Examination of Online Teaching Effectiveness in Terms of Various Variables

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SUMMARY

Online teaching or distance learning applications in education process are becoming more important day by day. Especially like as happens as nowadays – during the pandemics, online teacher education becomes more important meaning to continue the education. As in face-to-face education, teachers are the most important part of the education process. It can be said that their attitudes and capabilities in running the classes become determinative on the achievement of the education process. With this study teacher candidates' evaluation is tried to be examined by an online teaching effectiveness scale. In twelve items within four dimensions, named as presence, expertise, facilitation and engagement, the subject of the study has been studied. The study has been applied in Giresun University and the data has been collected from the Faculty of Education with the attendance of 446 teacher candidates from six departments. The data hasn't shown normal distribution and non – parametric analyzes has been used in the study. During the analyzes of the data, descriptive statistics has been explained with arithmetic means, minimum, maximum and standard deviation values. Also, Mann Whitney U Test and Kruskal Wallis Test have been used for searching the meaningful differs according to genders, departments and class levels. According to the descriptive statistics high points about online teaching effectiveness have been seen. According to genders and departments no meaningful differs can be found. But according to the class levels meaningful differs have been found in favor of the lower classes.

Keywords: Online teaching, distance learning, effectiveness of class management

INTRODUCTION

Education is known as a dynamic structure affected by input process and context dimensions. This perceived structure is planned in such a way that student – teacher interaction is at the forefront, especially in buildings called schools. However, as a result of some variables and unpredictable events, the process may have to be continued on a different platform. The Covid – 19 pandemics, which has spread rapidly from China to the whole world, has caused the educational practices in Turkey to change shape, as in many principles. The tendency to leave the place of teacher – student interaction in the classroom to virtual classroom environments created on digital platforms is on the way to become reality all over the world. Such a change, of course, leads to some necessary changes in many elements of the educational environment. Perhaps the most important changes from these afternoons take place in the dimension of teachers who implement teaching and evaluation activities in virtual classroom environments.

In virtual classroom environments, which correspond to a dimension of distance education, there are great changes in the roles and responsibilities of teachers at many points, from transferring the course contents and materials to the students, to the evaluation processes that need to be done at the end of the process. These changing roles and responsibilities undoubtedly lead to the questioning of the competence areas and skills that teachers should have, both in terms of themselves and the system. It is inevitable that teachers working in virtual classroom environments have to go beyond the competencies they have so far. When the literature is examined, it is possible to come across some studies that classify the qualifications that should be found in online course teachers. One of them is İşman et. al., (2004). Their study which is titled "Roles of Students and Teachers in Distance Education" should be able to present a research environment to students under the sense of self – control,

- To be able to prepare the materials based on the individual differences of the students,
- Must have technological and communicative skills,
- To be able to create an interactive environment in order to provide students with learning responsibility,
- Must be able to form interactive groups for permanent learning,
- Must be able to provide a collaborative learning environment,
- Should be able to give appropriate feedback by guiding students Distance Education". Some of the online teacher competencies in this study are as follows.

On the other hand, Wills (1994), Beteille et. al. (2020), Tucker (2000) emphasizes that teachers working in distance education should have different skills and competencies compared to traditional teaching.

There are many approaches that emerged with the development of technology in the field of education. In order for these approaches to be effective, every element in the system must adapt to the system in terms of qualifications. The most important of these elements is undoubtedly the teachers. To the online education system of teachers, it is important to develop their competencies in this field with the trainings offered to them for the use of technology and to increase their knowledge and skills in this field. With these trainings provided, improving the digital skills of teachers and ensuring their adaptation to digital – based teaching environments will bring about an increase in the quality of education.

When the relevant literature in the world and in Turkey is examined, there are some studies emphasizing the importance of starting the training of digital – based teachers in the pre – service period. Gultekin, (2006), Harry & Peratton (1999), Hall & Knox (2009) underlines the necessity of cheating digital competencies in teacher education in the pre – service period.

Evaluation of the quality of digital education is a necessary step as much as all the activities carried out in the process. Another important element of the online teaching services offered by the teachers in the system, namely the evaluation by the students, and receiving the necessary feedback are important to determine and improve the quality of the process.

In the last two years in Turkey, it has been observed that teachers generally implement similar practices in their online applications, which have come to the forefront with the pandemic process. According to Kaysi (2020), these applications are generally grouped as sharing the lecture notes with the students, teaching the lectures live on digital platforms, or sharing the lecture videos taken by the lecturers. In the evaluation of these applications, teachers evaluated the process by using different techniques. On the other hand, the quality of the education provided in the remote digital environment was also evaluated by the students. It is clear that the evaluation of this process by the students will guide the further steps to be taken in this area and the improvement studies to be made. It should not be forgotten that the feedback obtained from the students about the process is an important data source for development studies. In addition, student opinions will enable the emergence of important information as well as how my process is carried out in a healthy and desired direction.

From this point of view, the aim of this study is to evaluate the online education practiced in Turkey in terms of some variables based on student opinions.

For this meaning some questions as listed below have been tried to be answered by the help of collected data during the study of online teaching effectiveness according to the teacher candidates.

1. What are the descriptive statistics about online teaching effectiveness according to the teacher candidates?
2. Is there a meaningful differ about online teaching effectiveness according to the genders of the teacher candidates?
3. Is there a meaningful differ about online teaching effectiveness according to the class levels of the teacher candidates?
4. Is there a meaningful differ about online teaching effectiveness according to the departments of the teacher candidates?

METHOD

In the methodology section, there are explanations about the research method, study group, analysis tools and analysis method.

Research Model

General survey model from quantitative research methods was applied in this study. Positive opinions and the main aim of the study can be observed, measured and analyzed independently and objectively in quantitative research methods (Büyüköztürk et al., 2013). According to Şimşek (2012) and Karasar (2012) the reality can be reflected in general survey model by reaching the whole population or the sample which is a small appropriate reflection of the whole population.

Study Group

The research was carried out at Giresun University, Faculty of Education. Faculty of Education has eight departments and six of them have been determined as the population of the study. In autumn term of 2021, 1731 teacher candidates were continuing their educations in these departments which are named as Guidance and Psychological Counseling, Primary School Level Mathematics Teaching, Primary School Level Teaching, Science Teaching, Social Studies Teaching and Turkish Language Teaching. While calculating the number of sampling 95% confidence level and 5% error margin were paid attention as Şahin (2012) has said. According to this calculation 446 teacher candidates joined the study. While building the sample of the study teacher candidates' voluntariness were cared. First stratified sampling method was applied according to the departments, then the genders of them were played role in the sampling. The distribution of 446 teacher candidates is as shown as in Table 1 according to their departments.

Table 1. Sample of the Study

Department	Female (n)	Male (n)	Total (n)
Guidance and Psychological Counseling	60	26	86
Primary School Level Mathematics Teaching	42	6	48
Primary School Level Teaching	62	18	80
Science Teaching	29	9	38
Social Studies Teaching	77	27	104
Turkish Language Teaching	61	29	90
Total	331	115	446

Data Collection Tool

The data collection tool, which is named as *"Online Öğretim Etkililiği Ölçeği"* in Turkish, was adapted (Aşçı & Yıldırım, 2021) from the original *"Online Teaching Effectiveness Scale"* (Reyes-Fournier et. al., 2020). The scale was applied and adopted in Manisa Celal Bayar University in spring term of 2021. The scale has 12 items with in 4 dimensions as same as its original one. While the adaptation study translation study, language validity study, pilot study, validation study and reliability study steps were followed. According to the validation study step RMSEA (.080), SRMR (.035), CFI (.958), TLI (.940), NNFI (.943) values were found in the second level CFA fit indices of the study. The Cronbach's Alpha (α) and Test – Retest (r_s) values were obtained in reliability study step of the adaptation study. According to the reliability study the Cronbach's alpha (α) and test – retest (r_s) values for all dimensions and for the whole of the scale are like that; presence dimension (α .96) (r_s .91), expertise dimension (α .70) (r_s .72), facilitation dimension (α .84) (r_s .74), engagement dimension (α .97) (r_s .94), whole scale (α .92) (r_s .79). The scale can be used in observing the effectiveness of online teaching process as a user – friendly data collection tool with its practical structure as claimed in its original one. And also, general evaluation of the online teaching effectiveness has been asked to teacher candidates with an additional question scoring from 1 to 10. With this additional question teacher candidates have had a chance to make their own general evaluation about the teaching staff by scoring from 1 to 10. That additional question has been thought for seeing the consistency of scale and with this additional question an extra evaluation has done.

Data Analysis

The data was analyzed by SPSS 25 package program by caring the significant level as .05. First the distribution of the data was tested and normal distribution couldn't be seen (p=.00) in all dimensions and whole of the scale. So, the analyzing process was followed with nonparametric tests. While looking the descriptive statistics of the first sub – problem of the study minimum, maximum, arithmetic means and standard deviation values were cared. According to the second sub – problem as trying to find out the meaningful differ according to the genders, Mann Whitney U Test was used as a nonparametric test. For the third and fourth sub – problem as trying to find out the meaningful differ according to the class level and departments of the teacher candidates, Kruskal Wallis Test was applied. After finding meaningful differ at class levels of teacher candidates, Dunn Analysis was used to see the way of meaningful differ.

FINDINGS

With the findings part the findings of the study were presented according to the order of the sub – problems. With first sub – problem, the descriptive statistics has been examined; with the second sub – problem, the meaningful differ about online teaching effectiveness has been examined; with the third sub – problem, the meaningful differ about online teaching effectiveness has been examined and with the fourth sub – problem, the meaningful differ about online teaching effectiveness has been examined. The findings have been given with Table 2, Table 3, Table 4, Table 5 and Table 6.

First Sub – Problem Findings

The first sub – problem statement is; *"What are the descriptive statistics about online teaching effectiveness according to the teacher candidates?"*. By the help of Table 2, the descriptive statistics about online teaching effectiveness has been given. The descriptive statistics have been given for each one of the dimensions separately. Then the descriptive statistics about the whole of the scale and about the general evaluation have been given with Table 2. While giving the descriptive statistics minimum, maximum, arithmetic means and standard deviation values has been used as seen on Table 2.

Table 2. Descriptive Statistics about Online Teaching Effectiveness

Dimensions	n	Minimum	Maximum	$\bar{x}$	sd
Presence	446	6	32	25.65	6.837
Expertise	446	2	12	9.99	2.283
Facilitation	446	2	12	9.45	2.323
Engagement	446	2	12	8.87	2.625
Whole Scale	446	12	72	53.96	12.566
General Evaluation	446	0	10	6.58	2.126

According to the answers of the teacher candidates the *presence dimension* is 25.65 arithmetic mean points which means as *"agree"* and it shows a high point. Teacher candidates have evaluated the effectiveness of teaching staff in online teaching process by giving high scores. The most scored item is *"giving meaningful examples"* with 4.72 arithmetic mean and the least scored item is *"using creativity to increase student interest"* with 3.83 arithmetic mean.

Expertise dimension has been scored as 9.99 points which means as *"agree"*. In this dimension the item *"showing respect to the students"* has had higher arithmetic mean with 5.04 points than the other item which has asked for seeing *"subject matter knowledge"* of teaching staff. The lowest item from this dimension has got 4.96 arithmetic mean points which is also a high score.

In *facilitation dimension* the arithmetic mean is 9.45 points and teacher candidates evaluated as *"agree"* again. In this dimension while the item *"being planned"* getting the highest arithmetic mean with 4.86 points, the item *"giving clear expectations"* has got the lowest arithmetic mean with 4.59 points.

The last one, *engagement dimension* is 8.87 arithmetic mean points which means *"agree"*. *"Being online and offline ability"* is 4.68 arithmetic mean points and this item has got higher point than *"responding to questions timely"* item. The lowest item in this dimension has got 4.19 arithmetic mean point.

As seen in Table 2, each one of the dimensions, whole of the scale and the general evaluating question indicators show that teacher candidates have evaluated the online teaching effectiveness with high points. The teacher candidates have seen the online teaching process, which they had experienced, as effective.

Second Sub – Problem Findings

The second sub – problem statement is; *"Is there a meaningful differ about online teaching effectiveness according to the genders of the teacher candidates?"*. By the help of Table 3, the meaningful differ about online teaching effectiveness according to the genders of the teacher candidates of has been explained.

Table 3. Mann Whitney U Test About the Online Teaching Effectiveness According to the Genders of the Teacher Candidates

Dimensions	Gender	n	Mean Rank	Rank Sum	U	p
Presence	Female	331	221.30	73250.50	18304.50	.540
	Male	115	229.83	26430.50		
Expertise	Female	331	229.75	76046.00	16965.00	.075
	Male	115	205.52	23635.00		
Facilitation	Female	331	227.71	75371.50	17639.50	.235
	Male	115	211.39	24309.50		
Engagement	Female	331	227.91	75439.00	17572.00	.216
	Male	115	210.80	24242.00		
Whole Scale	Female	331	224.99	74473.00	18538.00	.678
	Male	115	219.20	25208.00		
General Evaluation	Female	331	226.22	74877.50	18133.50	.445
	Male	115	215.68	24803.50		

As seen on Table 3, there is no meaningful differ about online teaching effectiveness according to the gender of teacher candidates (p>.05). Each one of the all dimensions, whole of the scale and the general evaluation question hasn't shown any meaningful differs about online teaching effectiveness.

Third Sub – Problem Findings

The third sub – problem statement is; *"Is there a meaningful differ about online teaching effectiveness according to the class levels of the teacher candidates?"*. By the help of Table 4, the meaningful differ about online teaching effectiveness according to the genders of the teacher candidates of has been explained.

Table 4. Kruskal Wallis Test About the Online Teaching Effectiveness According to the Class Levels of the Teacher Candidates

Dimensions	Class Level	n	Mean Rank	X^2	df	p
Presence	1st	148	263.43	30,353	3	.000
	2nd	104	234.14			
	3rd	109	185.02			
	4th	85	190.31			
Expertise	1st	148	261.82	33.661	3	.000
	2nd	104	237.11			
	3rd	109	175.00			
	4th	85	202.32			
Facilitation	1st	148	259.75	24.047	3	.000
	2nd	104	229.82			
	3rd	109	189.72			
	4th	85	195.96			
Engagement	1st	148	235.07	4.658	3	.119
	2nd	104	227.73			
	3rd	109	201.35			
	4th	85	226.59			
Whole Scale	1st	148	261.31	27.324	3	.000
	2nd	104	233.42			
	3rd	109	184.78			
	4th	85	195.18			
General Evaluation	1st	148	261.98	23.815	3	.000
	2nd	104	223.50			
	3rd	109	195.32			
	4th	85	192.64			

As seen on Table 4, there are meaningful differs about online teaching effectiveness according to the class level of teacher candidates ($p<.05$) expect the engagement dimension ($p>.05$). Table 4. shows that presence dimension ($X^2=30.353$, $df=3$, $p=.000$), expertise dimension ($X^2=33.661$, $df=3$, $p=.000$), facilitation dimension ($X^2=24.047$, $df=3$, $p=.000$), whole scale ($X^2=27.324$, $df=3$, $p=.000$) and the general evaluation question ($X^2=23.815$, $df=3$, $p=.000$) have meaningful differs about online teaching effectiveness in sense of teacher candidates' answers. There isn't a meaningful differ in engagement dimension ($X^2=4.658$, $df=3$, $p=.119$).

For finding the directions of meaningful differs Dunn Analysis has been applied as shown in Table 5. According to the whole scale there are meaningful differs between third and first classes (p=.000), third and second classes (p=.006), fourth and first classes (p=.000), fourth and second classes (p=.042). All meaningful differs about whole scale are in favor of first and second classes. According to the general evaluation question there are meaningful differs between second and first classes (p=.018), third and first classes (p=.000), fourth and first classes (p=.000). All meaningful differences about general evaluation question are in favor of first classes.

Table 5. Dunn Test about the Meaningful Differs according to the Teacher Candidates' Class Levels for the Whole Scale and the General Evaluation Question

Dimensions	Groups having differ	p
Whole Scale	3rd Class – 1st Class	.000
	3rd Class – 2nd Class	.006
	4th Class – 1st Class	.000
	4th Class – 2nd Class	.042
General Evaluation	2nd Class – 1st Class	.018
	3rd Class – 1st Class	.000
	4th Class – 1st Class	.000

Fourth Sub – Problem Findings

The third sub – problem statement is; *"Is there a meaningful differ about online teaching effectiveness according to the departments of the teacher candidates?"*. By the help of Table 6, the meaningful difference about online teaching effectiveness according to the departments of the teacher candidates of has been explained.

Table 6. Kruskal Wallis Test about the Online Teaching Effectiveness according to the Departments of the Teacher Candidates for the Whole Scale and the General Evaluation Question

Dimensions	Departments	n	Mean Rank	X^2	df	p
	Guidance and Psychological Counseling	86	229.63			
	Primary School Level Mathematics Teaching	48	245.49			
Whole Scale	Primary School Level Teaching	80	198.79	5,900	5	.316
	Science Teaching	38	204.72			
	Social Studies Teaching	104	225.62			
	Turkish Language Teaching	90	233.36			
	Guidance and Psychological Counseling	86	224.47			
	Primary School Level Mathematics Teaching	48	260.02			
General Evaluation	Primary School Level Teaching	80	199.39	8.216	5	.145
	Science Teaching	38	231.75			
	Social Studies Teaching	104	212.92			
	Turkish Language Teaching	90	233.26			

The Kruskal Wallis Test values show that there is no meaningful difference about online teaching effectiveness according to the departments of the teacher candidates. The Kruskal Wallis Test values are: presence dimension ($X^2=5.618$, $df=5$, $p=.345$), expertise dimension ($X^2=6.129$, $df=5$, $p=.294$), facilitation dimension ($X^2=5.477$, $df=5$, $p=.360$), engagement dimension ($X^2=7.616$, $df=5$, $p=.179$), whole scale ($X^2=5.900$, $df=5$, $p=.316$) and the general evaluation question ($X^2=82.16$, $df=5$, $p=.145$).

CONCLUSION AND DISCUSSION

In this study, in which the effectiveness of online education was examined in terms of some variables, according to the opinions of teacher candidates; It is seen that the general average of the scores of the instructors come from the teacher candidates in online education process is evaluated highly. It can be evaluated that the teaching staff generally carry out online education process efficiently. teacher candidates have evaluated the teaching staff in online education process with high ratings in every stage of online education. With the last item instructors have get 6.58 out of 10 full points. This last item score shows the consistency in whole scale answers of teacher candidates. The 6 – point Likert – type scale, which was used in this study, shows that teacher candidates opinions are highly positive about online teaching process which has been started to be applied just from the beginning of the Covid – 19 pandemics by teaching staff.

Based on the opinions of the teacher candidates, it is seen that the scores obtained from the 6 – point Likert – type scale regarding the effectiveness of the online education process are approximately 4.5 with the average of the scores obtained from the whole scale and its sub – dimensions. Since the full score that can be obtained from the scale is 6, this result gives clues showing that the distance education process is effective. An important point that draws attention according to the teacher candidates in distance education process is one another opinion show that the instructors are insufficient to increase the interest of the teacher candidates by using their creativity skills in this process when compared to their other skills. This result can be seen as a result of the fact that the instructors cannot reflect their teaching skills to the process professionally due to the inability of face – to – face communication and interaction opportunities. On the other hand, the opinions of teacher candidates that the instructors treat them with respect (5.04) come to the fore. Although this view is a critical behavior in terms of the teaching process, it is also important in terms of being a model for teacher candidates. Senemoğlu (1987) determined in her research that the instructors showed good level of in-class teacher behavior on average. Gözütok (1995) also emphasizes that teacher behaviors are an important determinant of student behaviors to be acquired at the end of the education process, and draws attention to the necessity for the teacher to make these values an inseparable part of his own life in order for the student to adopt democratic understanding, attitudes and ideals. Because students are influenced by their teachers' behaviors rather than what they say and they take these behaviors as an example. Topal (2020) also emphasizes that teacher behaviors have a high power to influence students and points out that teacher behaviors that enable students to participate in the lesson, respect student personality and value their ideas will set a good example for students. Onural (2006) also emphasizes that subject area and pedagogical formation skills are at the forefront of the qualities that a good teacher should have. In addition to these, the teacher's love for his profession and his students, and having good communication skills are among the

important qualities that an ideal teacher should have. In addition, the teacher's tolerant, patient, cultured and fair behavior are listed as the qualities that an ideal teacher should have.

It can be said that undergraduate students' attendance, active participation in the course, collaborative work, tolerance, student-teacher relations and the open presentation of the course have a positive effect on student success. In addition, it has been revealed that the instructor's taking the student's opinion on the subjects related to the course and the pre-determination of the rules to be followed in the course are also effective on student success (Kısakürek, 1985). Other research results on classroom atmosphere also show that positive teacher-student relations and adopting classroom values have a significant effect on improving student behaviors and increasing their success (Özden, 2005).

This research, which examines the efficiency of the distance education process according to the views of the teacher candidates, reveals that the views of the teacher candidates about the effectiveness of the distance education process does not differ according to the gender and the department of education. This result shows that the perception of whether the process is effective or not is independent of the gender and department variables. On the other hand, the opinions of the teacher candidates show that the rank averages of the first graders are higher in terms of the effectiveness of distance education. Since this result reveals that there is a difference between the other grades in favor of the 1st grades, it can be evaluated that the 1st graders see distance education more adequate than the upper grades. In terms of the whole scale, the fact that the mean rank scores of the 1st and 2nd grades are higher reveals that there is a difference between these grades and both 3rd and 4th grades. This situation gives clues that the level of satisfaction of the 3rd and 4th grade students studying in the face – to – face education process is not met to the same extent in the distance education process. The fact that the 1st and 2nd grade students, who have just encountered the distance education process and cannot find enough opportunities for face – to – face education, consider the distance education application more sufficient than the upper classes can be seen as a result of the fact that these classes did not find the opportunity to compare face – to – face education and distance education at a sufficient level. The preppies have just joined distance education up to now. They will have chance to compare face – to – face education with distance education then.

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