the educational problems of the East and Southeast Anatolia region in general (Koç, 2014; Korkmaz, 2016; Şahin and Analı, 2019; Altun, 2019; Analı, 2020), the historical position of the regions (Demirtaş, 2008). There are also studies on the regions (Karataş and Çakan, 2018; Dağlı and Han, 2017; Taşkaya, Turhan and Yetkin, 2015; Atmaca, 2004) and the problem of mother tongue throughout the country (Yılmaz and Şekerci, 2016). As can be seen, the studies have focused on the problems faced by teachers when they are first recruited and the problems in rural areas.

There is no study in the literature on the views of teachers and prospective teachers who grew up in the region on the problems of the same region. The views of these prospective teachers on the educational problems they experienced in the region are significant in the context of the field education they received. This is because they can perceive the problems in the regions where they live better than others in a long thought process. At this point, the opinions of the prospective teachers who have received their primary and secondary education in the region on the regional problems are important. In this direction, the study aims to analyze the experiences of prospective teachers who live in East and Southeast Anatolia and have received their primary and secondary education in these regions about the educational problems in East and Southeast Anatolia.

Method

Model

The research was conducted using a phenomenological design, one of the qualitative research designs. Phenomenological research generally refers to a group's experience of a concept or phenomenon (Creswell, 2017). Phenomenological design, also called phenomenology, encompasses the concepts such as case, phenomenon, experience, understanding and attitude that we frequently encounter in our daily lives but are not fully

explained (Kıncal, 2013). The experiences of the prospective teachers who completed their primary and secondary education in the East and Southeast Anatolia regions of Turkey overlapped with the experiences underlying the phenomenological design regarding the problems they experienced or observed. In this study, the phenomenological design was used to analyze the experiences of prospective teachers who lived in East and Southeast Anatolia and completed their primary and secondary education in these regions about the educational problems in East and Southeast Anatolia.

Study Group

The criterion sampling method, which is one of the purposive sampling methods, was used to determine the study group for the study. The logic of this type of sampling is to study situations that meet predetermined criteria (Patton, 2014). A criterion sample is a type of sample consisting of people, cases, objects or situations with the characteristics specified for the problem (Yıldırım & Şimşek, 2013). In this study, prospective teachers who received their primary and secondary education in the regions of Eastern and Southeastern Anatolia (2nd, 3rd and 4th grades) were set as criteria. Accordingly, the study group of the research consists of 9 prospective teachers studying in different departments of the faculties of education (science, Turkish, primary education, mathematics, preschool, social studies, classroom).

Table 1.

Participant Information

No	Gender	Age	Department	Grade level	Place of Residence
PT-1	Female	20	Science Teaching	3. Year	Gaziantep
PT-2	Female	21	Science Teaching	3. Year	Ağrı
PT-3	Male	27	Turkish Language	2. Year	Van
PT-4	Female	20	Primary Education Mathematics	3. Year	Adıyaman
PT-5	Male	20	Primary Education Mathematics	2. Year	Şanlıurfa
PT-6	Male	20	Preschool Teaching	4. Year	Adıyaman
PT-7	Female	20	Social Studies Teaching	3. Year	Siirt
PT-8	Male	21	Classroom Teaching	3. Year	Bingöl
PT-9	Male	21	Social Studies Teaching	4. Year	Şanlıurfa

Demographic information about the participants (age, gender, department, grade level, place of residence) can be found in Table 1. "PT-1" stands for the participant in first place and "PT-6" for the participant in sixth place.

Data Collection Tools

As part of the research, in-depth interviews were conducted with participants in order to ascertain the views of prospective teachers trained in the regions of Eastern and South-Eastern Anatolia on the educational problems of the region. A semi-structured interview form developed by the researchers was used for the interviews. Before preparing the semi-structured interview form, the literature on the topic was reviewed and the questions were prepared. The prepared questions were compiled with the help of the opinion of a professional and a language expert. A pilot interview was then conducted with a prospective teacher. During the pilot application, one question was revised due to ambiguity. In a semi-structured interview, the researcher makes a plan to explore certain topics and ask open-ended questions. During the interview, he or she can change the order of the questions and add new questions depending on how the interview progresses (Johnson & Christensen, 2014). In addition, during the semi-structured interview, participants can be asked further questions about the details of the topic to clarify the issue or provide examples (Merriam, 2009). In this study, the interviews were conducted by the researchers in private with the prospective teachers, and third parties were not included in the interview. During the interview, care was taken to ensure that the environment was suitable for data collection, and interviews were recorded on a voice recorder with the consent of the participants.

Collection of Data and Analysis

Qualitative data analysis aims to code the data, divide the text into small units (statements, sentences, or paragraphs), assign labels to each unit, and collect the codes under themes (Creswell & Plano Clark, 2014). The data obtained in this study were analyzed using the content analysis method. Content analysis involves scanning qualitative material with many repeated words and themes to convert it into smaller qualitative data and make it meaningful (Patton, 2015). The data obtained from the interview was repeatedly listened to and read by the researchers as part of the content analysis. Then, the data obtained was coded and the related data of the coded data was combined to find the themes. After transcribing the interviews with the prospective teachers, "PT-1" was coded for the first participant and "PT-6" for the sixth participant. The data was presented under the themes and supported by direct quotes from the prospective teachers' opinions where appropriate.

Validity and Reliability in Research

To enhance the credibility of the research, the opinions of technical and linguistic experts were sought in the preparation phase of the interview form. In addition, the researcher

interacted with the participants over a long period of time during the research process. Long-term interaction between the researcher and the participants increases the credibility of the research data (Yıldırım & Şimşek, 2013). To ensure transferability, a purposive sample was used in the research phase, which consisted of prospective teachers who have more experience with regional problems. Another application to ensure the consistency of the research is expert review. The entire research process was reviewed by an expert. In addition, triangulation of data sources and researchers (Stake, 2010) was used to verify the data obtained from prospective teachers. Several researchers were involved in the collection, analysis and interpretation of the data in the study. During the data analysis, the researchers created the coding and themes in different ways, and then the analyses were examined for similarities and differences. In this way, compatibility between coders was checked and coordination between researchers was ensured. On the other hand, the data was originally recorded with a voice recorder and transferred to the computer environment to ensure the confirmability of the research.

Ethical Committee Approval

The ethical review was carried out by = Yıldız Technical University Social and Human Sciences Research Ethics Committee.

Date of the decision on the ethical review: 29.03.2022

Issue number of the certificate of ethical review: 2022/03

Findings

In this study, which aims to explore the views of prospective teachers who have grown up in disadvantaged areas about the educational problems in the region, the findings are explained within the framework of three themes. Information on these themes can be found in Table 2.

Table 2.

Table of theme and Sub-themes

Theme	Sub-theme
Economical Problems	Transport and housing problems
	Family's economical problems
Socio-Cultural Proble	Language problems
	Social gender-related problems

		Unawareness of parents
Education al	Problems	Problems due to school impossibilities
		Teacher's behaviors-attitudes
		Lack of teachers

These themes are economic problems, socio-cultural educational problems and educational problems. These themes were identified based on the statements of the prospective teachers. The themes identified were explained through supporting one-to-one quotes from the views and ideas obtained as a result of the interviews with the prospective teachers.

Theme 1 Economical Problems

According to the data collected from the prospective teachers during the research, one of the main themes highlighted among the educational problems in the regions of East and Southeast Anatolia is the economic problem. This main theme is presented under the sub-themes of transport and housing problems and family's economic problems.

1.1.Transport and Housing Problems

When the views of the prospective teachers were examined, they highlighted transport and housing problems among the economic problems related to the educational problems of the region in which they live.

Regarding the transport problems;

PT-1; *"The region where I live is the town center, therefore, I have not had any problems with transport. In rural areas, there can be problems with transport."*

PT -2; *"Sometimes we could not find shuttle buses. When we did find one, the drivers charged too high a fare because it was a one-time trip. After school, we had to wait for hours for the shuttle service. As students, we were often late for class because of the problems with the service."*

PT-6; *"For children living in the villages, the transport problem is a challenge. For people who come from the villages, transport can be difficult because it costs too much money. Families can not or do not send their children to school because of financial difficulties."*

PT-5; *"For example, there are schools in the villages, but the schools remain inactive. Such situations can lead children to go to school far away."*

When one examines the opinions of prospective teachers, one finds that students living in rural areas have great difficulty with transport because there is no school in their villages or towns. When travelling from small settlements to city centres by minibus, the higher fares have a negative impact on the educational life of the students due to the lack of a competitive environment.

The opinions on housing problems as follows;

PT -7; *"The child has to stay in the dormitory. I think that staying in a dormitory at a very young age can have very negative consequences. I lived in the dormitory when I was little. It leads to a certain disconnection from the family."*

PT-9; *"Even if you want to stay in a boarding school, the number of students is too many, so, you can not accommodate all the students in the dormitory."*

With regard to housing, one prospective teacher stressed that the dormitories were inadequate, while the other prospective teacher explained, based on her own experience, that some problems arose due to alienation from the family among the students stayed in the dormitory.

1.2. Economical Problems

Another sub-theme highlighted in relation to the educational problems of prospective teachers in the regions of Eastern and South-Eastern Anatolia is the economic problems of the family.

Some opinions about the family's economical problems are as follows;

PT-7; *"Another economic problem is the economic situation of the family. Since the family's economic situation is generally poor, the child's needs cannot usually be met at school."*

Regarding the impact of the family's economic problems on the school;

PT-6; *"Financial impossibilities are already reflected at school."*

There are also opinions from trainee teachers that the family's poor economic situation affects students' school attendance. For example;

PT -1 *"If the child's grades are not good, or if his family gets into economic difficulties despite good grades, his educational life ends. He is employed by his family at a young age. Especially when boys finish secondary school, if their exam marks are not good, they are sent to industry."*

PT-7 *"As families are engaged in sheep rearing and farming, they usually do not send their children to school. For example, they do not send their 12-13 year old child to school and ask him to help them in the garden or field."*

PT-4 *"The students whose economic situation was not good participated less in class psychologically. When the economic situation was bad, the parents were also less interested in the students. Because the parents had to work and the students had little interest in their classes. Therefore, the parents could not stand by the students. For this reason, I think one of the biggest problems is the economic problem."*

The main source of income for families living in the region is agriculture and livestock. The financial difficulties of these families have a negative impact on their children's school life. Some student families make their children work in agriculture and livestock at an early age, while others send them to some industries as child labourers. In this context, some prospective teachers emphasised that the economic situation of the family affects the students' access to resources.

For example;

PT -3 *"Due to the economic difficulties in the region, it is difficult to reach the desired resources. Of the parents there, the mothers are mostly housewives, while the fathers work as seasonal laborers, construction workers, etc. I can say that 80% of the students lack resources because their parents cannot earn income from their work."*

PT-8 *"Let me say this: since their income comes from farming and animal husbandry, they do not have much cash, and since they can not buy source books from alternative publishers, they can not expand and deepen their knowledge too much."*

When the teachers' opinions were explored, one trainee teacher explained that the students had resource problems as the fathers were mostly seasonal workers and the mothers mostly housewives. Another prospective teacher explained that students also have little access to resources due to low access to cash in the agriculture and livestock sectors. Based on these statements, it can be said that agriculture and livestock are the main sources of income for the student families, so this fact has a negative impact on the student's educational life.

Theme 2 Socio-Cultural Problems

According to the data obtained from the prospective teachers as a result of the research, one of the main issues highlighted among the educational problems in the regions of East and Southeast Anatolia is the socio-cultural problems. This main theme was presented

with sub-themes such as language problems, social gender-related problems and parents' unawareness.

2.1. Language Problems

Some prospective teachers explained that one of the educational problems in the disadvantaged regions is the language problems. They talked about the fact that the spoken language of some people in the region is Kurdish, which is a problem for education. Accordingly, they said that new teachers who are appointed in the above-mentioned regions have difficulties in settling in and communicating with both parents and students due to language problems. The examples given below prove this.

PT -3: *"Until school started, we did not speak Turkish but Kurdish. Our friends suffered even more as a result. Since Kurdish is mostly spoken, our teachers wanted us to speak Turkish. This time, some children were on their own. Although they had to learn to read and write in Grade 1, some friends did not make it until Grade 3, 4, or 5. This situation has a big impact on a child's educational life."*

PT-6: *"Because most of them know Kurdish, they have difficulties learning Turkish. Some families know Turkish, but others do not. Or they do not care about their child's education. The children start school 1:0 behind compared to the West."*

PT-7: *"The language problem is very common in the eastern and south-eastern regions, which we call the disadvantaged regions. The children there do not start their lives in Turkish. Because their parents do not know Turkish, they speak Arabic, Zazaic, Kurdish, and other languages. When they come to school, they feel as if they are strangers. The language problem comes up when they try to learn new things."*

According to the prospective teachers, it can be said that speaking different languages in the Eastern and South-Eastern regions has a negative impact on the educational life of the students. If the student's mother tongue is not Turkish, learning to read and write is a big problem, which causes the students to become introverted. This situation has a negative impact on their overall educational experience. In addition, parents' attachment to the school is weakened by the language differences, which affects the students' success and thus the continuity of education. Considering all these conditions, there can be significant setbacks compared to students from other regions.

2. 2. Social Gender-Related Problems

Some of the prospective teachers stated that perceptions of social gender negatively affect education in their regions. They explained that these problems cause both educational and social problems, such as preventing continuity in education, early marriage, child labor, and girls' being left out of the picture.

Examples of these are presented below;

PT -1; *"To speak for the girls: Girls are often married off at a young age. I have an aunt my age. She has a child now. One of my cousins also has a child. A 17-year-old child can be married off with her parents' permission."*

PT-5; *"The percentage of girls receiving education in Akçakale is very low compared to Turkey in general. There are such problems: The children who should be going to school are working in the fields like cotton and maize fields. In some regions girls are behind in education."*

PT-5; *"There is one parent who does not send her daughter to school. The cause of this problem is the lack of education. A woman in Urfa, for example, has many difficulties to face. She has to bear all the problems of her husband."*

PT-8; *"Since girls in eastern and south-eastern Anatolia are considered housewives, they are allowed to go to school at most until the eighth grade. Even high school is not considered necessary."*

According to the prospective teachers, the differences in social gender perceptions in the region have a negative impact on the educational life of girls. This situation poses a major problem for education. Considering that half of the student body in education are girls, one can better understand the extent of the problem. As a result of this perception, girls who do not receive schooling may be exposed to individual abuse such as early marriage and child labor.

One of the prospective teachers stated that the problems regarding girls have decreased compared to the past.

PT-9; *"The problem of fewer girls going to school is not as big as it used to be."*

When the views of the prospective teachers are examined, it is revealed that there is a serious problem when compared to the number of prospective teachers who state that there is a problem and the number of prospective teachers who state that there is no problem. In addition, when we examine the expression of the prospective teacher PT-9, there is still gender discrimination, even if it is less compared to the past.

2. 3 Unawareness of Parents

Some of the prospective teachers stated that parental unawareness has a negative impact on education in the regions where they live. An example of the general unawareness in the region;

PT-3; *"The biggest problem in my region is illiteracy. Before the time of the Prophet, there was a period called the age of ignorance. As a Kurd, I can definitely say that there are ignorant customs in my region."*

As an example of the unawareness of parents and the fact that they ignore the students;

PT-9; *"Parents think like this: I sent the child to school anyway, I do not care about the rest. This belief is a big problem for education."*

An example of unawareness leading to violence;

PT-5; *"There is an unawareness among parents. Parents who are violent, for example, can easily attack teachers."*

PT-7; *"Parents may not be able to communicate very well with their children. As they are not aware of this, there is a disconnect between them and the child and a greater tendency towards violence. Or the child suffers from psychological loneliness, which can lead to various problems later on."*

According to the prospective teachers, the unawareness of the parents in the region has a negative impact on the educational life of the students. Looking at the statement of the prospective teacher PT-3, we find that there is a general unawareness in the region that affects many situations, especially the perception of social gender. Moreover, unawareness leads to interest in the school and violence against students and teachers. In this situation, one of the most important factors that have a negative impact on education is that there is insufficient awareness among parents.

3 Educational Problems

According to the prospective teachers, the other main theme highlighted in the educational problems in the regions of Eastern and South-Eastern Anatolia is the educational problems. This main theme is presented with the sub-themes of problems due to school facilities, lack of teachers and teachers' behaviors-attitudes.

3.1 Problems Due to School Facilities

Some of the prospective teachers stated that the lack of school facilities in the regions where they lived caused problems in the education process. Among the school impossibilities,

they cited: no school buildings, classrooms, libraries, laboratories, or workshops. The following examples demonstrate this situation:

PT -9; *"In the east and southeast, there are still villages without schooling, their number is too great to be underestimated."*

PT -2; *"Apart from that, there is a lack of classrooms such as libraries, music rooms, etc. There was a lack of materials in our science laboratories. As a prospective science teacher, I can say that science experiments are very important, especially for secondary children in terms of curiosity and observation. When we were at school, we could not do experiments. Our materials were missing or too old."*

PT-2 *"There is not even a library. I want to buy a book. The prices of books are high, as you know. I would like to borrow expensive books from the library to read, but there is no library. There should be a big library that everyone can use."*

PT -3 *"Moreover, there is inequality of opportunity in education. In the Western regions, there are classrooms with 20 students, sitting one after the other. But where I am, there are 40-50 students sitting in 20-student classrooms. Students who have to sit alone can only sit with 3-4 students."*

PT-4 *"For example, in the past, more importance was given to teaching mathematics, science and social studies, as is the case in all schools. In primary school we did not have a workshop because art and music classes were not given much importance. This situation changed in high school, but in primary and secondary school our class consisted of about 40-50 students. 40-50 students tried to paint pictures in one classroom. We tried to take music lessons."*

When the views of the prospective teachers were examined, they expressed similar problems to the general problems of the country, such as overcrowded classrooms, lack of music and arts classrooms and science laboratories in the East and Southeast Anatolia regions. In addition, there were also region-specific problems such as villages without schools, schools without libraries and students sitting too cramped due to lack of classrooms and desks. This situation in the region has negative consequences for the region's students in the current education system.

3.4 Teacher's Behaviors-Attitudes

The prospective teachers stated that the behavior and attitude of teachers employed in the regions of Eastern and South-Eastern Anatolia are among the factors that harm education. The opinions on this situation are presented below;

PT-2: *"I saw too much discrimination by some of our teachers. They discriminated against students according to their status. For example, they asked questions like, "What is your father's profession?". In fact, teachers were trying to do their personal jobs with this attitude. I saw that some students felt offended by this attitude. I could not see any passion and determination on the part of the teachers to win over the students. I have seen many students who have the light within them and the determination to study and achieve their goals. I have also seen such students slip through teachers' fingers because of the attitude and shortcomings of their teachers."*

PT-4; *"The teacher preferred to show interest in the student whose parents have a good financial situation."*

As a result of the interviews, prospective teachers stated that teachers positively discriminate against students with high economic or social status and that this situation causes other students to develop negative attitudes towards school. As a result, some students stated that this disappointed them.

For example, prospective teachers commented as follows on the negative impact on the education caused by teachers asking to be appointed from the region:

PT-8; *"Teachers appointed to rural areas are trying to escape, they are just trying to do the job given to them and teach what they can."*

PT-3; *"Until 10-15 years ago, teachers did not want to go to these regions at all. That is true. Perhaps they were not committed to education after they went there. That's why the students in the East did not learn enough mathematics."*

When the opinions of prospective teachers were examined, they stated that teachers sent to the region as compulsory service could not devote enough time to education. This situation can have a negative impact on students and make it difficult to learn some lessons that require effort. If lessons that are not taught well in the first years are difficult to learn in the following years.

3.3 Lack of Teachers

Prospective teachers emphasized that the other problem that poses a problem in education in the Eastern and Southeastern Anatolia Regions is the lack of teachers. Participants stated that the lack of teachers in different branches and paid teacher practices affect education negatively. The examples presented below indicate this;

PT-2: *"In the area where I live, there is a lack of teachers. An example of this is that our science teacher was teaching a technical design course. In secondary school, teachers*

from other subjects such as maths and music teachers taught religious culture classes. Therefore, we could not learn these subjects properly and adequately. First of all, new teachers should be recruited to solve the problem of teacher shortage. They say we are now in the computer age. But we have never seen a computer teacher in my area."

PT-9: *"The biggest problem in education is the shortage of teachers. Teachers should be appointed. Although there are so many teachers, no teachers are being appointed. At the same time, there is a shortage of teachers in schools. It would be different, if a branch teacher taught his subject. A paid teacher who has studied any subject teaches any classes, for example, someone graduates from nursing school, but s/he serves as a classroom teacher."*

It is clear from the statements of the prospective teachers that not only are there similar problems in the regional schools, but that there are also region- specific problems. The fact that paid teachers who lack pedagogical training can be a problem that is also found in other regions. However, the involvement of teachers from different disciplines in the core subjects and the arts subjects can reduce the quality of education. This can also reduce interest in the subject and make it difficult to discover talented students

Result and Discussion

Within the framework of the research conducted to analyse the experiences of trainee teachers living in East and Southeast Anatolia, who have completed their primary and secondary education in these regions, regarding the educational problems in East and Southeast Anatolia, the educational problems in the respective regions were studied under three main themes. These themes are "economical problems, socio-cultural problems and educational problems". In this context, the article presented the educational problems in the area we determined as a disadvantaged region by corroborating the opinions of prospective teachers who have lived and studied in this region with the relevant literature.

If one examines the views of the prospective teachers, one finds that the first of the main issues highlighted in the educational problems in the regions of Eastern and South-Eastern Anatolia are economic problems. These economic problems include transport, housing, and family's economic problems. Similar to the research findings, Demirtaş (2008) found that the East and Southeast Anatolia regions had transport problems between 1923-1938 and housing problems in school districts due to rural settlement. In the case study of Ağrı province (Atmaca, 2004; Taşkaya, Turhan, & Yetkin, 2015), it was reported that teachers had problems with transport, housing and heating, and in the case study of Bismil, conducted by Karataş and Çakan (2018), it was found that students and teachers had problems

with transport to school. In the study conducted by Özdemir and Erol (2021) on the appointments of prospective teachers in the regions of Eastern and South-Eastern Anatolia, it was determined that participants were concerned about transport and housing. The results of the study show that the transport and housing problems in the region have not yet been fully solved. The other sub-theme highlighted in the study under the theme of economic problems is the economic problems of families. Similar to our findings, Dağlı and Han (2017) suggest in their study that the financial impossibility of families is a problem in education. Koç's (2014) study states that the financial situation of families contributes to girls not participating in education.

The other main theme highlighted by the prospective teachers among the educational problems in the regions of Eastern and South-Eastern Anatolia is socio-cultural problems. This theme was presented with the subthemes of problems with the mother tongue, social gender-related problems, and unawareness of parents. The prospective teachers stated that the fact that the mother tongue of the students in the regions where they live is not Turkish is a problem in the classroom. Similar to our findings, studies on regional education problems (Atmaca, 2004; Taşkaya, Turhan and Yetkin, 2015; Karataş and Çakan, 2018; Analı, 2020) and studies by Yılmaz and Şekerci (2016) on mother tongue education problems across Turkey have shown that the fact that student's mother tongue is a language other than Turkish is a problem in education. Another socio-cultural issue highlighted by prospective teachers is social gender. The research findings are consistent with the studies (Atmaca, 2004; Gedikoğlu, 2005; Koç, 2014) and the fact that girls have not participated in education. The prospective teachers stated that the unawareness of parents is a problem in education. These findings of the research are consistent with the studies in the literature (Karataş and Çakan, 2018; Dağlı and Han, 2017; Taşkaya, Turhan, and Yetkin, 2015).

One of the main issues highlighted by the prospective teachers among the educational problems in the regions of East and Southeast Anatolia is the educational problems. This main theme is presented under the sub-themes of problems arising from school facilities, lack of teachers and teachers' behaviour/attitude. The prospective teachers indicated that the physical inadequacies of school facilities, such as buildings, classrooms, libraries and workshops, negatively affect teaching. This finding of the research is in line with the findings of the studies in the literature (Atmaca, 2004; Gedikoğlu, 2005; Demirtaş, 2008; Koç, 2014; Taşkaya, Turhan and Yetkin, 2015; Dağlı and Han, 2017; Altun, 2019; Analı, 2020). In the research, prospective teachers stated that the attitudes and behaviours of teachers in the region

cause educational problems. The findings of the study are similar to the findings of Altun's (2019) study that problems may arise in relationships when teachers' humanitarian needs are not met in their place of residence, as well as the study findings of Taşkaya, Turhan, and Yetkin (2015), which indicate that the problems may occur in relationships between teachers and students and between teachers and parents. In contrast to studies in the literature, this study concluded that teachers working in the region positively discriminated against some students and did not care about students with poor economic status. The prospective teachers stated that the inadequate number of teachers in the region where they live causes educational problems. Similar to this finding in research, it was found that the lack of teachers in the region is a problem in education (Taşkaya, Turhan, & Yetkin, 2015 Karataş & Çakan, 2018).

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Reluctant Igbo: The matter of cultural identity in Buchi Emecheta's Kehinde

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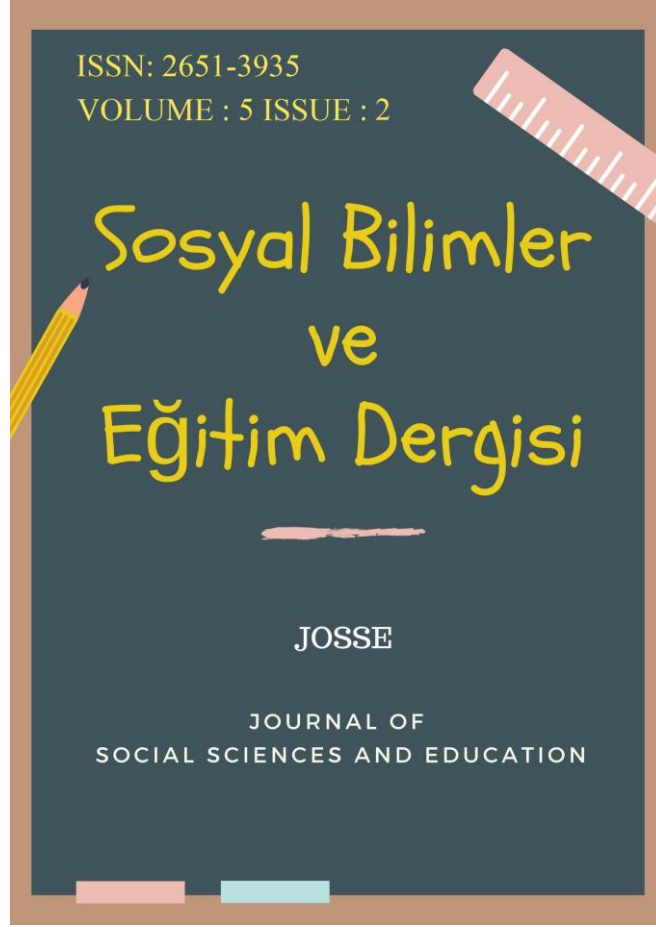
Reluctant Igbo: The matter of cultural identity in Buchi Emecheta's Kehinde

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Abstract	Research Article
Culture and identity issues occupy a great deal of place in postcolonial studies. Contemporary scholars have been highly debating the intersection of cultures belonging to divergent groups and the identity crises of individuals within those groups. Accordingly, new insights based on understanding the invisible aspects of these relations are gained to literature. In this study, Nigerian feminist writer Buchi Emecheta's Kehinde (1994) is analysed through the lenses of culture and identity since the protagonist Kehinde is forced to prefer either her native African culture, called Igbo or her acquired European culture. Such pressure causes Kehinde to strive for two different identities: a Nigerian woman adhering to local traditions and a European woman favouring freedom, though she is inclined to the latter. The paper has been approached by theorist Homi K. Bhabha's postcolonial notions since he holds culture and identity issues complementarily with particular terms which are hybridity and third space.	
Keywords: Kehinde, identity, hybridity, third space, Homi Bhabha	

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Introduction

In her work *Kehinde,* Emecheta explores the complications of making choices while being motivated by two different cultures. Postcolonial academics refer to this circumstance as cultural conflict. People's differing perspectives and perceptions of specific issues may generate difficulties in the shared community, which constitutes the basis of cultural conflict. Homi Bhabha proposes a solution to this state of conflict in his *The Location of Culture* (2004) by offering a term called "cultural hybridity", which allows for the survival and integration of diverse ideas within a multicultural environment. According to Bhabha:

> Hybridity is the revaluation of the assumption of colonial identity through the repetition of identity effects. It displays the necessary deformation and displacement and domination ... For the colonial hybrid is the articulation of the ambivalent space where the rite of power is enacted on the site of desire, making its objects at once disciplinary and disseminatory (1994, p. 112).

Based on Bhabha's claim, hybridity refers to the notion that individuals' identities are a synthesis of various cultures which come into touch. When two different cultures or countries come into contact with one another, they exchange not just ideas but also language, culture, religion, and other commodities. This process of sharing compels both of them to adjust and develop new skills; and because of this, it is impossible for either side to have a pure or untouched culture. For Bhabha, this way of acculturation is necessary to establish a place that integrates several cultures for the good of people in order to avoid the problem one would confront while dealing with a mixed setting. Thus, instead of evaluating a person's or a particular group's worth by dividing them into parts based on their race or culture, hybridity makes the newly created identity more cohesive by uniting their disparate parts. At this point, it is remarkable to also add Bhabha's theory of "third space", which polishes the individuality gained through cultural borders that in a similar principle set in hybridity. With his own words, Bhabha calls this notion "the binary thought and essentialist identities produced by colonial knowledge" (as cited in Bhandari, 2022, p. 171). Once the hybridity is achieved, third space emerges as a formative stage by which the colonised party creates their exclusive aspects. Rutherford by establishing a link between hybridity and third space epitomises the issue as "For me the importance of hybridity is not to be able to trace two original moments from which the third emerges, rather hybridity to me is the 'Third Space', which enables other positions to emerge" (1990, p.211). Back to Bhabha's approach, hybridity—as well as third

space—stands for a crucible in which various pure aspects are melted away, and a new item is benefited through the process.

On the other hand, living in a hybrid culture does not always mean having a hybrid identity. In other words, individuals experiencing a setting consisting of blended cultures may head for either their domestic background or target environment after a certain amount of time. In Mohsin Hamid's novel —*The Reluctant Fundamentalist* (2007), for instance, Changez, the hero, prefers to move back to his home country, Pakistan, after having spent more than four years in America. In Emecheta's Kehinde, even though the heroine and her husband Albert seem to have settled their dual cultural identities in London, the way of their conversion after eighteen years from the exact origin to opposite cultural poles reveals the two-fold output of cultural hybridity. Albert, brought up with a Eurocentric outlook, unfolds his suppressed identity by returning to Nigeria. In contrast, *Kehinde,* who attempts to preserve her homeborn qualities as much as possible, ends up in her in-between situation in the accultured surrounding by deciding to stay in London.

In this regard, the present paper handles the process during which the two characters—Kehinde and Albert—finalise their identities and how this process can be associated with Bhabha's postcolonial ideas. The basis under such associating between the selected work and Bhabha's premise stems from the suitability of Emecheta's identity-based plot belonging a colonised folklore and Bhabha's expertise on the matter. In another way, while Kehinde is being examined by a series of identity-reasoned occurrences, Bhabha's proposal of hybridity is questied whether it is fully solid to cover culture and identity concerns in the mentioned contexts. Considering these points, the study presents a concrete analysis of Bhabha's postcolonial views on a specific work that contributes to the evaluation of African literature and culture as well (Gündüz, 2014, p.66).

The Journey of Identities: From Target to Native and From Native to Target

With her Igbo identity, the author of *Kehinde,* Emecheta, is one of the writers in England who came from another country. Her book is about an Igbo woman whose mother and twin sister died when she was born. As expressed in the book, in Igbo culture, "Kehinde" means "second-born of the twins" (p. 18). Thus, the name creates a feeling of dualism and signals Kehinde's cultural transformation into a British setting. In other words, her biological twin constitutes the Nigerian side, while Kehinde, unlike her essence, forms the assimilated twin. In the storyline, Kehinde is reported to be taken to the Yoruba community by her aunt Nnebogo since twins are considered evil in Igbo customs. This way, Kehinde's existence is

secured by this transfer and this new community's conviction in the Christian religion that embraces twins. To talk more openly about Kehinde's survival in the Yoruba community, her transfer and the fact that she is still alive show that acculturation also happens between cultural minorities, as well as at the international level. Kehinde's preservation is shown to depend on her new society's willingness to accept positive cultural exchange based on the good values of Christianity and Yoruba customs. If not, mishaps or unfortunate incidents would still be linked to Kehinde in the Igbo community at that time. In such a manner, based on cultural and social matters, the novel shows how positive integration at the level of religious beliefs helps innocent people in Nigeria stay alive. After years, Kehinde moves to England to live and start a family with her spouse, Albert. Albert's receiving a letter from her family telling him to return to Nigeria triggers the problems in their marriage and gives way to a cultural resolution. Symbolically, this letter is a bridge to the space where both characters feel good and secure. In order to sell their property, Albert leaves Kehinde in London and goes to his home country to prepare a setting for his family. However, failing to find a buyer for the home, Kehinde chooses to move in with her husband and children in Nigeria. On the first day, she is baffled to discover that after only a year, Albert has already started a second family with another Nigerian lady who is pregnant with a son. Kehinde struggles to manage a polygamous lifestyle, but in the end, she has concluded that her husband is emotionally distant from her. She returns to London, and during her time there, she re-establishes her position as a woman, wife, and mother, which results in Kehinde's liberating herself from the conventional life that is often patriarchal in Nigeria.

Kehinde and Albert are depicted at the beginning to be adapted in London by melting their two-dimensional personalities in the same pot, which is a case of hybridity uttered by Bhabha. Even though they cannot be classified as entirely either Londoner or Nigerian, this blended lifestyle provides the opportunity by which they make themselves accorded and accepted into the society they live in. According to Yousfi, such a way of integration makes it easier for both parties—the coloniser and the colonised—to accept each other and increase their compatibility, while its effects are more observable on the colonised ones (2013, p. 398). Living in such a tolerant society, the family enjoys the modernity of the culture, especially Albert. While he does not show any objection to his wife's earning more than him, he also offers a solution to the unexpected pregnancy of Kehinde with an abortion, which would not even be suggested if they resided in Nigeria. Kehinde's reluctant acceptance of this abortion offer demonstrates that she is indeed committed to the Igbo culture that resists abortion, and

in the same way, it shows how Albert embraces his second culture for the sake of his interests. To Albert, this abrupt pregnancy is an obstacle in the way of his return to Nigeria since he finds himself in an ambivalent situation due to the multicultural society. While Kehinde insists on staying in England, Albert has already set his mind on returning:

> But I want to go back to the way of my life my father had, a life of comparative case for men, where men were men and women were women, and one was respected as somebody. Here, I am nobody, just a storekeeper. I'm fed up with just listening to my wife and indulging her. The only alternative is go to the pub, but going to stand among all those drunken whites is no solution. No, to be at home is better (p. 35).

Albert seems to have a sense of being estranged from the western way of life and being uprooted from his position in a community to which he does not feel he belongs. Despite this, he acts as if he were "Londoner," by pretending to behave in a western manner. Due to this alienating idea, Albert believes he can only feel strong in Nigeria, where he is seen as a patriarch who is superior to the other local people there, owing to his Londoner image. Accordingly, Kehinde appears to have a place in the western world thanks to hybridity, while Albert's relative instability pushes him to the edge of the in-between position, from which he later leaves by going to Nigeria.

Kehinde's conflict with her identity—indeed her in-between case—becomes visible after she starts living alone in London to sell their property. Both psychologically and socially, Kehinde experiences pressure and restlessness of loneliness: "It seemed that without Albert, she was a half-person. Unable to cope with the nagging silence, she plunged into depression . . ." (p. 59). Besides, her friend Mariommo's husband insults her for leading a single life since it is considered to be a shame in Nigerian culture. On the one hand, Kehinde desires to maintain her life in England as a black and free woman with her self-reliance; on the other hand, she would like to perpetuate the unity of her family by returning to her homeland and obeying the traditions imposed on her. Finding herself at the intersection point of her native culture and western habit, she unwillingly decides to move back to her husband and children in Lagos, Nigeria, with the influence of her inner voice. As the couple is in search of a convenient home concept for themselves, this quest as shown above is formed according to their emotional states and surrounding circumstances, which is described by Bhabha as follows:

What is being iterated or articulated around the concept of home are certain needs, certain interests, certain passions and affects, which actually then create that life-world, that existential comfort that you associate with home. […] There are very distinct forms of narrativity, choices, judgments, which evaluate certain locations, which create a home around certain location. […] There is a continual transvaluation, or a changing. That depends very much on decisions you make. (as cited in Akçeşme, 2021, p. 18; Bhabha, 2017).

In this regard, Kehinde's mental state and the patriarchal order in her native culture, which also spreads into her neighbourhood, push her to act in a way she does not wish to establish her conception of home.

Even though Nigeria frames the home notion for both characters, it means different connotations for Kehinde and Albert. Figuratively, Nigeria becomes heaven for Albert while it represents hell for Kehinde. Umeh highlights the first reason for this discrepancy: "According to Emecheta, Igbo society embodies the principle of male dominance and female subordination. Emecheta's women, for the most part, are sacrificed at the altar of a male-oriented society, and men exploit the sex/gender system to maintain male-dominance" (1996, p. xxiv). To Umeh, women are considered to be in a subaltern position against men in that particular African culture, which locates the female gender as devoted wives or mothers, just like addressed in the Victorian Period of Britain as "The Angel in the House", meaning an ideal domestic woman. Thus, being in her homeland while saving Kehinde from being exploited by the Whites, cannot save her from being oppressed under male hegemony. Correspondingly, sex discrimination is presented in Albert's second marriage, alias polygamy. To Kehinde's surprise, he gets married to a well-educated—holding a PhD degree—a woman called Rike to meet the expectations of his society. Kehinde always used to—till coming to Nigeria—deem that she and her husband have sound ties in their marriage. Besides, European culture had influentially been positive in changing the dark mentality of her husband coming from his childhood. However, as observed, Albert prefers the privileges of his native culture over the sophistication of his accultured habits. Baloyi lightens the case of males' multiple marriages within the African context as follows: "In almost all African societies, polygamy is an acceptable and valid form of marriage – in fact, monogamy has been associated with people of lower social status" (2013, p. 164). Based on Baloyi's explanation, it would be wrong of Albert if he did not marry for the second time. Furthermore, to display how intense the influence of male dominance is, Emecheta presents a striking utterance from Ifeyinwa, an

essential female character in the novel, upon Kehinde's calling her husband in a personalised way: "That's one of the things you must learn. Stop calling him 'my' husband. You must learn to say 'our'. He is Rike's husband too, you know" (p. 71). From Kehinde's side, the concept of family in her home country cannot go beyond a crowd of people living under one roof. In another way, men show up as the masters acting with the sense of entitlement to choose their female partners, whereas women are held equivalent to an object that is picked up depending on their beauty. To have an inference, such cultural approaches shape not only the community's values but also have a widespread impact on a larger scale; to put it differently, the more sophisticated culture means the more intellectual country or even continent for this case. In one of the reports of UNESCO, the matter of sophistication depended on culture is handled: "One of the most fundamental issues to Africa's modernisation efforts concerns the indigenous cultural factor, more precisely the interplay between traditional sociocultural values and practices and modem development imperatives" (1997, p. 99). In this context, societies accommodating humiliating values or customs that do not please each member should be given up to take grounded steps for future generations. To sum up the Nigerian context for Kehinde and Albert, it clears off Albert's hybrid identity since he entirely devotes himself to his native tradition. On the other side, Nigeria creates a tremendous ambivalence for Kehinde as she is accustomed to living with Western practices. Indeed, her hybrid identity due to her living in London leaves Kehinde in a dilemma. She has difficulty accepting the norms of her home culture that she once used to live with.

Due to the cultural conflict, she experienced in Nigeria, Kehinde feels sure about returning to London. Emecheta depicts her arrival in London with an ecofeminist approach:

> Outside, though it was cold, the sun was shining, and she felt a surge of elation. She got out of the taxi in front of the house in Leyton, and was surprised that nothing had changed in the twelve months she had been away. She did not know what changes she had been expecting but it looked as if things had stood still. Only a few hours before, still in Nigeria, she had thought the whole world was collapsing. Now she noticed that the trees the council had planted along the street were just beginning to bud. In a few days, they would burst into bloom, and it would be spring (p. 107).

Kehinde takes a step from a world of inequalities and injustices to a world where humane values are prioritised. Her time in Nigeria is implied as a period of turmoil, a kind of dark habitant, in which she is exploited as a female. Yet, London welcomes her with stability and

serenity as well as with its flowers preparing to blossom for spring. In a way, a female character's revival through shifting from one culture holding outdated customs to a Western one is symbolised by nature's blooming. Thus, by regarding Kehinde and nature equally valuable, Emecheta signals that the value given to both is vital for the future of humankind. Other than this, Kehinde's landing as shown in the quote, indicates that she has been welcomed into her diaspora, her true home now. Her sense of identity shifts from being Nigerian to English. This change of scenery for her future in England augurs new and optimistic prospects. Eventually, Kehinde's coming back to England fills her with joy, peace, and a sense of cleanliness, as demonstrated by nature. In this sense, Kehinde's in-between case ends, and she takes a step into a new extent named as "the third space" by Bhabha. To him, the third space refers to a liminal zone wherein cultural identities are reshaped and take their final forms (Bhabha, 2004, pp. 57-58). With a further explanation, Byrne states that: "[Third space] is not simply one thing or the other, nor both at the same time, but a kind of negotiation between both positions" (2009, p. 42). In this respect, Kehinde's ambivalent manner between her local and Western cultures is reconstructed upon her arrival in England, and she finalises her identity crisis by embracing the target Western culture. At the end of the novel, when her son Joshua declares his right to the ownership of the house in London, Kehinde claims her own authority on the property with an insurgent stance: "Claiming my right does not make me less of a mother, not less of a woman. If anything it makes me more human" (p. 141). Obviously, Kehinde's transformation from a patriarchal background to a modern framework seems to be completed, which positions her into Bhabha's third space. However, Kehinde's pursuit of independence and refusing a lifestyle based on polygyny should not be viewed as her overall denial of her native culture in favour of a modern one. In her third space, she adopts Western manners but does not entirely give up or omit her Igbo culture.

Result and Discussion

Emecheta's *Kehinde* is broadly about a Nigerian marriage that is in transition and struggling because of their in-between situation in a diverse community. They cannot revert to their traditional beliefs or embrace the host culture's modern standards, and because of that, they vacillate between two spheres. Albert solves his problem by returning to Nigeria to restore his manhood image; Kehinde, on the other hand, feels that she has a much more tolerable patriarchal in England to which she can stand. It is observed that their different

perspectives and behaviours cause tension in their marriage. The situation is also summarised by Sings as follows:

Buchi Emecheta deals extensively with the issues of home and belonging in her works. Most of her characters are incessantly in search of a stable home; they fluctuate between the different locations, seminally the "original" home and the "diasporic" home; though finally they find their "desired" or pertinent location of home, whether it is their native place or it is the place of settlement. They nurture dreams of home, perpetuate a quest for it, become enmeshed in its labyrinthine trajectories and finally reach their destination through several ordeals of self-definition and an inherent urge to be anchored in some home-location (2018, p. 382).

Prominently, Buchi Emecheta, as an active voice of females in her cultural setting, reflects the women's accepted problems in her country. Indeed, her works are not so distant from her experiences in her own life. In this connection, she can be regarded as a live recorder of cases she has experienced. Her novel *Kehinde* represents a strong female character's dilemmas. On the one hand, she is a British citizen trying to live as much as dependent on her roots, but on the other hand, she becomes the victim of the trap that those roots bring. Till the end of the storyline, she is neither British nor Nigerian, but a floating character just shuttling between those two and struggling to create her own space. However, what changes Kehinde is her realising the facts of life. The identity she once much aggrandised is indeed a black mask closing women's eyes and othering them.

The incidents in the novel are clarified through Homi Bhabha's postcolonial views. In the beginning, though having spent long years in London, Albert shows an in-between situation, while Kehinde's case can be explained by hybridity; Albert is keen on returning to Nigeria due to the multicultural setting, and Kehinde prefers staying in London. In Nigeria, Albert succeeds in locating himself in his third space, in which he finishes his ambivalence. However, Nigeria becomes a place of dilemma, an in-between situation, for Kehinde since she has a well-adjusted personality in the context of England. Finally, she finds her solution by returning to London, which represents Kehinde's third space. From an outer view, Bhabha's theory regarding the postcolonial exercise is figured out how truly it conceptualises the identity matters of the coloniser and the Orient. Though it has a fictional narrative, Kehinde proves what Bhabha puts forward. A similar disposition may be noticed in Muhsin Hamid's *The Reluctant Fundemantist*, from which this study generates its title. As in

Kehinde, the hero in Hamid's work, blended with the mixture of two different cultures, struggles to establish his own particular identity, which also supports and covers Bhabha's notions.

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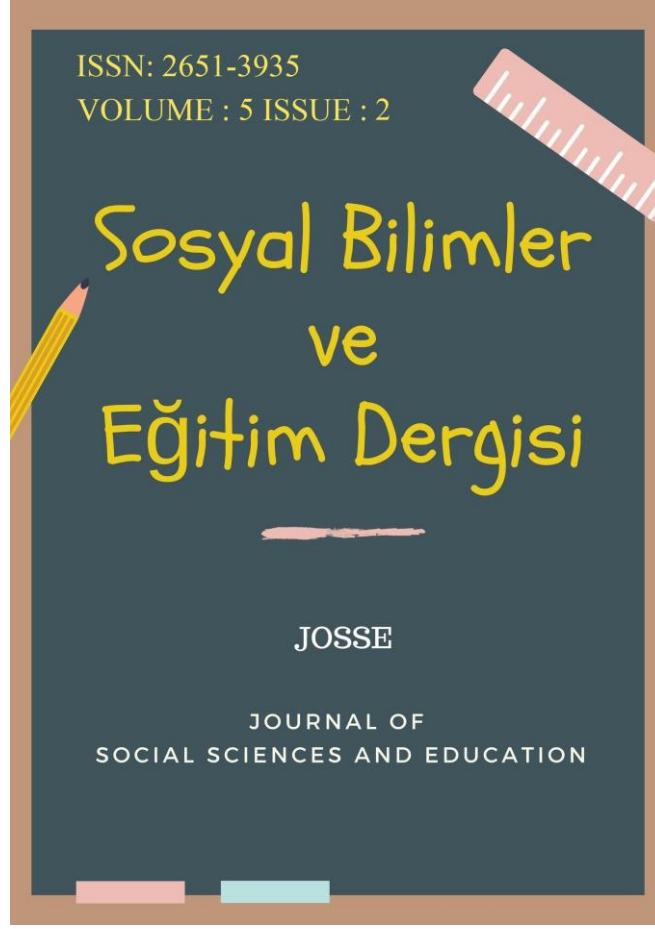
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City, Identity and Civilization in the Eyes of Teacher Candidates

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Abstract	Research Article
This study aims to reveal the views of pre-service teachers studying at Yıldız Technical University Education Faculty about the city, identity and civilization and their perceptions of Istanbul urban identity. The study group of the research consists of teacher candidates who continue their education in different departments and levels at Yıldız Technical University Faculty of Education. An electronic interview form developed by the researchers and delivered to teacher candidates via Google Forms was used to collect the data. The data obtained were analyzed in accordance with phenomenology, one of the qualitative research methods, and interpreted by classifying with content analysis. The details of the pre-service teachers' perceptions of urban identity in Istanbul, after the settlements they lived in before Istanbul, and their contributions to Istanbul's teacher identity are discussed. Perceptions before and after living in Istanbul were compared and evaluated. According to the research findings, Istanbul; The participants gained qualifications such as being familiar with ethnic diversity, gaining self-confidence, exhibiting national values, being tolerant, being aware of the opportunities offered by the city, and empathizing when meeting people from different cultures. features. Participants expressed their metaphorical perceptions of Istanbul in five different themes (sea, history-culture-civilization, metropolitan life, emotion and others) with different images. It was determined that pre-service teachers gained a wider, comprehensive and unique identity by living in Istanbul and experiencing the city life. It is thought that these gains will provide cultural and qualified contributions to the students that prospective teachers will train in the future.	

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Introduction

Civilisation As a Concept

Mankind has been in an effort to create spaces for his life since the first ages. Sometimes he built a shelter from the trees and sometimes he kept a cave for himself. Hair tents, barracks, caves have brought along with their dwellings, buildings, schools and other structures needed for life, together with a process of evolution. With the culture of living together, the dwellings have developed and started to turn into cities that have taken an order. Turkish nation; With the tribes and tribes he founded, he lived a life formed by Kafesoğlu's *Steppe Culture* and settled down with the Uyghurs. It is known that the Uyghurs, who continue the cultural heritage of the Huns and Köktürks, are the first Turkish tribe to have a fully settled life (Yıldız Altın). Turkish tribes faced migrations, wars, conquests and a process that spread to new geographies afterwards. In this context, new geographies have created a beginning for new civilisations. The concept of *civilised*, which is used as a synonym for the word *civilised*, which is the origin of the word *civilisation* in our language, is met with the meaning of *having a great development in the fields of thought, art and industry* (*Türkçe Sözlük* 2042). The definition of civilisation, like the definition of the concept of *culture*, is enriched with different achievements in every language and geography. Meriç stated that at this point, from the Germans to the Americans, civilisation was first met with a meaning that was equivalent to culture and then different from culture. He describes this situation as *for some, culture is the effort that a person spends to mature; civilisation, its movements to change the world; One is the goal, the other is the means. According to some, there is only a difference in volume between the two notions* (Meriç *Umrandan* 82-83). Gökalp on the other hand, explains civilisation with culture that is; with his own words, and states that civilisation, like culture, includes many concepts such as religion, morality, law, art, language, and literature. Shaping his life and writing life on the axis of the idea of *civilisation*, Meriç points out that the concepts of culture and civilisation should not be separated from each other. Guizot (cited in Meriç *Umrandan*) points out that the history of civilisation is a comprehensive concept that covers all other histories with a similar approach. Since the concept of culture has an important place in the construction of civilisation, civilisation in this context; It would be appropriate to deal with the meanings and values of the concept. The value of civilisation; it is a belief and moral order that will unite all people and establish peace and justice. According to Kalın (*Dünya* 2), being civilised expresses a set of ethical, legal, and humane approaches and behaviours in direct opposition to the concept of barbarism. In

contrast, civilisation amounts to the intellectual, physical, political, and economic order emanating from these approaches and behaviours.

City and City Identity in The Civilizational Imagination

The living spaces are reflections of the human needs and motivations of the construction of cities. The abodes, houses of worship, roads, schools, bridges, business spaces, parks, market places, penitentiaries, and even cemeteries are the direct result of this consideration. Therefore, the urban reflects the human. Cities are akin to humans. The cities develop thanks to the contribution of those who live in them. Although humans are the exact image of each other, each city has its unique qualities. Like human fingerprints, cities have a particular identity woven with traces of the past. The totality of the meanings and values attributed to cities are the most significant indicators that determine the identity of that city (Yıldırım).

Religious, historical, geographical, and linguistic differences nurture and develop these identities. In the present day, some cities have formed their identity through geography, whereas others have created an identity based on their history and values.

In recent years, names such as the ancient city, liveable city, quiet city, shopping city have emerged thanks to such qualities of the cities.

Figure 1.

According to Sennett (2002), identity is the pure self-identification process of individuals about others. From their foundation, cities also form their identity over time (Yıldırım). This physical and inanimate construct gains warmth thanks to human energy and emotion. City identity can be referred to as the civilisation that emerges as a result of human beings contributing to the identity and personality of the city. In this case, *while reviving the city, culture builds the civilisation or the civilisation revives the city* (Ökten *İstanbul 14*). In other words, an invisible separator exists that distinguishes a city from other cities, which can be called the spirit or identity of the city (Rossi, 1999: 32). One of the cities that carry this spirit and identity is Istanbul.

Istanbul As a City Of Civilization and Its City Identity

Since the Christian Roman Empire, Istanbul has served as a civilisational symbol in the Muslim Ottoman Empire. Thanks to its strategic position contributions, it has formed a rich civilisation and assumed a symbolising city identity. Istanbul is a culture that has filtered

out the past and the present from its perspective. Every corner of Istanbul that breathes and lives reflects this culture. Its dwelling is the reflection of belonging to the culture, i.e. Istanbul's identity. The city consolidates this belonging to the culture and concretises the abstract concepts belonging to civilisation through its symbols, values, and ways of living. Located at the crossroads of Europe and Asia, the Western and Eastern civilisations, and where the Turkish culture replaced the Roman/Byzantian culture, this ancient city brought about a process that affected all its dwellers through rapid change. In this context, the religious factor presents a city identity that has affected architecture and the individual's clothing style and worldview. On the one hand, Islam presented a change in terms of its sociocultural position and historical status; on the other hand, it specifies the worldviews and lifestyles of its residents (Çelik 145). Every individual living in Istanbul is influenced by this identity and enriches the Istanbulian identity through the city dynamics.

Identity, a quality attributed based on the individual's actions, is a concept that emerges thanks to actions and is shaped by values (Ökten *Yahya 32*). What kind of city identity does Istanbul offer to its residents as a city where civilisations intersect, the traces of ancient civilisations are found, and which has an extensive cultural, architectural, artistic, and literary heritage? How and to what extent does developing this identity by belonging affect the daily lives of these individuals? Specifically, how are students of education affected by the city's identity, and how does this identity contribute to their teacher identity?

Özsezer and İflazoğlu Saban state that self-identification and how individuals see themselves in the teaching profession represent their identity structure. Francis and Roux point out that identities change in the long term and that individuals make choices from a plethora of identities in passing from one situation to the other.

This study discusses the identity development process of teacher candidates in the context of Istanbul's city identity and its contributions to their identity. Considering that the concept of identity holds significance for teacher qualities in Korthagen's modelling, questions such as "If so, is city identity a variable that influences teacher identity?" are discussed in this study.

Method

This study is primarily focused on the concepts of the city, identity, and civilisation. It foremost lays weight on the concepts of the city and identity and takes account of university students' perceptions of the concepts of civilisation, identity, and the city. Various questions were directed to interviewees to determine city identity, cultural and civilisational

development of cities, and the impacts on individuals. To this end, teacher candidates' responses were examined, categorised; and the findings were interpreted based on the categorisations. In line with this general aim, the concept of city identity was discussed specifically about Istanbul. It aims to set forth this concept's contributions to the individuals who migrated to Istanbul and the associations it evokes in its residents.

Model

Teacher candidates' views were collected through phenomenological research. Phenomenological studies aim at uncovering the participants' perceptions, experiences, and meanings attached to a phenomenon. Furthermore, these studies may address individuals, behavioural conditions, social phenomena such as events. Individuals who experience a phenomenon are interviewed; their views are examined and categorised based on their experiences.

Our study benefits from interviews as the data-collection method mainly utilised in phenomenology. (Starks and Trinidad 1374). The phenomenon in question tries to be explained by employing non-structured or semi-structured interviews (Wimpenny and Gass 1490). Data collection requires an unbiased process without any expectation or drafting. To this end, open-ended and general questions are designed for the interviews in such a way that they do not affect the answers, and in-depth data can be obtained by referring to related questions if required (Baker et al.). In this type of study, the researcher analyses how the individuals included in the interview process or the study group interpret their experiences in the light of the collected data. The description and explanation of these experiences lead to the formation of themes. In addition to describing these experiences, phenomenology entails the identification of the relationship between individual experiences and the phenomenon. Teacher candidates' experiences in their hometowns emphasise the common social mindset that influences their teacher identity. This mindset underlines to what extent it shapes the individual's thought whilst interpreting the phenomenon in question.

The participants' experiences included in the study group of the phenomenological study are interpreted in the context of content and meaning. Identifying the phenomenon based on research findings and results suggests why it occurred in a particular way and what to concentrate on in future studies.

The interview questions were detailed and deepened with open-ended questions such as "Why?" to analyse the teacher candidates' views in-depth. Subsequently, they were categorised according to themes. The analysis process for coding/categorisation included the

following path: identification of the phenomenon in the interviews/text, its denomination, and categorisation (Baş and Akturan 87).

Study Group

The study group is composed of students (n=201) enrolled in the Faculty of Education at Yıldız Technical University in the Spring of 2020 to 2021 academic year. The demographic information of the teacher candidates is as follows: It is seen that 72% of the students were aged between 19-21. Only 5%(f=11) of the students were over 25 years of age. It is also observed that 33% of the participants (f=66) are enrolled at the department of Turkish Language Education in the spring semester of the 2020-2021 academic year. The students in the psychological counselling and guidance and foreign language teaching departments participated the least by 2%.

Data Collection Tools

In the first phase of the study, after the identification of the participants' demographic data, the participant's perceptions of the city, identity, and civilisation concepts were examined. In order to obtain the participants' views, they redesigned an interview form. The interview form was finalised by the views of Turkish language education experts. The interview form was prepared on Google Forms electronically and shared with participants voluntarily. Ethical principles were paid specific attention to the course of data collection, and the participants did not have to provide any personal information.

The collected data were interpreted through content analysis, whereas the findings were classified. It is essential to consider flexibility in shaping the qualitative research process, interactivity, and induction in data analysis (Balcı 38). The abovementioned reasons demonstrate that the analysis and interpretation of qualitative data is a process that requires in-depth examination. This study benefits from content analysis as a qualitative analysis method.

Content analysis *is a scientific approach that studies social reality using objective and systematic categorisation of the message, meaning and/or linguistics of verbal, written or other materials, transforming these data into numbers and inferencing* (Tavşancıl and Aslan 22). Content analysis mainly focuses on collected data; frequently repeated or emphasised events and phenomena in the data set are coded. The codes lead to categories, and themes are formed based on these categories (Baltacı). The content gathered from the participants' interviews and the resulting data are systematically categorised and analysed (Bengtsson, Crabtree and Miller, Merriam and Grenier, Glesne).

To ensure the reliability of the data, two independent experts were asked for their opinions on the collected data. Experts and the researchers agreed on the content of the participants' views. The impact of the consensus and the disagreement between the researchers and the experts on the reliability of the study was examined based on Miles and Huberman's (64) formula [Consensus/(Consensus+Disagreement)x100]. The results show that consensus on the reliability of the study, the researchers and two experts in Turkish language education are 92% and 94%, respectively. This result shows that the reliability level of data analysis is high.

Ethical Committee Permission

Ethical permission was obtained with the meeting of Yıldız Technical University Social and Human Sciences Research Board dated 17.03.2022 and numbered 2022.03.

Findings

This section accommodates the findings obtained from the responses to the interview questions within this study's scope. Graphic 1 shows the participants' responses to the question "Do you think cities have identities?"

Graphic 1.*Whether cities have identities or not*
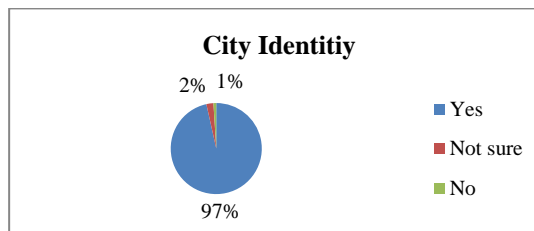
In Graphic 1, an overwhelming majority of participants stated that cities have identities. Only two students thought that cities do not have identities, whereas five students expressed their uncertainty.

The participants were asked the following question in the interview: "Which metropolitan cities do you think to have identities?". The responses to this question are concretised in two separate graphics. The first three cities referred to as cities with identities are seen in Graphic 2. Graphic 3 shows the cities that were reported to have the least of an identity:

Graphic 2.*Cities that have the strongest city identity for participants*

**Cities with Identitiy
(Most)**

Trabzon
14%

İstanbul
25%

Bursa
16%

İzmir
22%

Ankara
23%
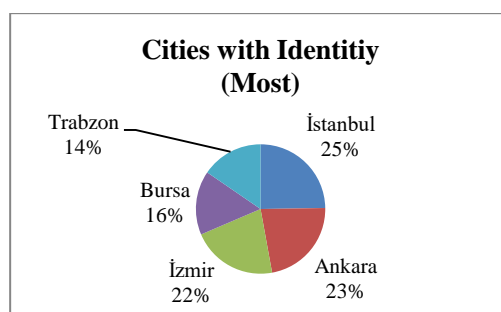
Graphic 3.*Cities that have the strongest city identity for participants*

**Cities with Identitiy
(Least)**

Kocaeli
23%

Manisa
16%

Aydın
17%

Mersin
23%

Balıkesir
21%
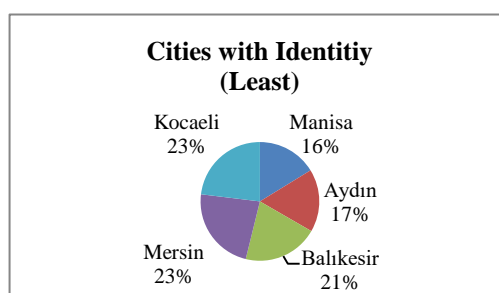
It is seen from Graphic 2 that the first three cities referred to by participants overlap with the most crowded and developed cities ranking in Turkey. In the participants' statements, Istanbul, Ankara, and Izmir occupy the top three places in ranking cities with a city identity. Bursa and Trabzon's other two cities, which hosted ancient civilisations and have a city texture. It is also known that these cities have a rich cultural infrastructure. In Graphic 3, Manisa, Balıkesir, and Aydın constitute the three cities referred to as cities with the weakest city identity. It is striking that these three cities meet the criteria for being metropolitan cities thanks to the centrum and district population and large districts as stipulated in the 2014 law of metropolitan cities. On the other hand, the other two cities, Mersin and Kocaeli, differ as they accommodate multiple rather than local identities due to a migration flow initiated by industry, commerce, and ports. After collecting the participants' views on city identity, the following questions were specifically focused on Istanbul. These specific questions about Istanbul were addressed only to students studying or living in Istanbul and because the city has the strongest city identity. Thus, the most basic finding from the students is that Istanbul is the most significant city with an identity.

Graphic 4 shows that 178 students think that Istanbul is the city that bears an identity and even that evokes the most sense of identity. The question "Do you think that Istanbul is a

city with an identity?" aims at confirming this and determining the results through specifying the question. The participants' responses to these questions are shown in Graphic 4.

Graphic 3.*Whether Istanbul has an identity or not*
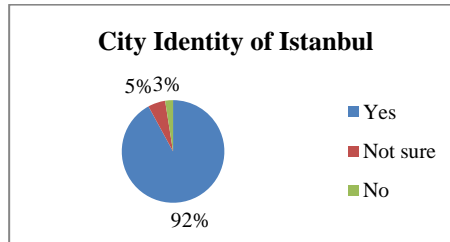
It is crucial to reach deeper findings from the relevant data in qualitative studies. To this end, since the majority of students provided an affirmative answer to this question, they were asked to justify their opinion. An analysis of students' responses offers eight themes in Table 1.

Table 1.

Themes related to Istanbul's city identity

History	Culture	Civilisation	Individuality
Multi-identity	Capital City	Architectural	City Icons

Following the question related to Istanbul's city identity, the students were asked about the impact of Istanbul on the formation of their self-identity. Graphic 5 shows the responses to this question.

Graphic 4.*The impact of Istanbul on the formation of students' self-identity*
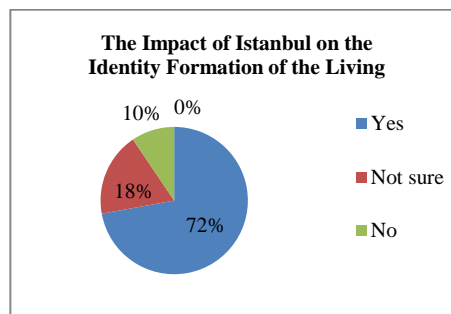
It is seen in Graphic 5 that 145 (72%) out of 201 interviewees acknowledged the impact of Istanbul on their identity formation. Furthermore, those 145 students were asked about the contributions of Istanbul to their self-identity formation. 138 out of 145 students responded to this question. An analysis of student responses demonstrated eight themes.

Table 2.

Contribution of Istanbul to individuals' identity

Ethnic	Self	Incorporating	Environment

Diversity	Confidence		of Tolerance
Empathy	Opportunities of the City	Culture and Civilisation	History

The participants were also addressed pre and post-knowledge questions to evaluate the contribution of Istanbul to their identities through their perceptions of Istanbul. These questions were responded to by 92 teacher candidates who had moved to Istanbul from other locations. Graphic 6 compares the responses to the questions "What kind of sentiments did you have before coming to Istanbul?" and "What kind of sentiments did you have after coming to Istanbul?".

Graphic 5. *A comparison of sentiments before and after coming to Istanbul*
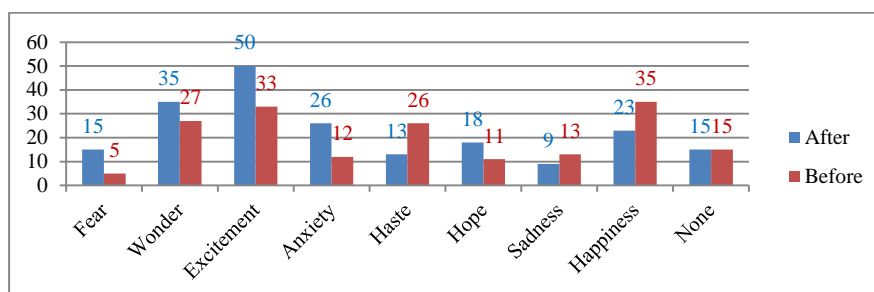
Graphic 6 shows that the highest reported sentiment was excitement with 54.3% (f=50), whereas the least reported sentiment was sadness measured at 9,8% (f=9). 16.3% /f=15) of the participants reported that they did not have any particular emotions. According to this comparison, some of the participants who moved to Istanbul from other locations reported changes in their emotions. They reported a decrease in levels of fear, curiosity, nervousness, anxiety, and hope whilst feelings of a hurry, happiness, and sadness increased.

To observe the participants' perception of Istanbul and the reflection of the concept of *civilisation* on themselves, the participants were asked the following question: "Is Istanbul a civilised city?". The responses to this question are found in Graphic 7.

Graphic 6. *Whether Istanbul is a civilised city or not*
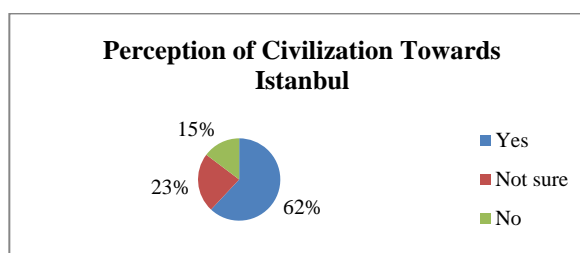
It is seen from Graphic 7 that 62% (f=101) of the participants perceive Istanbul as a city where civilisation manifests itself. 23% (f=38) of the participants report uncertainty. In

contrast, 15% (f=24) replied "no" to this question. The ideas behind this response tried to be determined by further in-depth questions.

After the participants perceived Istanbul as a city with civilisation, they were asked another question to identify their experiences before moving to Istanbul. The features of their places of origin are found in Graphic 8.

Graphic 7. *Locations before coming to Istanbul*
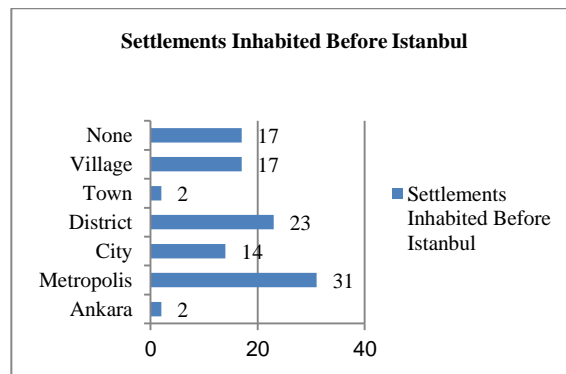
Graphic 8 shows that 33 participants- including 2 in Ankara- live in metropolitan areas (excluding Istanbul and Ankara). Fourteen participants live in cities, whereas 23 reside in districts. The number of town residents amounts to 19. Based on the abovementioned information, the participants were asked to provide recommendations on Istanbul. They offered recommendations centred around city identity and civilisation, some of which are as follows:

The participants interpreted living conditions in Istanbul. Their recommendations were analysed and classified into seven themes:

Table 3

Recommendations for living conditions in Istanbul

To feel and understand Istanbul
Adapting to the environment and conditions
Improve yourself
Be thrifty
Acting in a timely and planned manner
To walk a lot
Be able to put up with the downsides

These recommendations reflect the participants' experiences, and they offered recommendations on how to live in Istanbul based on their lives before Istanbul. The participants were asked to respond to the following question with a single concept: "What

does the word 'Istanbul' brings to mind?". Their responses varied in variety and associations. Table 4 shows the themes identified based on the response distribution and analyses.

Table 4.

What Istanbul brings to mind

Theme	Teacher Candidates' Answers	Total Frequency
Sea	Bosphorus (22), sea (9), landscape (2), Golden Horn (2), seagull (2), Seaside of Üsküdar (1), blue (1)	40
History, Culture, Civilization	history (14), civilisation (6), Galata (5), Eminönü (5), Maiden's Tower (3), Galata Tower (3), Dersaadet (2), Ottoman (2), mosque (2), history (2), motif (1), Hagia Sophia (1), Fatih (1), Ottoman Empire (1), Fenerbahçe (1), cultural accumulation (1), Beşiktaş (1), city of culture (1), Suriçi (1), Taksim (1), city of history and Islam (1), historical buildings (1), tower (1), poetry (1), literature (1), antique (1), seven hills (1)	61
Metropolitan life	crowd (26), traffic (8), big (6), chaos (5), metropolis (5), enchanting (1), crowd of people (1), chaos (1), confusion (1), darkness (1),	68

	turmoil (1), rush (1), megapolis (1), center (1), struggle (1), life (1), everything (1), opportunity (1), vaveyla (1), life (1), suffering (1), diversity (1), vitality (1)	
Feeling	freedom (3), peace (2), childhood (1), longing (1), belonging (1), lover (1), my memories (1), loneliness (1), being (1), every moment and my firsts (1), excitement (1), love (1)	15
Other	unique (1), elegance (1), cat (1), tourism (1), wealth (1)	5
Total		189
Ticking the other option		21
Unresponsive		1

When the Table 4 was examined, 189 different answers were encountered. These answers were distributed to the themes of sea, *history-culture-civilization, metropolitan life*, feelings. Those that could not be categorized were gathered under the "other" heading. In the distribution of the themes, it was determined that the answers were mostly about metropolitan life.

Result and Discussion

It is possible to encounter studies on the city, culture, and civilisation. In his work titled *Beş Şehir (The Five Cities),* Tanpınar shares various clues on city identity through the styles and eating habits of the urbanites. There are various studies on the impact of urban change on city identity in the City Studies literature (Ulu ve Karakoç, Birol, Adıyaman, İlgar, Şahin, Atik, Aliağaoğlu and Abdullah). These studies put forward the negative impacts of urban changes and transformation on city identity. Furthermore, different fields (Kaypak, Topçu, İdrisoğlu, Acar et al.) also addresses identity formation based on factors that define city identity, and the importance of city cultures for identity formation is emphasised.

Yıldırım (137) considers city identity within the context of ethnic structure, image, religion, language, architecture, means of production, and environmental conditions. The issue of disidentification was also studied as a significant sociological topic of research (Karaaslan, Özcan). These studies confirm the rhetoric that geographical features, flora, climate, air, water are reflected in the behaviour of the locals. In his study on America, Tuan examines the human-nature relationship, geography-dependent behaviours, feelings, and thoughts associated with abode. He tries to comprehend the human world based on these factors (Tuan). History, geography, local administrations, behavioural sciences also approach the impact of city identity on individual identities from various perspectives.

Çelik (139) asserts that cities are characterised by their belonging to the symbolic systems of the civilisational world they are situated in from a broad perspective, and dynamics intersecting at the subjective experiences of their residents from a specific perspective. It is also emphasised that cities differ from the rural areas with their specific living conditions (Yıldırım). The participants confirm this thesis in the context of Istanbul in our study. Thus, the differences between participants' pre-and-post-Istanbul feelings, perceptions, and thoughts were identified.

In a study by Ayvalıoğlu (7), it was found that gender, age, education level, occupation, district in Istanbul, period of residence in Istanbul, previous districts, jobs and travel frequency in the city influence individuals' perceptions of the city. This is also reflected in the dataset of our study focusing on Istanbul, with a population of 16 million. Furthermore, Ökten *(İstanbul 14)* describes the characteristics of *being an Istanbulite* such as clothing, eating and drinking, attitude and behaviour, speaking, travelling, sacred spaces. It is seen from the participants' data that city opportunities contribute to their personal development and teacher identities and that the abovementioned characteristics overlap with their perceptions of Istanbul and its contributions. In his work *Huzur (Peace),* Tanpınar refers to being an Istanbulite as owning a city identity. Nevertheless, the concept of being an Istanbulite requires not only to belong to the city but also to experience and sustain its rich civilisation. On the other hand, Demir Bayraktar (68) suggests that an individual should internalise and adapt to the dynamics of the home city as well as be aware of the quality *of being an urbanite*. Sağdıç (1279) analysed university students' perceptions of Istanbul in terms of city image and concluded that natural elements rather than rich historical sites form the city image.

The results of this study do not overlap with our study. However, the mention of the negative aspects of the city, resulting in anxiety, but also the advantages of the location and

the opportunities overlap with our study. The main problems of Istanbul that are most cited are traffic, overpopulation, and environmental problems.

It was discovered that the new graduates and teacher candidates in this study sample are on common ground in terms of a myriad of perceptions and ideas. They point out ideas and perceptionssuch as the multicultural structure of Istanbul, the strategic location of the Bosphorus, the opportunities, its historical legacy (Sağdıç 1280).

Kılıçkaya Boğ (378) refers to various elements that contribute to the identity of cities. Architectural structures, city components that form the city texture, logos designed for cities, information design elements are referred to like elements that contribute to the identity of a city. However, our study suggests that elements such as religion, culture, lifestyle, tradition, and perspectives impact Istanbul's city identity formation.

Özsezer and İflazoğlu Saban assert that teacher candidates should be provided various opportunities during their training to gain experiences to express their identity; these experiences should include the methods that can help them to develop, learn about themselves, and question their past experiences. Within this context, it can be said that a metropolitan city such as Istanbul offers a highly cognitive and socio-active learning environment in which teacher candidates can integrate their past experiences, their teaching narratives, values, and personal identities. In a similar vein to Meriç (Bu Ülke 2009), who states that civilisation is referred to as the equivalent for culture, this study has concluded that the civilisation available in cities is equivalent to city culture. Insofar as they contribute to their culture and civilisation, individuals are affected by cities.

As long as they continue their education there, teacher candidates are affected by Istanbul's identity. They state that they have a richer culture thanks to the gains from this identity. Likewise, as a rich city, Istanbul has a specific identity marked by both the Roman/Byzantine and Ottoman Empires. This richness offers an extracurricular environment conducive to the personal development of teacher candidates pursuing their studies in Istanbul. The history of the city, its specific lifestyle, metropolitan, social and cultural opportunities provide a great source of richness for a teacher candidate. Another point to consider is that ancient cities stood out in the perception of city identity. Whereas cities such as Istanbul, Ankara, and Izmir were mentioned about cities with an identity, newly-metropolitanised provinces such as Manisa, Balıkesir and Aydın were not associated with a city identity. Although the living conditions, the opportunities, level of development in Istanbul offer increased benefits to teacher candidates, these can lead to a more hectic and

exhausting life. Concerning this, the teacher candidates pointed out that Istanbul is an indispensable city with the opportunities it offers, its cultural and civilisational richness whilst having an exhausting and busy metropolitan life.

The conclusions drawn from the dataset of this study on teacher candidates are:

Cities have identities. These identities affect the residents with benefits and consequences as well.

- Istanbul, Ankara, and Izmir stand out as cities with a specific identity and a civilisation in Turkey.
- Istanbul has qualities that affect individuals in terms of identity with its lifestyle, history, and cultural infrastructure.
- There are differences between the pre-and-post-Istanbul moods of the teacher candidates. The students report a decrease in their fear, curiosity, anxiety, excitement, hope, and an increase in feelings of haste, happiness, and sadness.
- As an urban and developed city, Istanbul is a city that has a culture and a past.
- Teacher candidates who are studying in Istanbul are affected by Istanbul's city identity.
- The concept of city identity should be considered in separation from culture and civilisation. In this context, the social reflections of city identity on individuals should be considered.
- Whereas cities affect individual identities, individuals also have an impact on city identity in terms of the social consequences of their own lives.
- Whether they are originally from Istanbul or not, individuals who live or study in Istanbul are influenced by Istanbul's identity.
- Istanbul offers teacher candidates great opportunities that may contribute to their cultural, social, sportive, artistic, and professional development outside their place of study. Teacher candidates can also benefit from these opportunities alongside their academic education.

These results demonstrate that the concepts of culture and civilisation should be taken into consideration in studies on city identity. This study can also be replicated in Europe, Asia, Africa, and various ancient cities in Turkey. The results of these international and local studies will determine whether city identity has similar or different influences on the qualities and identities of teachers in different geographies.

Our study discussed the extent to which Istanbul was perceived as a city of civilisation and how its ancient civilisation affected its residents. Studying in Istanbul, which has a rich civilisation, will contribute to students' academic skills and personal development.

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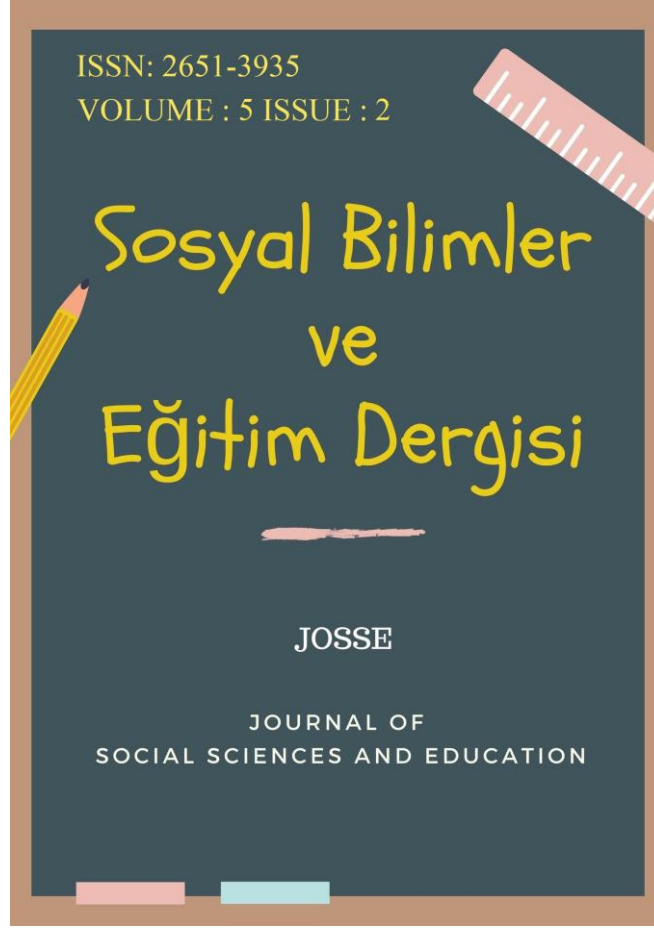
Web 2.0 Tools for Increasing Secondary School Students' Access to Science Courses*

*This research was produced from a Master's Thesis of second author nazmed Web 2.0 Araçları İle Desteklenen Çevrimiçi Eğitim Uygulamalarının 7. Sınıf Öğrencilerinin Canlılarda Üreme, Büyüme Ve Gelişme Ünitesindeki Erişilerine Ve 21. Yüzyıl Becerilerine Etkisi.

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Web 2.0 Tools for Increasing Secondary School Students' Access to Science Courses

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Abstract	Research Article
In this study, the effect of the use of Web 2.0 tools in online education on the achievement of secondary school students in the unit "Reproduction, Growth and Development in Living Things" was examined. The sample of the research consists of 14 students studying in the 7th grade. In the study, the lessons were carried out in accordance with the current curriculum, using web 2.0 tools in an online environment. The study lasted for 6 weeks in total and a different Web 2.0 tool was applied to the students every week on the "Microsoft Teams" platform. The model of the research is a mixed model in which quantitative and qualitative methods are combined. In this direction, the "Reproduction, Growth and Development Unit Achievement Test in Living Things" was used as a quantitative data collection tool, and the "Reproduction, Growth and Development Unit Worksheet in Living Things" was used as a qualitative data collection tool. SPSS program was used in the analysis of the quantitative data, and content analysis was used in the analysis of the qualitative data. As a result of the study, it has been found that online education applications supported by web 2.0 tools have a positive effect on students' achievement in the unit "Reproduction, Growth and Development in Living Things". In the study, it was found that the students gave more correct code and frequency outputs with a significant difference after the application, and that they correctly associated the unit concepts with each other.	

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Introduction

Today's technological developments have made information production and sharing widespread. Thanks to technology, information has become accessible to everyone and applicable in every environment. The 21st century, which we live in and which we call the information age, has also provided important developments in information technologies. Digital technologies appear in almost every environment. Accordingly, it is very important that it becomes widespread in life-preparing courses (Mulenga & Marban, 2020). The use of technological tools is inevitable, especially in a lesson that is directly related to life and up-to-date, such as a science lesson. It is also necessary for today's students to use Web 2.0 technologies in the lessons of science teachers (Weller, 2013). In extraordinary situations such as the pandemic experienced in the past years, the use of digital technologies has accelerated to ensure the continuity of education. In addition, the digital changes that took place in the education structure became the leading global education model, "anytime and anywhere education"-based distance education. Distance education is a type of education that allows mutual video and audio communication by minimizing physical conditions such as time and space (Yamamoto & Altun, 2020). The web environments where distance education takes place have also changed over time. The most common educational technologies to be used in online classes are Web 2.0 tools. Unlike Web 1.0 environments, Web 2.0 environment is characterized as a platform where information is acquired, but also produced, shared and organized (Yuen et al., 2011).

Theoretical framework

Web 2.0 tools

Web 2.0 tools are second generation web environments that enable individuals to produce and share information and content interactively and collaboratively (Hall et al., 2010). Web 2.0 tools are expressed as exciting environments designed to improve participants' ability to create and share content on any topic (Griffin & Ramachandran, 2010). Integration of Web 2.0 tools with online education; It leads to an increase in the quality of education and the formation of an interactive and collaborative online learning environment (Rhoads et al., 2013). The use of web 2.0 in online learning environments facilitates collaborative learning among students and with the teacher, thus providing active learning. It provides an increase in learning by

providing a flexible learning environment (Tambouris et al., 2012). Web 2.0 technologies allow teachers and students to improve themselves. It also enables students with individual differences to access appropriate activities (Hargadon, 2009).

The benefits of Web 2.0 technologies are as follows:

• Provide cognitive and social learning

• Providing collaborative learning

• Provide motivation and efficient learning

• Increasing students' interest in the subject

• Fun learning and assessment opportunity

• Presenting current and long-term content

• Active participation in the lesson

• Continuing the learning and teaching process in epidemic or disaster situations (Prashnig, 2006; Conole & Alevizou, 2010; Wankel & Blessinger, 2013).

Mohammed et al. (2020), Web 2.0 tools were used in foreign language teaching. Students are divided into experimental and control groups. The design of the research is pre-final, experimental-control group and 30 students participated in the study. In the 12-week study, a developed program containing numerous Web 2.0 tools was used for the experimental group; The control group was trained using traditional teaching methodology. In the study, it was found that there was a statistically significant difference in favor of the post-test in the learning achievement of the experimental group students.

Online classes

Online education, which is a sub-title of distance education, is defined as education carried out independently of time and place with the help of information and communication technologies. In other words, online learning is explained as a type of learning that can be performed with the help of a web browser on a technological device such as a computer, smart mobile phone, tablet (Horton, 2006). Online classes provide a group work environment with collaborative activities. Thus, it allows information sharing among students and provides different perspectives (Pierce et al., 2007). Models used online are examined in two groups as synchronous (synchronous) and asynchronous (asynchronous) (Romiszowski, 2004). In this study, the simultaneous (synchronous) model was used. Simultaneous (synchronous) online

education is a learning environment where activities are carried out at the same time but in different places by using online communication tools between student-teacher or student-student. In this process, since teachers and students participate in the lesson at the same time, it is also called a simultaneous live lesson (Martin, 2010). In the simultaneous live lesson, teachers and students can communicate through audio and video, and in this way, the lessons can become interactive and more efficient. Simultaneous (synchronous) online education has some advantages and disadvantages.

Advantages:

• Creating a discussion and brainstorming environment

• Provide instant feedback and notification

• Time and place independent education

• Giving the opportunity to work with the group

Disadvantages:

• Students who are not good at using technology remain shy

• Lesson planning is difficult and/or irregular (Taylor, 2002; Midkiff & DaSilva, 2011).

Literature review

Azid et al. (2020) investigated the effect of using Web 2.0 tools on students' mathematics achievement. The model of the study is mixed model. 60 students participating in the study were divided into experimental and control groups. As a result of the study, it was found that there was an increase in the mathematical achievements and interests of the experimental group.

In a study conducted by Onbaşılı (2020), the effect of science teaching practices supported by Web 2.0 tools on the self-efficacy perceptions of primary school teacher candidates in using Web 2.0 tools was examined. Forty primary school teacher candidates participated in the study and it lasted for 14 weeks in total. After the 23 Web 2.0 tools used in the study, the opinions of pre-service teachers were examined. As a result of the study, it was found that science teaching practices supported by Web 2.0 tools had positive effects on the self-efficacy perceptions of primary school teacher candidates in using Web 2.0 tools.

In another study by Chawinga & Zinn (2016), university students' awareness of the use of web 2.0 technologies, the purpose for which they use web 2.0

applications, and the factors affecting the use of web 2.0 technologies were examined. A questionnaire was applied to 186 university students who participated in the study. As a result of the study, students' web 2.0 technologies; it has been determined that they use them to access information, communicate with their teachers, send homework, and stay in touch with their friends during their academic studies. In addition, Web 2.0 technologies; It has been found that it is very effective on undergraduate students and academicians and is frequently used for social networks.

Abdoli-Sejzi et al. (2015) investigated the effectiveness of Web 2.0 technologies in virtual universities. A questionnaire was applied to 384 students who participated in the study. As a result of the study, it has been found that there is a positive relationship between the use of Web 2.0 technologies and student success in the virtual university.

In a study by Huang et al. (2013), university students' views on using web 2.0 technologies were examined. A questionnaire was applied to 423 university students participating in the study. As a result of the study, it has been found that web 2.0 tools have a positive effect on students' learning, provide interaction between student-student and student-school, and increase the level of satisfaction with the lessons.

In an experimental study by Baig (2011), online learning environment supported by Web 2.0 tools and face-to-face physics lessons were compared. The study group consists of tenth grade students. As a result of the tests applied in the study, it was found that the online learning environment supported by the Web 2.0 tools used in the physics lesson increased the success of the tenth grade students.

When the literature is examined, although there are many studies on the use of web 2.0 tools in different units and subjects in science, there are very few studies on the unit "Reproduction, Growth and Development in Living Things" (Hardy et al., 2008; Andersen & Matkins, 2011; Weller, 2013). ; Habibi et al., 2019). In this direction, the research problem of the research is "How is the effect of online education applications supported by Web 2.0 tools on students' achievement in the unit of Reproduction, Growth and Development in Living Things?" determined as.

In order to fill this gap in the literature, this study, which examines the effects of online education applications supported by web 2.0 tools on the achievement of

7th grade students in the unit "Reproduction, Growth and Development in Living Things", is thought to be a guide for teachers and researchers.

Method

Model

The model of the study is mixed model. In this direction, a mixed method, in which qualitative and quantitative data can be collected and used together, was used (Gay et al., 2012). Mixed method; It is a research method that includes the use of qualitative and quantitative research methods in studies, the collection, analysis and interpretation of quantitative and qualitative data (Leech & Onwuegbuzie, 2009).

Sample and Population

The study group of the research consists of 14 students (8 girls, 6 boys) studying in the 7th grade. An easily accessible sample type was used to determine the study group of the research. In easily accessible sampling, the researcher selects a sufficient number of people as a sample from among the existing people (Stratton, 2021). Students who have the opportunity to attend online classes at a private school were determined for the study.

Data Collection Tools

Quantitative and qualitative data collection tools were used in the research. "Reproduction, Growth and Development Unit Achievement Test" developed by Aygün & Şimşekli (2019) as a quantitative data collection tool, and "Reproduction, Growth and Development Unit Worksheet in Living Things" was applied as a qualitative data collection tool. Developed by Aygün & Şimşekli (2019), the "Reproduction, Growth and Development Unit Achievement Test in Living Things" is an achievement test prepared to measure the academic success of 7th grade students in the unit "Reproduction, Growth and Development in Living Things". There are 23 multiple choice questions in the test. The test was administered to 93 people in the pilot application and the Cronbach Alpha reliability coefficient was calculated as 0.78. The test is valid and reliable. The achievement test was administered to the students before and after the application. The "Reproduction, Growth and Development Unit Worksheet" developed by the researcher by scanning the literature was prepared to measure the achievement of 7th grade students in the unit "Reproduction, Growth and Development in Living Things". The access test consists of 8 questions in total: matching, filling in the blanks and open-ended.

Expert opinions were used in the preparation of the rhubarb test. The access test was also administered to the students before and after the implementation.

Collection of Data and Analysis

In the analysis of the data obtained from the quantitative data collection tool in the research, the SPSS program was analyzed using the Wilcoxon signed-rank test, which is one of the non-parametric tests. The Wilcoxon signed-rank test allows comparison of two related measurements. Therefore, Wilcoxon signed-rank test was used to evaluate whether there is a significant difference between pre-test and post-test scores (Garcia et al., 2009). Content analysis was applied in the analysis of the data obtained from the qualitative data collection tool in the research. Content analysis is the conceptualization of the obtained data, organizing the concepts in a meaningful way, and determining the category and theme that explains the data accordingly (Hsieh & Shannon, 2005). The answers obtained from the students were analyzed by two researchers using open coding. The obtained data were analyzed and classified into themes, categories and codes.

Study Process

The study was conducted online through the Microsoft Teams platform, which is one of the web 2.0 tools in the science course. Microsoft Teams platform is a free-to-use chat-based teamwork platform. Virtual workspaces with chat such as group chat, private messages, meetings and calls are created on the platform (Shaw, 2020). Students accessed online courses from their existing computers, tablets and phones. Students met and used a different web 2.0 tool every week. In the study, the 7th grade science course "Reproduction, Growth and Development in Living Things" unit was supported with web 2.0 tools.

Figure 1. Weekly Implemented Web 2.0 Tools

First Week: Padlet, Canva, Youtube, Quizizz

Second Week: Nearpod, Youtube, Kahoot

Third Week: Nearpod, Youtube, Wordwall

Fourth Week: Padlet, Storyboard That, Wordwall, Kahoot, Bubbl Us
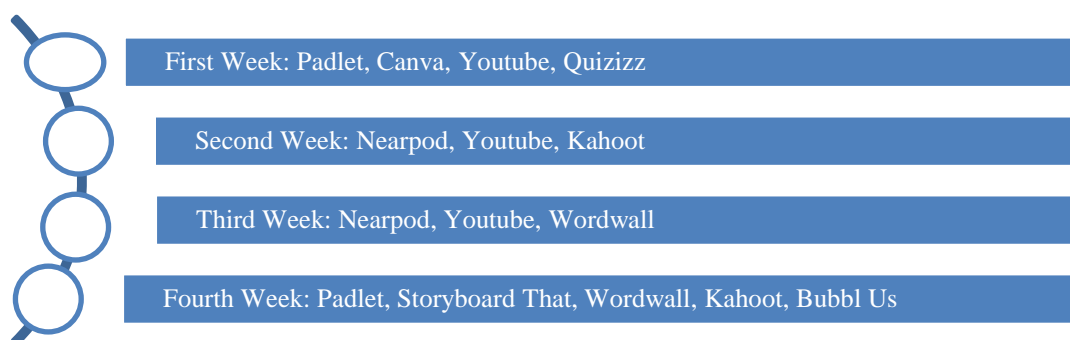
Lesson plans are prepared according to the 5E education model. The weekly lesson plans are explained in detail below.

First week

The lesson plan for the first week is as follows:

Engage: A live lesson is started via Microsoft Teams and the current news called "Sharing a Surprise from the Octopus Mother" prepared with the Padlet application, one of the Web 2.0 tools, is shared with the students. Ask the students, "Do you have any siblings? If so, how many and how old? "How would you feel if you had 7 siblings?" Attention is drawn to the lesson by asking questions such as: Students are expected to click on the link and write their answers on the board on the padlet.

Explore: Images prepared with Canva, one of the Web 2.0 tools, are shared with students. "Which features do you think might be similar to the mother and which features of the father?", "What do you think might be the reason for this similarity?" A discussion environment is created by asking questions. Students' ideas are taken.

Explanation: Students are shown the "Development of Embryo's" animation, which explains the development of the embryo. Afterwards, an introduction to human reproduction is made in the interactive Fenito Science Workshop book. The concepts and functions of the penis, testis, sperm, sperm duct and gland in the male reproductive system are explained by showing the diagram. The concepts and functions of the egg, ovary, fallopian tube, uterus (womb), vagina in the female reproductive system are explained by showing a diagram. It is explained that the fertilization event occurs with the union of the sperm and egg, which are the reproductive cells. The developmental characteristics of zygote, embryo, fetus and baby stages and the relationship between them are explained. Afterwards, the importance of hygiene for the health of the reproductive organs is emphasized.

Elaborate : Preparing with Padlet, one of the Web 2.0 tools, the birth week of the newborn, birth weight, height, developmental retardation, etc., in smoking and non-smoking mothers. A section from the article sample, in which it is compared in terms of features, is shared with the students. Ask the students, "What should a mother-to-be pay attention to in order to give birth to her baby in a healthy way?" and "What should a mother-to-be avoid in order to give birth to her baby in a healthy way?" A discussion environment is created by asking questions. Students are expected to click on the link and write their ideas on the board on the padlet.

Evaluation: Students are asked to participate in mini-evaluation questions about human reproductive cells, reproductive organs and their functions, prepared with Quizizz in Web 2.0 tools, by sharing them with the link. "The fertilization event takes place in the oviduct.", "The male reproductive cell is called the zygote.", "The male reproductive organ where the sperm is thrown out of the body is the penis." "An expectant mother should eat whatever she likes.", "When the baby is 10 weeks old in the womb, its name is fetus.", "Nylon ones should be preferred when buying underwear", "Female reproductive cell is produced in the oviduct." Ask them to mark true or false questions. Then, the lesson is concluded by discussing the correct answers to the sentences with the teacher along with their reasons.

Second Week

The lesson plan for the second week is as follows:

Engagement: The live lesson is started via Microsoft Teams, the link of the activity prepared using Nearpod, one of the Web 2.0 tools, is shared with the students and they are asked to log in to the virtual classroom. When all students in the class log in, the researcher starts the lesson of the virtual classroom. "Why do you think reproduction is important for living things?" Students are asked to answer the open-ended question by writing it down or dictating it by voice. In this process, after all students have stated their answers in writing, each student is expected to express their thoughts on the question.

Exploration: "What do you think the shape of the sperm and egg cell look like? Draw." Students are expected to answer the question by drawing on the virtual classroom page. The drawing slide is designed in such a way that students can adjust the brush thickness and brush colors to the desired settings, or have the option to add images, write text and delete them. After the students' drawings are finished, the researcher is expected to show everyone's drawing to the class and the characteristics of the sperm and egg cell are discussed by the students and the teacher.

Explanation: With the "Human Sperm vs Sperm Whale" video, an animation describing the structure, movement and similarity of the sperm cell with the sperm whale is watched. In the animation, students are entertainingly told about the movement of a sperm, the journey of a sperm whale in the water, and the comparison of a swimmer's swimming in a swimming pool by calculating the Reynolds number. In this way, students are provided to understand why sperm are microscopic in size

and the advantages of this situation. "Based on your observations, write down the properties of the sperm that enable it to move." The students are asked to answer the question in written form.

Elaborate: "Imagine trying to design a sperm that is even more effective than it is now. What shape would it have?" The page with the question is passed and the students are asked to draw. When students have finished their drawings, they are asked to examine the visual of abnormal sperm cell structures. As a result of their examination, the students said, "As you can see in the figure, there are many different types of sperm abnormalities. Choose one of them. How do you think the abnormal sperm shape you choose affects fertilization?" are asked to answer the question. Students are expected to write their thoughts in the answer box. After the answers received, the teacher and students are expected to discuss the question.

Evaluation: After the activity with Nearpod, one of the Web 2.0 tools, is over, the teacher is expected to make a general summary of Human Reproduction, Growth and Development. Afterwards, the Mini Quiz event is shared with the students via the link with Kahoot, one of the web 2.0 tools. After all students log in to the link, the competition is started and the prepared questions are expected to be answered. The correct answers of the wrong questions are discussed and the lesson ends.

Third Week

The lesson plan for the third week is as follows:

Engagement: The live lesson is started via Microsoft Teams, the link of the activity prepared using Nearpod, one of the Web 2.0 tools, is shared with the students and they are asked to log in to the virtual classroom. When all students in the class log in, the researcher starts the lesson of the virtual classroom.

Exploration: On the first page of the virtual classroom activity, "What do you think is the importance of plants for living things? What could be the benefits they provide to humans and other living things? Students are asked to answer the open-ended question by writing. After the students have stated their answers in written form, a discussion is held with the teacher by sharing them verbally as well. Then "Close your eyes and imagine a flower. What do you think the shape of that flower is? Can you draw the flower to show its parts?" Students are expected to answer the question by drawing on the virtual classroom page. The drawing slide is designed in such a way that students can adjust the brush thickness and brush colors to the

desired settings, or have the option to add images, write text and delete them. After the students' drawings are finished, the researcher shows everyone's drawing to the class and the parts of the flowering plant are discussed over the students' drawings.

Explanation : "Got seeds? Just add bleach, acid and sandpaper" video and the video explaining different plant growing methods are watched. The video describes the process of growing plants using bleach, acid and sandpaper. Afterwards, the students were asked, "Based on your observations, in what situations do you think we will have to use the methods shown in the video? Do you think there is a need for these plant growing practices in the city we live in? Why?" They are expected to answer the question. Then, students are asked to state their opinions about the reasons for needing different plant growing methods and a discussion is made.

Elaborate: "Can you draw the stages of reproduction, growth and development of a plant? Show your ingenuity :)" question is asked and students are asked to draw. After the students' drawings are finished, the researcher is expected to show everyone's drawing to the class and discuss the drawings. Afterwards, the students are presented with a visual of different-looking flowers and they are asked to examine the flowers. After they finished their review, "Imagine a flower that is more remarkable than it is now. What kind of design do you think it would have and what features would it have?" The question is asked and students are asked to draw flower shapes that they think will attract attention. After the drawings are finished, the remarkable features of the drawn flowers are discussed with the class.

Evaluation: The link of the Wordwall activity, one of the Web 2.0 tools, is shared with the students. Students are expected to mark the correct option in the questions in the activity. After the activity is completed, a brief summary of the plant reproduction, growth and development is made with the teacher and the lesson ends.

Fourth Week (1st lesson)

The lesson plan for the fourth week (1st lesson) is as follows:

Engage: A live lesson is started via Microsoft Teams and the link of the activity called "Nature and Human" prepared with the Padlet application, one of the Web 2.0 tools, is shared with the students and they are asked to participate.

Exploration: Students are asked to examine the plot prepared with Storyboard That, one of the web 2.0 tools, and transferred to Padle, and they are expected to write the message that the plot wants to tell under the image. Then, the video is

watched by the class, which covers the great forest fire in Australia and how trees and animals were affected by the fire in the interview with the people living in the surrounding area. Students are asked to write their opinions on the cause of the fire and its effects on living things on the padlet.

Explanation: An introduction to the subject of Reproduction, Growth and Development in Plants is made from the book Interactive Fenito My Science Workshop. The concepts of sexual reproduction and asexual reproduction are explained. Four types of asexual reproduction are described, namely by division, budding, regeneration, and vegetatively. Examples of organisms that reproduce by asexual reproduction are given. Parts of the flowering plant, male and female reproductive organs are explained. The characteristics of the parts of the flowering plant are explained through visuals. Formation stages of sexually reproducing flowers; pollination, fertilization, zygote, embryo, seed and fruit are explained.

Elaborate: The requirements for germination of the seed under suitable conditions are discussed. The requirements for the healthy growth of the plant are explained. Interactive Fenito Science Workshop is expected to classify inorganic substances required in experiments for plant growth as dependent, independent and control variables.

Evaluation: The link of the Wordwall activity, one of the Web 2.0 tools, is shared with the students. Students are expected to mark the correct option in the questions in the activity. After the activity is completed, a brief summary of the subject is made with the teacher and the lesson ends.

Fourth Week (2ⁿᵈ lesson)

The lesson plan for the fourth week (2nd lesson) is as follows:

Engage: A live lesson is started via Microsoft Teams and an introduction to the subject of Reproduction, Growth and Development in Animals is made.

Exploration: "We learned about reproduction in humans and plants. So how do you think animals reproduce?" and "Have you ever had an animal in your home or garden? If you fed it, what did you do to take care of it?" Ask students to answer questions. A discussion environment is created based on the answers given.

Explanation: Reproduction, Growth and Development in Animals page opens from the book Interactive Fenito My Science Workshop. Vertebrates are said to reproduce by sexual reproduction. It is explained that animal reproductive cells and

human reproductive cells are the same, therefore humans are also included in the member of the animal kingdom. The development of the zygote formed by reproduction is explained. Afterwards, it is explained how growth and development differ in vertebrate animals. The concept of metamorphosis and the living beings that undergo metamorphosis are explained. The metamorphosis stages of some animals such as butterflies and frogs are explained.

Elaborate: The link of the Bubbl Us activity, one of the Web 2.0 tools, is shared with the teacher and the teacher shares the screen with the class. The teacher prepares a mind map for the unit Reproduction, Growth and Development in Living Things with the whole class. It is expected that the unit concepts that should be in the mind map are given by the students. Verbally expressed concepts are boxed by the teacher through Bubbl us. Misconceptions are detected by associating the concepts with each other in a sentence. A general repetition of the Reproduction, Growth and Development unit is made by making the necessary corrections.

Evaluation: With Kahoot, one of the Web 2.0 tools, the Mini Quiz Final event is shared with the students via the link. After all students log in to the link, the competition is started and the prepared questions are expected to be answered. The correct answers of the wrong questions are discussed and the lesson ends.

Findings

The quantitative and qualitative findings obtained from the study are given under separate headings.

Quantitative Findings

Quantitative findings analyzed with the SPSS program are given in Table 1 and Table 2.

Table 1.

Descriptive Statistics of Student Access

Group	N	X	S
Pre-test	14	9,1429	3,77964
Post-test	14	16,6429	4,43079

Table 2.

Comparison of Study Group Access Test Pretest-Posttest Scores with Wilcoxon Signed Ranks Test

Ranks	N	Rank	Rank Sum	Z	p

	Average				
Negative Rank	1	1,00	1,00	-3,112	,002
Pozitive Rank	12	7,50	90,00		
Equally Rank	1				

According to Table 2, as a result of the analysis of the data in the study, a positive (Z=-3.112) and significant (p=.002<.05) result was obtained in terms of the achievements of the study group in the unit of reproduction, growth and development in living things.

Qualitative Findings

The qualitative findings analyzed by content analysis are as follows:

Table 3.

Students' Answers to the Question of "Features of male and female reproductive cells are given below. Write the given features under the cell you think they belong to"

Theme	Category	Codes	Frequency	
			Before	**After**
Cell Properties	Sperm Cell	Male reproductive cell	7	14
		It consists of three parts, head, middle and tail	13	14
		Small and mobile	9	13
		Producing a large number	6	14
		Composed of cell membrane, cytoplasm and nucleus	2	2
		Big and immobile	4	1
		Producing in small numbers	6	-
		Having a female reproductive cell	4	-
	Ovule cell	Female reproductive cell	6	14
		Producing in small numbers	5	14
		Big and immobile	8	13
		Consist of cell membrane, cytoplasm and nucleus	10	12
		Small and mobile	1	1
		Producing a large number	6	-
		Male reproductive cell	4	-

According to Table 3, the most common answer given before the implementation in the "Sperm Cell" category under the "Cell Properties" theme was the code " It consists of three parts, head, middle and tail" and the most common answer given after the implementation was "Male reproductive cell". It was seen that the most common answer given before the implementation in the "Ovule Cell" category was the code "Consist of cell membrane, cytoplasm and nucleus", and the most common answer given after the implementation was the code "Female reproductive cell". Considering the frequencies before and after the implementation, it was seen that the students gave more accurate codes and more frequency output with a significant difference after the application. It was determined that the students mixed their properties with sperm and egg cells before the implementation. After the implementation, it was determined that the students learned the properties of sperm and ovule cells correctly.

Table 4.

Students' Answers to the Question of "Male and female reproductive organs are given below. Accordingly, match the features given below with the structures in the organs."

Theme	Category	Codes	Frequency Before	After
Features of Reproductive Organs	Sperm Duct	Where sperm are transported from the testicles to the penis	5	11
		Where urine and semen are expelled	1	1
		The place where the secretion that allows the sperm to move freely is produced	3	-
		Where sperm cells are formed	2	-
		Where the fertilized egg implants and develops until birth	1	-
		I do not know	2	-
	Gland	The place where the secretion that allows the sperm to move freely is produced	5	14
		Where sperm cells are formed	3	1
		Where urine and semen are expelled	2	-

		Where sperm are transported from the testicles to the penis	1	-
		I do not know	1	-
Penis		Where urine and semen are expelled	8	13
		Where sperm are transported from the testicles to the penis	3	2
		The place where the offspring, which has completed its development, leaves the mother's body at birth	2	-
		Where sperm cells are formed	1	-
Testis		Where sperm cells are formed	7	13
		Where sperm are transported from the testicles to the penis	2	1
		Where fertilization takes place	3	-
		The place where the secretion that allows the sperm to move freely is produced	2	-
Oviduct		Where fertilization takes place	3	10
		Where the fertilized egg implants and develops until birth	2	1
		Where the ovule cell is produced	4	-
		Where sperm are transported from the testicles to the penis	1	-
		The place where the secretion that allows the sperm to move freely is produced	1	-
		I do not know	2	
Ovarian		Where the ovule cell is produced	9	14
		Where fertilization takes place	-	2
		Where the fertilized ovule implants and develops until birth	1	1
		The place where the secretion that allows the sperm to move freely is produced	2	-
	Where sperm are transported from the testicles to the penis	1		-
	The place where the offspring, which has completed its	1		-

		development, leaves the mother's body at birth		
Uterine	Where the fertilized ovule implants and develops until birth	4	12
	Where fertilization takes place	3	2
	The place where the offspring, which has completed its development, leaves the mother's body at birth	5	-
	I do not know	2	-
Vagina	The place where the offspring, which has completed its development, leaves the mother's body at birth	8	14
	Where the fertilized ovule implants and develops until birth	3	-
	Where fertilization takes place	3	-

According to Table 4, the most common answer given before and after the implementation in the "Sperm Duct" category under the theme of "Features of the Reproductive Organs" was the code " Where sperm are transported from the testicles to the penis". In the "Gland" category, it was seen that the most common answer given before and after the implementation was the code " The place where the secretion that allows the sperm to move freely is produced". It was seen that the most common answer given before and after the implementation in the "Penis" category was the code " Where urine and semen are expelled". It was seen that the most common answer given before and after the implementation in the "Testis" category was the code " Where sperm cells are formed". It was seen that the most common answer given before the implementation in the "Oviduct" category was the "Where the ovule cell is produced" code, and the most common answer given after the implementation was the " Where fertilization takes place" code. It was seen that the most common answer given before and after the implementation in the "Ovarian" category was the code " Where the ovule cell is produced". It was seen that the most common answer given before the implementation in the "Uterine" category was the code "The place where the offspring, which has completed its development, leaves the mother's body at birth", and the most common answer given after the application was the code " Where the fertilized ovule implants and develops until birth". It was

seen that the most common answer given before and after the implementation in the "vagina" category was the code " The place where the offspring, which has completed its development, leaves the mother's body at birth". It was determined that there was an increase in the frequency numbers of the answers given by the students before and after the application, mostly in the correct code. It was determined that the students had misconceptions about the reproductive organs before the application, and that their misconceptions were resolved after the implementation.

Tablo 5.

Students' Answers to the Question of "The stages of formation of an individual are given below. Write the properties of the numbered structures in the spaces given."

Theme	Category	Codes	Frequency	
			Before	After
Stages of Formation of a Human	Female reproductive cell	Ovule cell	3	13
		Ovarian	6	1
		I do not know	5	-
	Male reproductive cell	Sperm	9	14
		I do not know	5	-
	The fusion of sperm and egg	Fertilization	5	14
		I do not know	9	-
	Structure formed by the union of sperm and egg	Zygote	2	13
		Embryo	-	1
		Fertilization	1	-
		I forgot	1	-
		I do not know	10	-
	The structure formed by the zygote through successive mitotic divisions	Embryo	5	13
		Zygote	-	1
		Fertilization	1	-
		I do not know	8	-
	The structure formed by the growth and development of the embryo	Fetus	6	14
		Embryo	1	-
		I do not know	7	-
	The State of the Fetus that Completed Its Development at the World	Baby	8	14
		I do not know	6	-

According to Table 5, the most common answer as the "Ovarian" code given before the implementation was in the "Female Reproductive Cell" category under the theme "Stages of Formation of a Human", and the most common answer given after

the implementation was the "Ovule cell" code. It was seen that the most common answer given before and after the implementation in the "Male Reproductive Cell" category was the "Sperm" code. It was seen that the most common answer as given before the implementation in the category of was the code "I don't know", and the most common answer given after the implementation was the code "Fertilization" in the "The fusion of sperm and egg" category. In the category of "Structure formed by the union of sperm and egg", the most common answer given before the implementation was the code "I don't know", and the most common answer given after the implementation was the code "Zygote". It was seen that the most common answer given before the implementation was the code "I don't know" in the category of "The structure formed by the zygote through successive mitotic divisions ", and the most common answer given after the implementation was the "Embryo" code. In the category of "The structure formed by the growth and development of the embryo", it was seen that the most common answer given before the implementation was the code "I don't know", and the most common answer given after the implementation was the "Fetus" code. It was seen that the most common answer given before and after the implementation in the category of " The State of the Fetus that Completed Its Development at the World" was the "Baby" code. It was determined that some students confused the concepts of egg and ovary before the implementation, and this conceptual confusion was corrected after the application. After the application, it was determined that a student confused the concepts of zygote and embryo.

Table 6.

Students' Answers to the Question of "Write in the blanks which type of asexual reproduction the following organisms perform."

			Frequency	
Theme	Category	Codes	Before	After
Types of asexual reproduction	Paramecium	By dividing	3	13
		I do not know	11	1
	Rose	Vegetative	4	12
		I do not know	10	2
	Earthworm	Regeneration	3	12
		By dividing	1	2
		I do not know	10	-
	Strawberry	Vegetative	3	11

	Budding	1	-
	I do not know	10	3
Cap mushroom	Budding	2	10
	Vegetative	1	1
	Spore	1	-
	I do not know	10	3
Starfish	Regeneration	3	12
	By dividing	-	1
	I do not know	11	1
Jellyfish	Budding	3	10
	By dividing	1	-
	I do not know	10	4
Amoeba	By dividing	4	12
	I do not know	10	2
Coral	Budding	2	11
	Vejetatif	1	-
	By dividing	1	1
	I do not know	10	2
Violet	Vegetative	4	13
	I do not know	10	1
Moss	Regeneration	-	6
	Spore	1	2
	Germination	1	-
	Vegetative	2	-
	I do not know	10	6
Oglena	By dividing	3	11
	Budding	1	-
	I do not know	10	3

According to Table 6, the most common answer given before the implementation was "I don't know" in the "Paramyceum" category under the theme of "Types of asexual reproduction", and the most common answer given after the implementation was "By dividing". It was seen that the most common answer given before the implementation in the "Rose" category was the code "I don't know", and the most common answer given after the implementation was the "Vegetative" code. It was seen that the most common answer given before the implementation in the "Earthworm" category was the code "I don't know", and the most common answer given after the implementation was the "Regeneration" code. In the "Strawberry" category, the most common answer given before the implementation was the "I don't

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know" code, and the most common answer given after the implementation was the "Vegetative" code. It was seen that the most common answer given before the implementation in the category of "Cap mushroom" was the code "I don't know", and the most common answer given after the implementation was the code "Budding". It was seen that the most common answer given before the implementation in the "Starfish" category was the code "I don't know" and the most common answer given after the implementation was the "Renewal" code. It was seen that the most common answer given before the application in the "Jellyfish" category was the code "I don't know", and the most common answer given after the implementation was the "Budding" code. In the "Amoeba" category, it was seen that the most common answer given before the implementation was the code "I don't know", and the most common answer given after the implementation was the code "By dividing". In the "Coral" category, the most common answer given before the implementation was the "I don't know" code, and the most common answer after the implementation was the "Budding" code. It was seen that the most common answer given before the application in the "Violet" category was the code "I don't know", and the most common answer given after the implementation was the "Vegetative" code. It was seen that the most common answer given before the implementation in the "Moss" category was the code "I don't know", and the most common answers given after the implementation were the " Regeneration" and "I don't know" codes. It was seen that the most common answer given before the implementation in the "Oglena" category was the code "I don't know", and the most common answer given after the implementation was the code "By dividing".

Table 7.

Students' Answers to the Question of "The parts of a flower are given below. Write the name and function of the organ in the place indicated by the arrow."

Theme	Category	Codes	Before	After
Recognizing parts of a flower through visual	Recognition of the cusps	tooth crest	2	10
		Mound	5	-
		dental tube	-	1
		I do not know	7	3
	The seed outline/ recognizing the ovary	Ovarian	1	11
		seed draft	2	1
		egg cell	2	-

	I do not know	9	2
Identifying the stigma	dental tube	2	12
	female organ	2	2
	Ovarian	1	-
	female reproductive cell	1	-
	I do not know	8	-
Recognition of the male organ	Male organ	5	9
	Başcik	-	4
	Pollen	1	1
	I do not know	8	-
Petal Recognition	petal	4	14
	Leaf	2	-
	I do not know	8	-
sepal recognition	sepals	4	14
	Leaf	1	-
	I do not know	9	-
Recognizing the flower bed	flower tray	4	13
	Handle	1	-
	I do not know	9	1
Recognizing the flower stem	flower stalk	7	14
	I do not know	7	-

According to Table 7, it was seen that the most common answer given before the application was "I don't know" in the category of "Recognizing the Tooth Crest" under the theme "Recognizing the parts of the flower through visuals", and the most common answer given after the application was the "Tooth Crest" code. It was seen that the most common answer given before the application in the category of "recognition of the seed outline/ovary" was "I don't know", and the most common answer given after the application was the "Ovary" code. It was seen that the most common answer given before the application in the "Recognition of the Dentistry Tube" category was the code "I don't know", and the most common answer given after the application was the "Denticulum tube" code. It was seen that the most common answer given before the application in the "male organ recognition" category was the code "I don't know", and the most common answer given after the application was the "male organ" code. In the "petal recognition" category, the most common answer given before the application was the "I don't know" code, and the

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most common answer given after the application was the "petal" code. It was seen that the most common answer given before the application in the "Seal recognition" category was the code "I don't know", and the most common answer given after the application was the "Seal" code. In the category of "Recognizing the flower tray", it was seen that the most common answer given before the application was the code "I don't know", and the most common answer given after the application was the code "Flower tray". It was seen that the most common answers given before the application in the category of "Recognizing the flower stem" were "Flower stem" and "I don't know" codes, and the most common answer given after the application was the "Flower stem" code.

Table 8.

Students' Answers to the Question of "Write the metamorphosis stages of the butterfly and the frog in the "Your Answer" section below, respectively."

Theme	Category	Codes	Before	After
Visual Recognition of Butterfly Metamorphosis	Egg stage	Egg	6	14
		I do not know	8	-
	Caterpillar / larval stage	Caterpillar	3	10
		Larval	2	4
		I do not know	9	-
	Pupal stage	Pupal	3	11
		Cocoon	2	3
		I do not know	9	-
	Butterfly phase	Butterfly	5	14
		I do not know	9	-
Visual Recognition of Frog Metamorphosis	Egg stage	Egg	5	14
		I do not know	9	-
	Tadpole stage	Tadpole	4	9
		Caterpillar	2	5
		I do not know	8	-
	Young frog stage	Young frog	2	8
		Tadpole	3	6
		I do not know	9	-
	Adult frog stage	Adult frog	2	13
		Baby frog	3	1
		I do not know	9	-

According to Table 8, the most common answer given before the implementation was "I don't know" in the "Egg Stage" category under the theme of "

Visual Recognition of Butterfly Metamorphosis", and the most common answer given after the implementation was the "Egg" code. In the category of "Caterpillar / larval stage", the most common answer given before the implementation was the code "I don't know", and the most common answer given after the implementation was the code "Caterpillar". It was seen that the most common answer given before the application in the "Pupal Stage" category was "I don't know", and the most common answer given after the application was the "Pupa" code. In the "Butterfly Stage" category, the most common answer given before the implementation was the "I do not know" code, and the most common answer given after the implementation was the "Butterfly" code. It was seen that the most common answer given before the implementation was the code "I don't know" in the category of "Egg Stage" under the theme of " Visual Recognition of Frog Metamorphosis", and the most common answer given after the implementation was the "Egg" code. It was seen that the most common answer given before the implementation in the category of "tadpole stage" was the code "I don't know", and the most common answer given after the application was the "tadpole" code. It was seen that the most common answer given before the implementation in the "Young Frog Stage" category was "I don't know", and the most common answer given after the implementation was the "Young frog" code.

It was seen that the most common answer given before the implementation in the "Adult frog stage" category was "I don't know", and the most common answer given after the implementation was the "Adult frog" code.

Table 9.

Students' Answers to the Question of "Onur prepared the following materials for growing zucchini at home. In the process of growing honor gourd, what should he pay attention to in terms of the materials he uses and the environmental conditions? What else does the squash need to grow healthily?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Growing plant	Environmental conditions	Water	9	7
		Suitable temperature	-	7
		Oxygen / Air	2	7
		Moisture	2	4
		Light	-	3

		Sun	7	2
		Carbon dioxide	1	1
		Pot change	1	-
		Seed	1	-
		Medicine	1	-
		Fertilizer	1	-
		Heat	1	-
	Other	I do not know	4	-

According to Table 9, under the theme of "Growing Plant", the most common answer given before the implementation in the "Environmental Conditions" category was the code "Water", and the most common answer given after the implementation "Water", "Suitable Temperature" and "Oxygen/Air" codes. It was determined that while the students only commented on the growth of the plant before the implementation, they made comments on the germination, growth and development of the plant after the implementation.

Table 10.

Students' Answers to the question of "What do you think should be considered in the care of different animals (cat, dog, chick, fish, lamb, chicken, cow...)?"

			Frequency	
Theme	**Category**	**Codes**	**Before**	**After**
Animal care	Things to do	Paying attention to the living space	-	8
		Paying attention to your diet	2	8
		Show love	3	5
		Keep clean	6	5
		Vaccinate regularly	2	4
		Give food	4	4
		Give clean water	3	4
		Hover	2	3
		Give freedom	1	2
		Taking care of when sick	2	1
		Toilet training	2	-
		Grow in the garden	1	-
		Paying attention to the shelter area	3	-
	Other	I do not know	4	-

According to Table 10, under the "Animal Care" theme, the most common answer given before the application in the "What to do" category was "Keeping it clean", and the

most common answer given after the application was "To pay attention to the living space." and "Taking care of his diet." codes have been found.

Result and Discussion

As a result of the study, it was found that the students gave more correct code and frequency outputs with a significant difference after the application and correctly associated the unit concepts with each other. In addition, it was observed that the students had misconceptions about reproductive cells and their features, reproductive organs and their functions, stages of formation of living things, types of asexual reproduction, parts of flowers, stages of metamorphosis, plant and animal breeding, but their misconceptions were largely resolved after the application. With the results obtained, it was concluded that there was a positive change in the students' pre- and post-application achievements within the scope of the "Reproduction, Growth and Development in Living Things" unit. Accordingly, it was seen that the quantitative and qualitative findings supported each other.

Similarly, Azid et al. (2020), it was found that the use of Web 2.0 tools increased students' mathematics achievement. In a study conducted by Uysal & Çaycı (2020), it was found that Web 2.0 animation tools had a positive effect on the academic achievement of 4th grade students. Jena et al. (2020), it has been found that the use of Web 2.0 tools has a positive effect on the learning performance of secondary school students. Mohammed et al. (2020) with undergraduate students, it was found that there was a significant difference in the achievements of the experimental group, in which Web 2.0 tools were applied, compared to the control group, in which traditional instruction was applied.

Abdoli-Sejzi et al. (2015), it was found that there is a positive relationship between the use of Web 2.0 technologies and student success in the virtual university. In another study by Baig (2011), it was found that the online learning environment supported by Web 2.0 tools used in physics lessons increased the success of tenth grade students. Other studies also emphasize that Web 2.0 technologies have a significant effect on student achievement (Malhiwsky, 2010; Konstantinidis et al., 2013).

Recommendations

In this study, the effect of online education applications supported by Web 2.0 tools on the achievement of 7th grade students in the unit "Reproduction, Growth and Development in Living Things" was examined. As a result of the study, it has been reached

that online education applications supported by web 2.0 tools increase the access of students. Accordingly, web 2.0 tools can be applied and useful in other branches and subjects in order to increase the accessibility of secondary school students. In this study, online training activities were carried out using the web 2.0 tools Canva, Padlet, Quizizz, Nearpod, Wordwall, Kahoot, Storyboard That and Bubbl Us. Different web 2.0 tools can be used and useful according to the needs of the course, the teacher and the students. The duration of this study is limited to a total of 6 weeks (24 course hours) with 4 weeks of practice and 2 weeks of testing. It may be more beneficial to practice for a longer period of time so that the study can be generalized.

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