

# Evaluation of the Use of Information and Communication Technologies in Education based on the Principle of Equality\*

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## ABSTRACT

In this study, the evaluations of school administrators and teachers regarding the use of ICT in education on the basis of equality of conditions and equality of opportunity, which are the sub-dimensions of the principle of equality, are discussed. In the study, parallel mixed-methods approach, in which qualitative and quantitative data are used together, is adopted. The qualitative part of the research process was designed as phenomenological study, and the quantitative part as correlational survey. The study group of the qualitative part consists of 12 school administrators working in Edirne, Turkey. The qualitative data was obtained through semi-structured interviews were analyzed by descriptive analysis. The study group of the quantitative part of the study consists of 411 teachers working in the Central District of Edirne, Turkey. To collection of quantitative data, "Equality Scale for ICT Use in Education" and "Personal Information Form" were used. One-way ANOVA, t-test and descriptive statistics were used to analysis data. According to the qualitative findings of the study, school administrators evaluated that even though an effort was made to establish equality in the use of ICT in education, it was not sufficient and therefore the use of ICT in an educational environment was not realized. It was observed that the total scores of Equality Scale for ICT use in Education applied to the teachers participating in the research were at an average level. The evaluations of teachers, based on gender, field of education, age, seniority, school level, and in-service training status dimensions were examined, and the results were interpreted by giving mean values of the findings with statistically significant differences according to the principle of equality of conditions in ICT use in education

**Keywords:** information and communication technologies, equality in education, equality of opportunity, equality of conditions

## INTRODUCTION

In the recent century, information and communication technologies (ICT) are used in almost every area of life. This situation also accelerated the production, dissemination, sharing and use of information. As a result of the rapid developments in science and technology, the concept of information society has emerged, and education systems have now had to raise individuals suitable for the information society. The Turkish Ministry of National Education (MEB) has defined the information society as a society consisting of individuals who seek information, access it, classify, store and evaluate the information that people access and acquire (MEB, 1998). Using educational technologies in educational practices is a process that motivates

students, enabling them to gain new achievements. The use of multimedia content contributes a lot to the teacher in motivating the student (Özan & Özdemir, 2010). The main purpose of the student's learning is the focus of investments in technology in the field of education. In this respect, technology should be particularly emphasized for the question of "How can we teach better to the students who are the focus of this industry?" "Technology in the form of chalkboard, ruler, map, model in the past has left its place to information and communication technologies by keeping up with the digital world today. In this sense, investments are constantly made in ICT and classes are equipped with these technologies" (Çoklar, 2012). Usuel, Mumcu and Demiraslan (2007) stated that using ICT in schools maximizes the efficiency of students' learning environments by enabling learning independent from time and space, as well as playing a role in developing their thinking skills.

The fact that the use of ICT in educational environments is necessary for effective teaching and student success also brought inequalities in ICT. Socio-economic status of families, infrastructure of schools, quality of educational software, and the skills of teachers to use ICT cause problems in accessing ICT. This situation revealed the importance of the concept of equality in education. The concept of equality is often perceived by the stakeholders as equal opportunities. However, in education, equality covers both equality of opportunity and the concept of equality of conditions, which can be considered as a source of inequality, as well as the fact that these two forms of equality are handled independently. Turner (1997) defined equality as the starting point of every individual participating in education with equal points and without exaggeration. On the other hand, it has defined equality of opportunity as the type of equality in which those who use their talents for success in the educational environment come to the fore and are rewarded. While equality of opportunity and equality of conditions cannot be separated from each other up to a certain point, ensuring equality of opportunity is directly related to ensuring equality of conditions. In the context of these definitions, it is inevitable to create inequalities in the use of ICT in the educational environment.

School and teacher-based reasons constitute the basis for the inequality in the use of ICT in the educational environment. Pelgrum (2001) shows that lack of adequate equipment in schools and teachers' inability to use ICT equally are essential in the formation of inequality in using ICT. In addition, various factors such as software support and instructional designs affect the achievement of equality in the use of ICT in the educational environment. Economic funds of families, education they receive, and their professional status are another determining factors in ensuring equality for the use of ICT. In their report, Ferreira and Gignoux (2010) stated that the economic situation of the families is directly related to ensuring equality, and that their professions affect indirectly. In creating the equality for the use of ICT, it is effective on individual factors such as gender, technology interest, and technology perspective. Aksoy (2012) emphasized that girls are not directed to use technology in the formation of inequality, whereas Perkmez and Tezci (2011) stated that ICT usage skills affect students' access to ICT tools. Considering these factors, it is clear that the inequality in ICT use occurs on the basis of equality of opportunities and equal opportunities in the educational environment. The opinions of the school administrators and teachers, who are among the most important stakeholders of this puzzle stated in this context, are of great importance in finding solutions to eliminate this issue.

### **Equality**

Although equality has many conceptual meanings, it is possible to define it in many areas such as moral, political and legal equality (Ayhan, 2009). There are many definitions related to the principle of equality. "Equality conceptually refers to the relationship between two or more things that are neither surplus nor incomplete in terms of structure, value, size, quantity and quality. The Turkish Language Association defines equality as two or more things being equal. In another definition, regardless of their physical and spiritual differences, it has been defined as the fact that there is no discrimination between people in terms of social and political rights (TDK, 2019). JJ Rousseau defined equality as that the power and wealth levels are not exactly the same for everyone, but that this power does not escape any bullying and is used only when required by positions and laws (Dent, 2005). He also stated that it is necessary to maintain and continue equality by law (Rousseau, 1993). Equality in the 10th article of the Turkish Constitution is clearly stated as that "Everyone is equal without discrimination due to language, race, color, gender, political thought, philosophical belief, religion, sect and similar reasons, and no privileges will be granted to any person, family, group or class."

Turner (1997), known for his work called "Equality", stated that this concept has a complex structure and that it cannot be fully defined, but there are four different types of equality. Turner defined these four types of equality as ontological equality, equality of conditions, equality of opportunity, and equality of outcomes. Ontological equality is defined as the human being being equal before God, without discrimination of religion, language or race, because he is human. According to this type of equality, he stated that being born as a human being requires equal rights with everyone.

In Turner's other equality type, equality is the type of equality that defends people to start the race from the same point without obstacles. This type, which defends that there will not be equal opportunities in the place where the class and material heritage from the family is transferred, argues that every individual should have the same opportunities for the race of success, and that there should be no social distinction. Equality of conditions is closely related to the idea of equality of opportunity, and they cannot be separated from each other up to a certain point. Creating equality of conditions is the most difficult form of equality. Equal opportunity is seen as a natural consequence of equality. However, it is seen that the level of equality can be achieved in terms of creating equal opportunities.

Turner described equality of opportunity as the most common known equality argument of western democracies. Equal opportunities mean the right of individuals to enter social institutions depending on their success and ability. It is a type of equality where those who use their equal opportunity skills for their personal success come to the fore. People's progress is shaped by their own skills and abilities. Considering the knowledge, experience, and abilities of people regardless of their age, gender, and race ensures equality of opportunity.

The equality of outcomes, which is the last equality type of Turner, is to eliminate the inequalities that may occur as a result of the race, regardless of the opportunities and resources, and to ensure that the outcomes are equal. This type, also called positive discrimination or positive privilege, provides some privileges to unfavorable groups and provides equal opportunity. Equality of outcomes can be expressed as part of many policy programs aimed at eliminating competitive inequalities.

### **ICT Use and Equality in Education**

Information and communication technology in education is the processing of information and communication facilities and features that support education, learning and fields of activity in various ways. In educational technologies, ICT requires the use of hardware and software approaches that can help develop more effective learning outcomes (Okechukwu & Chogozie-Okwum, 2014). According to Malik, Rohendi and Widiaty (2019), they stated that by using ICT and providing the content of the teacher more actively, enjoyable / exciting classroom environment needed for students to be taught the learning process becomes much easier, which leads to optimal learning outcomes. In addition, they stated that the use of ICTs expand student potential, increase learning opportunities, quality of learning and efficiency, allow independent learning and collaborative learning, and encourage the realization of lifelong learning. Wegerif (2002) concludes that in studies on learning in ICT, technology cannot have a direct impact on learning, and that technology can be transferred using teachers and materials correctly. While ICT provides services in all areas of education, it both speeds up the educational inputs and ensures that administrative affairs are carried out quickly. ICT is used effectively not only in the school but also outside the school.

Although it is easy to access information and communication technologies in education, the level of access to educational technologies of individuals in different socio-economic and cultural groups is not the same. With the innovations in the field of communication technologies, while many people in the society can access ICT, there are still many people in certain sections of the society who still cannot access these technologies (Ilgaz and Seferoğlu, 2010). There are rapid and major changes in information and communication technologies. It can be said that following the developments in the field of ICT brings along some opportunities in terms of both economic power, growth and democratization process. When the studies conducted are examined, 3 main factors that affect the use of ICT in education are determined. These factors can be listed as individual, school, and family. On a national and international basis, it is understood that there are individuals who have access to these technologies as well as individuals who have no access to these technologies. With the innovations in the field of communication technologies, while many people in the society can access ICT, there are still many people in certain sections of the society who still cannot

access these technologies (Ilgaz and Seferoğlu, 2010).

### **Equality of Conditions**

Equality of Conditions is also known as equality of opportunity inaccurately. Opportunity is defined as the appropriate condition or situation, which is used as the meaning of possibility word (TDK, 2019). Hamzaoğlu (2014) defined equality in terms as equitable access to basic rights such as education, health, social security within the pre-determined measures of individuals in the society. Equality of conditions aims to reduce the gap between social needs such as socioeconomic, health, education, transportation, and communication among social classes. Turner (1997) stated that it was the most difficult type of equality to achieve equality of conditions and defined it as the individuals participating in the race starting the race with non-exaggerated and similar obstacles. Similarly, while defining equality of conditions, Petek (2018) stated that when social classes are examined, it is the most difficult type of equality to be created and it is the biggest obstacle to bring individuals to the starting point equally. Equality of conditions is regarded as the type of equality in which every opportunity, where the difference between social classes is minimized, aims to benefit each individual.

### **Equality of Opportunity**

Called the most common form of equality in modern democracies (Turner, 1997), “equality of opportunity” is a principle that stipulates that individuals can compete in terms of their abilities and capabilities, regardless of their social attributes. “According to Hobsbawm, this principle has been the tool for establishing a hierarchical social order on the basis of official equality since the time it was first introduced. This view of Hobsbawm reflects the Marxist interpretation brought to the subject.” (Ünal and Özsoy, 1999). While defining equality of opportunity, Aydin (2010) defined it as the situation of having equal conditions and opportunities among those who participated in an initiative or election in any field. He stated that individuals were born equally before the law, but that they lived in inequality in many ways. He stated that the reasons for these inequalities might be due to the socio-economic status of the family, educational level and interregional differences. Equal wages in the working life and the right to social security can be given as examples of the rights brought to achieve this equal opportunity (Ünlü, 2009). According to Uçkaç (2003), equality of opportunity is defined as the fact that everyone can benefit from educational institutions equally in order to facilitate social transition, and at the same time, obtaining or benefiting from resources provides equal opportunities.

## **RESEARCH METHOD**

### **Research Model**

In this research, a mixed method approach is used, where quantitative and qualitative methodology are used together to evaluate the use of ICT in education by teachers and administrators. Quantitative and qualitative research designs are divided into different forms according to the importance, priority, time and level of the mixed research method. Since different aspects of qualitative and quantitative data are used and compared together in the research, the data obtained from both school administrators and teachers have the same importance in order to reveal a similar reality based on the evaluations of different actors. Therefore, parallel mixed-methods design was used in the study. The aim of parallel mixed-methods research is to collect both qualitative and quantitative data simultaneously, to combine these data and to use the results to understand a research problem (Creswell, 2014).

In the qualitative part of the research, the phenomenological design, one of the qualitative research designs, was used in accordance with its purpose. While examining the experience of school administrators for the use of ICT in education, the opinions they make on the basis of equality of conditions and equality of opportunity allow to be evaluated in depth and in detail with the phenomenological design. Phenomenological design focuses on the cases that are known, but do not have an in-depth and detailed understanding (Yıldırım & Şimşek, 2018). In the quantitative part of the research correlational survey model was used to determine teachers' evaluations about the use of information and communication technologies in education in the context of equality principle. Correlational survey model is the research approach that

aims to describe the current situation as it is. This model tries to define the events or individuals that are the subject of the research, in their own conditions without attempting to affect them (Karasar, 2014: 77).

**Participants**

The sample of the qualitative part of the research consists of 12 administrators working in the City Center and Districts of Edirne, Turkey during the 2019-2020 academic year. The study group was determined by using maximum variation sampling methods. The demographic characteristics of the administrators participating in the research are given in Table 1.

**Table 1: Demographic Features of Administrators**

	Gender		Working Year at School Administration	
	Female	Male	5 years and less	5 years and Over
Primary School	2	2	2	2
Middle School	4	0	3	1
High School	1	3	1	3
<b>Total</b>	7	5	6	6

The quantitative part of the research consists of 411 teachers working in the city center of Edirne, Turkey. Teachers were determined by using random sampling methods. The demographics characteristics of the teachers are shown in Table 2.

**Table 2: Demographics of Teachers**

		n	%
<b>Gender</b>	Female	249	60.6
	Male	162	39.4
<b>Age</b>	21-30	22	5.4
	31-40	122	29.7
	41-50	186	45.3
	50+	81	19.7
<b>Seniority</b>	1-5	18	4.4
	6-10	45	10.9
	11-15	73	17.8
	16-20	66	16.1
	21-25	105	25.5

	25	104	25.3
<b>School Level</b>	Primary School	125	30.4
	Middle School	88	21.4
	Anatolian High School	61	14.8
	Imam Hatip School	27	6.6
	Vocational High School	89	21.7
	Science High School	21	5.1
	<b>In-service training in the field of ICT</b>	Received	247
Not Received		164	39.9
<b>Total</b>		411	100

### Data Collection Tool

The qualitative data were collected through semi-structured interviews; quantitative data were collected using the participant information form and the Equality Scale for ICT Use in Education.

### Semi-Structured Interview Form

The semi-structured interview form was prepared as a data collection tool in order to evaluate the use of information and communication technologies in education on the basis of equality principle. While preparing the form, the related literature was examined and interview questions were. In order to determine the validity, the interview form was finalized after obtaining information about the compliance of the interview form with the research questions and making the necessary arrangements.

### Personal Information Form

In order to determine the demographic characteristics of the teachers participating in the research, the "Personal Information Form" was used.

### Equality Scale for ICT Use in Education

In order to evaluate teachers' use of ICT in education based on the principle of equality, "Equality Scale for ICT Use in Education", which was prepared by Canbay (2020) as one factor and 5-point Likert type, was used. The Cronbach's alpha internal consistency coefficient of the scale, whose validity and reliability studies were conducted with the participation of 250 teachers different from the research sample, was calculated as .94. The fact that this value is between 0.81-1.00 indicates that the reliability based on internal consistency is high (Özdamar, 2004). The fact that the scores to be obtained from the Equality Scale for ICT Use in Education is high indicates that teachers' evaluations about the use of ICT in education based on the principle of equality are positive, and that the scores to be obtained being low indicates that the evaluations are negative.

### Collection of Data

In order to collect qualitative data of the research, 12 administrators working in the city center of Edirne, Turkey and its districts were interviewed. The interviews were held face-to-face in the school building where the administrators worked. While collecting qualitative data, permission was obtained from the Edirne

Provincial Directorate of National Education to apply the semi-structured interview form to school administrators. After the obtain permissions, the administrators were interviewed. Before starting the interview, it is stated that the information about the research will be given and the information and identity information provided will be kept confidential. In addition, during the interview, permission was obtained for the use of a voice recorder so that the views can be taken completely. While 11 administrators approved the voice recording, 1 administrator did not want to be recorded, and their answers were evaluated by taking notes.

The "Equality Scale for ICT Use in Education" was used to collect the quantitative data of the research. The scale form was applied in a school environment to 411 teachers working at various levels in the central district of Edirne, following the permission obtained from the Edirne Directorate of National Education.

### **Data Analysis**

Descriptive analysis was used in the analysis of the qualitative data of the research. Descriptive analysis is summarized and interpreted according to previously determined themes. The data can be arranged according to the themes put forward by the research questions, or can be presented by considering the questions or dimensions used in the interview and observation process (Yıldırım & Şimşek, 2018). Interviews to collect qualitative data in the research were transferred to the computer environment in writing, without any intervention from the voice recorder. The interviews transferred to the paper are grouped within the framework of the themes created. It is classified by giving a code to each administrator interviewed. The stages used for descriptive analysis were followed one by one and the interpretation of the findings was made..

The SPSS software was used to analyze the quantitative data collected in the research. The collected data was transferred to the SPSS and normality tests were carried out. The normality test was used to determine the normal distribution of the data, and it was accepted that the data was distributed normally. One-way ANOVA, t-test, age and descriptive statistics were used in order to determine whether the results obtained from the assessment of the use of ICT according to the principle of equality of conditions in education differ according to the different variables.

## **FINDINGS**

### **Qualitative Findings**

The school administrators were examined on the basis of "equality of conditions" and "equality of opportunity", which are the lower steps of the principle of equality in education, and these two types of equality were analyzed in 3 sub-themes: individual, family, and school. The question of "How do you generally evaluate the use of ICT in education" is directed to school administrators. The vast majority of participants stated that the use of ICT in education is an indispensable requirement and should be used in present conditions. Besides, there are also school administrators who stated that the use of ICT in education was insufficient and that this deficiency was due to not being used in accordance with the purpose of equipment, teacher, and purpose. When school administrators evaluate the use of ICT in education within the scope of equality of conditions, three different findings emerge. While one group of administrators think that equality of conditions is achieved, another group says that there is no equality in the current education system. The other group of administrators, on the other hand, argue that there is a great deal of equality of conditions today, but there are also parts that are missing. The vast majority of school administrators think that not every student benefits from the use of ICT in education equally. Many administrators agree with each other, including those who think that equality of conditions is achieved as well. Factors such as differences in the technological infrastructure of schools, technology used according to school levels, course contents, and laboratory environments are considered as reasons why students cannot benefit equally. School administrators stated that the family plays a very important role in the scope of equality in terms of equality of conditions and that the main factor of ensuring equality in the home rather than the school environment is the family, that the families are always supported to access ICT tools, regardless of their financial conditions, and they also stated that financial conditions only affect the quality of the ICT tool used only for educational

purposes. It is stated that the fact that the families provided ICT tools in the home environment facilitates that the students would be more equipped and ready for the school, in this case, thus easing the burden on instructors in schools. In addition, they think that families who have high level of education will affect the use of ICT tools effectively and in accordance with the purpose of the students. Considering the role of the school in ensuring the equality in the use of ICT in education, it is seen that the infrastructure provided by the state in general is present in every school. School administrators stated that each class has a smart board and internet connection with the FATIH project. He stated that basic ICT tools are used in the educational environment with both state support and school-family support. In addition to these supports, the collaboration of schools with different institutions, projects and the creation of software workshops, robotic code workshops, 3D printers and classes are shown as the biggest advantages of schools. However, the lack of computer laboratories in every school, and the lack of computers and equipment in the schools are considered as an obstacle to the use of ICT tools. They also stated that in some schools, the lack of an IT teacher or a technically helpful staff is a problem for the formation of equality of conditions. Another factor affecting the assessment of equality of conditions is the personal roles of students. School administrators generally evaluate students in our current era as individuals who are willing to use technology and have the ability to use technology. Students' interest in technology is related to ICT tools, making it easier for them to have that tool. Although the school and the family have a direct effect on providing technology, the technology interest and ability of the student to reach ICT tools are seen as a difference in reaching these tools. School administrators stated that the priority should be given to schools as a solution for the problems encountered in ensuring equality of conditions. They assessed that students should be in a position to benefit equally at least in the school environment for ICT tools that he / she cannot access in the home environment for different reasons. Although their families try to provide ICT tools, not all students have the same opportunity. Therefore, it is necessary to provide similar opportunities to each school regardless of the region where the school is located as well as the social environment. It is thought that there should be a system that should not only provide smart boards and infrastructure to schools, but should also use this structure effectively. In addition, regardless of the grade, there is a commonly accepted idea that a computer laboratory, software workshops, computer hardware to meet the needs, information technology instructors, the content of classes in which students can use technology effectively, and the number of lessons should be increased, and a structure in which everyone will have access to the same conditions and levels should be established. They stated that, since ensuring equality of conditions is a structure that requires financially large budgets and is difficult to create, it is necessary to create an educational environment with the support of the state, where there are equal conditions within the school, even if it is not equal at home.

Assessing the impact of equality of opportunity, which is another sub-dimension of the concept of equality, on the use of ICT, school administrators said that ICT tools contribute to students' learning as well as the feeling of increasing success with ICT tools. They stated that the ICT tools used in the educational environment generally attract the interest of students and as a result, reflect positively on their perception of learning. They stated that students with different learning skills can catch up with their learning speed with ICT tools or they can overcome their deficiencies by using ICT tools. While doing these, the levels of readiness and possibilities of having these tools are also taken into consideration. School administrators who think that the equality of conditions should be ensured in order to create equality of opportunity stated that after providing the opportunity to students, students who are interested in technology and have high skills of using technology benefit from ICT tools, and creating a competitive environment in the classroom with ICT tools makes successful students come to the fore. School administrators are also of the opinion that the purpose of using technology is very effective in ensuring equality of opportunity. They stated that in order to affect students' personal success and performance, these tools should be used in accordance with their purpose and in the best way in the educational environment. Stating that ICT tools can be used in a very different way than their purpose, school administrators said that control and supervision should be done by both the school and the family. Especially in vocational high schools, despite the fact that there are more opportunities, the number of individuals who use technology other than its purpose causes concerns about the size of the benefits provided by technology. School administrators stated that the family was directly influential in ensuring equality of opportunity and that the number of families who are guiding while using technology is increasing, especially in regions where the education level is increasing, families are more dominant in using ICT, so they support their children. The fact that there are opportunities in the home

environment and that there are parents who enable students to benefit from technology efficiently affect the academic success of the student. Administrators stated that children who use technology in a controlled and appropriate manner by their families differ from their peers in the educational environment and are more successful in technology-based subjects such as software, coding, and robotics. Stating that the awareness of parents is very important in the formation of equality of opportunity, the administrators argued that the awareness level of the families will increase with a good education that they will receive on ICT, and students who will get the highest level of efficiency from the ICT tools will be raised in the educational environment. The school administrators, who stated that schools play a role in ensuring equality of opportunity through instructor training, said that there were teachers from every age group and this situation caused differentiation of the methods used. Teachers' ability to use technology in different dimensions is shown as the reason for not being able to benefit from equality of opportunity for students. Currently, administrators, who state that technology is a necessity, think that even though there is almost every opportunity in schools, teachers who do not keep up with technology influence student achievement. Again, the insufficiency of the course contents and the number is seen as an obstacle to the students' use of technology. They also stated that schools' visions for student success should be arranged in accordance with our era, and that teachers should be trained to be able to transfer their knowledge in the best way for student success by increasing the education both within the school and within the national education. Stating that there are teachers who are very active in the use of technology in addition to teachers who almost stay away from and never use technology, the administrators think that closing this gap will affect equality of opportunity. School administrators emphasized that parent education should be given to ensure equality of opportunity. The idea that a family trained in the use of ICT will guide the child will be both productive and increase personal success. Raising awareness of parents, and not only providing ICT tools but also showing how to use them effectively is regarded as the first step in ensuring equality of opportunity. The administrators, who thought that the teachers should be educated in the schools after educating parents, said that the teachers should not use the same methods for many years, but instead, they should keep up with the times. They should improve themselves on the use of ICT tools and stated that they should make the most efficient use of these tools in their lessons. Teachers who are experienced in using ICT and have the ability to use technology have stated that this can be achieved through in-service trainings, courses, and seminars. The administrators, who saw students as the last step of achieving equality of opportunity, stated that after providing both conscious parents and equipped teachers, it depends on the personal curiosity and interest in the student to benefit from ICT tools.

Generally, school administrators who think that it will take a long time and cost to achieve equality of conditions, and equality of opportunity, argue that the support from the state is prioritized for equality of conditions, and this will be resolved together with the school environment and families, and the view that equality of opportunity is essential for both teacher and family training prevails. Besides, it should be noted that there are administrators, who perceive the concept of equality of conditions, and equal of opportunity as a single concept and who give similar answers.

### Quantitative Findings

The average scores of teachers' evaluations regarding the use of ICT according to the principle of equality in education are given in Table 3.

**Table 3: Average Score Statistics of the Equality Scale for ICT Use in Education**

Variable	Number of Items	Score Range	n	$\bar{X}$	$\bar{x} / k$	Sd
Equality to ICT Use in Education	19	19-95	411	65.47	3.44	.56

When Table 3 is analyzed, it is seen that in the study carried out with the participation of 411 teachers, the mean scores of the ICT use by instructors in education based on the principle of equality are calculated as ( $\bar{X} / k = 3.44$ ). Considering the scale in general, this finding can be said to reveal teachers' evaluations regarding the medium level of equality in the use of ICT in the educational environment.

In the research, t-test was used for independent groups in order to determine whether there is a

difference in the context of the variable gender according to teachers' evaluations regarding the use of ICT in education based on the principle of equality. The findings obtained according to the analysis results are shown in Table 4.

**Table 4: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality by the Variable Gender**

Variable	Group	n	$\bar{X}$	Sd	Sd	t	p
Equality to ICT Use in Education	Female	249	65.82	11.235	409	.768	.443
	Male	162	64.94	11.673			

The findings in Table 4 show that there is no significant difference in teachers' evaluations regarding the use of ICT in education based on the principle of equality in the context of the gender variable ( $p > .05$ ).

In the research, the results of the one-way analysis of variance (ANOVA) and the average scores of the teachers according to their fields of education are presented in Table 5 and Table 6, in order to determine whether there is a significant difference in the context of the field of education variable according to the teachers' evaluations regarding the use of ICT on the basis of the principle of equality.

**Table 5: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality by the Variable Field of Education**

Variable	Source of the Variance	Sum of Squares	Sd	Mean Squares	F	P	Significant Difference
Equality to ICT Use in Education	Between-group	1730.816	5	346.163	2.71	.020	A-F
	Within-group	51591.666	405	127.387			C-F
	Total	53322.482	410				

(A: Class, B: Science and Mathematics, C: Social, D: Foreign Language, E: Culture Courses, F: Vocational Courses)

**Table 6: The Mean Scores of Teachers Based on Their Fields of Education**

Fields of Education	n	$\bar{X}$	Sd
Primary School	105	63.62	10.64
Science-Math	76	66.60	11.55
Social Science	100	63.60	9.70
Foreign Language	51	63.66	13.03
Culture Lessons	45	67.22	11.63
Vocational Courses	34	70.05	13.50
Total	411	65.47	11.40

When Table 5 is exploring, it is seen that there is a significant difference after the one-way ANOVA test in order to determine whether there is a significant difference in the context of the field of education variable according to teachers' evaluations regarding the use of ICT in education based on the principle of equality ( $p < .05$ ).

After the one-way ANOVA) test, LSD test, one of the Post-hoc multiple comparison tests, was applied to find out which fields of education have the differences. When the LSD test results are examined, it is seen that the category of class is significantly different from the category of Vocational lessons, and the Social Category is significantly different from the category of Vocational lessons. According to the LSD test results, the highest score belongs to the "Vocational lessons" category ( $\bar{X} = 13.50$ ), which is followed by the categories of "Foreign language" ( $\bar{X} = 13.03$ ), "Culture lessons" ( $\bar{X} = 11.63$ ), "Science and Mathematics" ( $\bar{X} = 11.55$ ), "Class" ( $\bar{X} = 10.64$ ) and "Social" ( $\bar{X} = 9.70$ ), respectively.

When looking at Table 6 to examine the areas with differences, it was observed that the average score of the "Vocational lessons" category was the highest ( $\bar{X} = 70.05$ ). It was observed that the average score of the "Class" category is ( $\bar{X} = 63.62$ ), and the average score of the "Social" category is ( $\bar{X} = 63.60$ ), which are significantly different from the average score of the category of vocational lessons. The results show that the teachers who take part in vocational courses have more positive perceptions about equality in the use of ICT in education than teachers and class teachers with the social sciences background. This situation may arise from the fact that vocational lesson teachers working in vocational high schools are easier to access ICT tools and have more opportunities to use in the lesson compared to classroom teachers and social science teachers. In addition, it can be stated that the absence of existing ICT infrastructure in primary schools affects this difference.

The results of the one-way analysis of variance (ANOVA) test conducted in order to determine whether teachers differ in the context of the age variable based on the principle of equality according to their assessment of ICT use in education are shown in Table 7.

**Table 7: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality by the Variable Age**

Variable	Source of the Variance	Sum of Squares	Sd	Mean Squares	F	P	Significant Difference
Equality to ICT Use in Education	Between-group	126 180	3	42.060	.322	.810	-
	Within-group	53196.301	407	130.703			-
	Total	53322.482	410				

When Table 7 is analyzed, it is seen that there is not a significant difference after the one-way analysis of variance (ANOVA) test in order to determine whether there is a significant difference in the context of the age variable according to teachers' evaluations regarding the use of ICT in education based on the principle of equality ( $p > .05$ ).

The results of the one-way analysis of variance (ANOVA) test conducted in order to determine whether teachers differ in the context of the seniority variable based on the principle of equality according to their assessment of ICT use in education are shown in Table 8.

**Table 8: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality by the Variable Seniority**

Variable	Source of the Variance	Sum of Squares	Sd	Mean Squares	F	P	Significant Difference
Equality ICT Use in Education	Between-groups	524.526	5	104.905	.805	.547	-
	Within-group	52797.956	405	130.365			
	Total	53322,482	410				

When Table 8 is analyzed, it is seen that there is not a significant difference after the one-way analysis of variance (ANOVA) test in order to determine whether there is a significant difference in the context of the variable seniority according to teachers' evaluations regarding the use of ICT in education based on the principle of equality ( $p > .05$ ).

The results of the one-way analysis of variance (ANOVA) test conducted in order to determine whether teachers differ in the context of the variable school level/grade based on the principle of equality according to their assessment of ICT use in education are shown in Table 9.

**Table 9: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality by the Variable School Level**

Variable	Source of the Variance	Sum of Squares	Sd	Mean Squares	F	P	Significant Difference
Equality to ICT Use in Education	Between-groups	637.765	2	318.883	2.469	.086	-
	Within-group	52684.717	408	129.129			
	Total	53322.482	410				

When Table 9 is analyzed, it is seen that there is not a significant difference after the one-way analysis of variance (ANOVA) test in order to determine whether there is a significant difference in the context of the variable school level according to teachers' evaluations regarding the use of ICT in education based on the principle of equality ( $p > .05$ ).

In the study, t-test was used for independent groups in order to determine whether teachers differ in terms of the variable status of in-service training based on their assessment of ICT use in education based on the principle of equality. The findings obtained according to the analysis results are shown in Table 10.

**Table 10: Investigation of Teacher Evaluations Regarding the Use of ICT in Education Based on the Principle of Equality According to the Variable of In-Service Training Status**

Variable	Group	n	$\bar{X}$	Sd	Sd	t	p
Equality to ICT Use in Education	Yes	247	65.9352	11.79172	409	.750	.315
	No	164	64.7805	10.79255			

The findings in Table 10 do not show a significant difference in the context of the in-service training variable based on the teachers' evaluations regarding the use of ICT in education based on the principle of equality ( $p > .05$ ).

## DISCUSSION AND CONCLUSION

The evaluations made by school administrators on the basis of equality show that there is no equality in the use of ICT in the educational environment. According to the opinions of the administrators, it is concluded that the schools are different from each other and that each school does not have similar infrastructure and technical features. It is observed the fact that existing structures of the schools are not similar widens the gap between the schools in different regions of education, and the regions with better socio-economical conditions gain more benefits in ICT use with the support of their environment. This situation causes inequalities in the use of ICT in the educational environment. The fact that the opportunities in technology are different between primary, secondary and high school levels are seen as an obstacle to ensuring equality of conditions. While the change in the use of ICT from teacher to teacher in existing lessons in schools, insufficient number of laboratories and lack of classes show that there is no equality in ICT use on the basis of the equality of conditions, Unluer (2010) stated that factors, which prevent the use of ICT for teachers for instructional purposes such as the adaptation of ICT usage skills, new technologies, and teacher training structure, limit the use of ICT in education. In addition, the lack of ICT infrastructure, insufficient hardware, and limited software availability for ICT use are shown as the reasons for inequality. In his study, Erten (2019) determined that the differences between the socio-economic status of families are distinctive in accessing technology. Similarly, according to Tomul (2007), while inequality in education arises from the socio-economic situation of the country in macro dimension, it is stated that it is related with the socio-economic situation of families in micro dimension. However, contrary to the literature, the evaluations made by the school administrators do not appear to be an obstacle in ensuring the equality of the families.

The fact that families provide all kinds of ICT tools regardless of their economic status indicates that equality is achieved in terms of family size. When the evaluations made by school administrators are considered on the basis of equality in terms of use of ICT, it can be seen that they are perceived only as material or abstract opportunities. The fact that school administrators could not fully grasp the concept of equality in terms of using ICT in terms of software support for the use of ICT in schools, appropriate curriculum, differences between teachers' skills in using ICT, material suitable for ICT usage and instructional design, and in this case, it can be considered as an obstacle.

The evaluations made by school administrators on the basis of equality of opportunity are seen as the biggest factor in ensuring equality of families. The efforts of families to achieve equality of conditions are not regarded as ensuring equality of opportunity. On the basis of equality of opportunity, family inequalities may arise from different levels of awareness and technology perspectives of families. The deficiencies in controlling the technology they provide and being a guide can prevent students from using the ICT equally. In addition to families, teachers' perspectives on technology prevent the formation of equal opportunities. The different ICT usage levels in different school types show that teachers have an impact on the use of technology. Similarly, Hakkari, Tuysuz, and Atalar (2016) stated that teachers' software information and frequency of software use positively affect ICT usage, while Kaya and Usluel (2011) stated that professional development and teacher experiences affect ICT usage. This case is supported when considering teacher evaluations. It is concluded that the use of ICT in the student dimension is not suitable for its purpose, and due to the inability to ensure the equality of conditions, it does not create environments where students can reveal their personal achievements. In a report published by the European Commission (2011), the use of ICT in students can also facilitate personalized and individualized learning, and that if ICT is used to support class-specific learning, it may also have a positive impact on attainment. School administrators generally consider equality of opportunity and equality of conditions as the same concepts, which can be regarded the reason for creating inequalities in ICT use. As a result, it is concluded that even though efforts have been made in order to create equality in the use of ICT, according to the opinions of school administrators, this is not sufficient, so there is no equal ICT use in the educational environment.

The total scores of teachers on the equality scale for ICT use in education are at an average level. The average scores obtained from the scale show that teachers' evaluations regarding the use of ICT on the basis of the principle of equality show that the equality in education environment is not fully achieved. The evaluations made by the teachers in the context of the gender variable do not make a significant difference. This supports the school administrators' evaluations. The difference between the genders of teachers does

not affect the assessment of equality for the use of ICT in education. Contrary to the literature, the ages and seniority years of the teachers do not make a significant difference in the evaluation of equality. However, it is concluded that the opinions of school administrators do not affect the equality assessment in ICT usage, similar to the opinions of teachers.

When the evaluations made by teachers according to the variable fields of education are examined, it is seen that there are significant differences. The differences in the fields of education are between the class teachers and the teachers who take part in vocational courses, which shows that this is in line with the opinions of the school administrators. In the evaluations made by school administrators, it can be concluded that vocational high schools have advantages on the basis of equality of conditions and equality of opportunity. On the other hand, limited opportunities in primary schools seem to affect classroom teachers' use of equality in ICT use.

As a result, in the context of the opinions of administrators and teachers, it was revealed that the principle of equality in the use of ICT in education is not fully realized and there are problems in ensuring equality. While the stated problems generally stem from the lack of adequate infrastructure of schools within the scope of equality of conditions, the lack of software and instructional design, the differences between teachers' ability to use technology, and the differences between students' perspectives on technology, the problems on the basis of equality of opportunity stem from the perspectives of families and teachers towards technology and differences in students' interests in technology as well as their skills. In order to minimize problems related to equality, IT teachers must be employed in schools. The number of technology-based courses and the number of hours should be increased, and the necessary knowledge, skills and consciousness should still be instilled in the teacher training process with the CET departments.

### Suggestions

- Having a physically good technology infrastructure in the educational environment will not be sufficient by itself in ensuring equality. In order to ensure equality in terms of technical infrastructure, in addition to physical conditions, a holistic approach in which appropriate software and materials are used for ICT use is required.
- Administrators and teachers should not only keep the use of ICT in the school environment, but also be able to produce content simultaneously or asynchronously in different conditions and environments, and have the ability to use ICT for their intended purpose.
- Studies should be carried out to cover the lack of knowledge and skills of teachers regarding the use of ICT, and every teacher should be aware of the current developments in technology.
- The lack or absence of the number of technical teams experienced in the use of ICT in schools causes inequality. Qualified individuals from whom teachers can receive technical support must be present in schools.
- Parents should be made aware of the use of ICT, and they should be able to support technology when necessary, not only by providing the technology, but also providing opportunities for their children to use technology.
- It should be known by both school administrators and teachers that equality of conditions and equality of opportunity are different from each other, and the perception of using ICT only in this direction should be eliminated.

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