

# Using Information and Communication Technologies in Education: Exploring the Views of Classroom Teachers (A Mixed-Method Research)

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## Abstract

This study examined the views of classroom teachers on the effects of using information and communication technologies in primary school education on students. An exploratory sequential design of mixed-method research designs, in which the qualitative and quantitative data are used together, was employed. There were two research groups in the study. The focus group study participants consisted of six classroom teachers with at least ten years of teaching experience, who actively used technology. However, the study group that responded to the questionnaire items consisted of 60 classroom teachers. The research was carried out in a public school in Mersin at the beginning of 2020. An open-ended focus group interview question form and teacher opinion questionnaire on information and communication technologies were used in the study. All interviews in the focus group interview were recorded digitally and analyzed by two experts. The findings were presented in tables based on sentences. The findings obtained from the questionnaire were analyzed and presented as percentages and frequencies in tables. Further, the findings obtained from the focus group interviews and the questionnaire were analyzed and interpreted by blending them together. According to the resultant findings, information and communication technologies are educative and entertaining for students. In addition, dissocializing students and causing addiction in some cases are their negative aspects. Teachers believe that the use of information and communication technologies is inevitable and important in today's education.

**Keywords:** Education, Primary school, Classroom teachers, Information and communication technologies



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## INTRODUCTION

The place of technology is gaining more significance in society and becoming increasingly indispensable, especially in the 21st Century. Various studies show that using Information and Communication Technologies (ICT) in education has positive effects on many variables from academic achievement to attitude and emphasize that integrating information and communication technologies with teaching-learning processes is necessary and important (Allegra, Chifari & Ottaviano, 2001; Loveless, 2003; Çoklar, 2015; Kerr, 1996; Whitton, 2007). The concept of information and communication technologies comprise a set of technologies in which information is dominant and this information is transmitted through increasingly dense networks (Erdoğan & Bilir 2002: 50). Usluel, Mumcu, and Demiraslan (2007) emphasize that ICT should not be used as a goal in education and learning environments, but as a tool for achieving the learning goals. Herein, teachers should make a regular use of ICT in classroom activities depending on their specific subject areas.

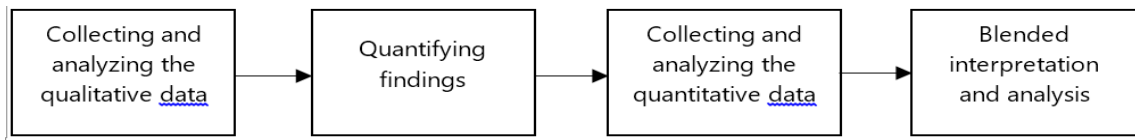
The use of information and communication technologies in education has long been indispensable for educators because of providing positive outcomes. Today, new applications based on educational technologies such as augmented reality applications, coding activities, robotic works, and STEM activities, and also the development of mobile learning tools have made the utilization of information and communication technologies more prevalent and important in education. Studies in the literature emphasize that using ICT improves students' creativity (Allegra, Chifari & Ottaviano, 2001; Sayan, 2010; Jang, 2009; Loveless, 2003), innovativeness (Kılıçer, 2016; Safa & Arabacıoğlu, 2021), critical thinking (Lazakidou & Retails, 2010; McMahon, 2009), self-efficacy (Çoklar, 2015; Güneş & Buluç, 2017; Kocaoğlu & Akgün, 2015), problem-solving and research skills (Battista, 2001; Ersoy & Türkan, 2009; Mertoglu & Öztuna, 2004).

On the other hand, research shows that children's high exposure to technology causes technology addiction and they experience many negative effects of technology (Aksaçlıoğlu & Yılmaz, 2007; Çekbaş et al., 2003; Güllüpinar et al., 2013). Adjusting the type, duration, number, suitability, and dose of technology utilized in teaching-learning processes in schools is of great importance. Classroom teachers have the opportunity to directly observe the positive and negative effects of technology-based education students receive. At this point, obtaining the views of classroom teachers when organizing technology-based education in primary schools is considered important in terms of arrangements that could be made. In the literature, no study has been found that examines the effects of ICT applications on students at primary school level with a mixed method design. Therefore, this study is considered important in terms of contributing to the literature.

This study aims to explore the views of classroom teachers on the effects of information and communication technologies on students. For this purpose, the views of classroom teachers on the positive and negative effects of technology on students and their suggestions for what can be done are determined, using an exploratory sequential design, one of the mixed-research designs. Hence, the research question of the study is "What are the views of classroom teachers on the effects of using information and communication technologies in education on students?"

## METHOD

This study was structured according to an exploratory sequential design model of mixed-methods studies. Creswell and Clark (2017) classified the mixed-methods studies as explanatory, exploratory, triangulation, and embedded designs. An exploratory sequential design was preferred in this research, as it suited the structure of the study. The purpose of exploratory sequential design studies is to quantitatively assess the findings obtained using a qualitative research design (Creswell & Creswell, 2017). Figure 1 below presents the procedure for exploratory sequential design.



**Figure 1.** Procedure in exploratory sequential design

Although more teachers are reached out using the quantitative dimension in mixed-methods studies, a more in-depth examination of the research topic is facilitated using their qualitative dimension (Greene, Krayder, & Mayer, 2005). In this study, the qualitative findings obtained from the views of six teachers were supported and analyzed by blending them with the findings obtained from 60 teachers who responded to the questionnaire created using the views of teachers. The findings of the research were collected and analyzed in January and February 2020.

### **Data Collection Tool**

There are two data collection tools in the study. The first data collection tool is the focus group interview question form. The questions in the data collection tool were prepared as described above and given that the interview was unstructured, different questions were also asked during the interview. The data were collected through the questions asked within the scope of an unstructured interview according to the course of the interview. For the content validity of the previously prepared questions, expert opinions were obtained from two faculty members working in Mersin education faculty, and the questions were developed within this scope. The data collection tool included the following main questions.

1. What are the positive effects of ICT applications on students?
2. What are the negative effects of ICT applications on students?
3. What are your suggestions on what should be paid attention to in ICT utilization in education?

The second data collection tool of the study is the teacher opinion questionnaire on using information and communication technologies as educational tools, which was developed based on the qualitative findings obtained from the focus group interview. This questionnaire included 28 statements to determine the views of teachers about using information and communication technologies in education.

### **Study Group**

In effective focus group interviews, the group should consist of 6-8 people (Krueger, 2002). In this research, the study group consisted of six people. When determining the focus group interview participants, the criteria of having at least 10 years of teaching experience, being a volunteer, and actively using information and communication technologies in educational environments were sought. Computer, tablet, interactive board, etc. the use of Web2 tools or the ability to use augmented reality and virtual reality applications have been accepted as some of these criteria. The second study group consisted of 60 classroom teachers from a public school who responded to the teacher opinion questionnaire on using information and communication technologies as educational tools.

### **Data Analysis**

According to Creswell (1998), the analysis results in focus group interviews should be presented using words and sentences. According to Grudens-Schuck, Allen, and Larson (2004), presenting the analysis results in the form of percentages, in other words numerically, in focus-group interviews is not a preferred method. Accordingly, the findings in this study were presented based on words and sentences after the content analysis of the data. Another data collection tool of the research, the teacher opinion questionnaire on using information and communication technologies as educational tools, was prepared considering the opinions obtained from the focus group interview by classifying them according to the similarities of the statements. Five teachers evaluated the questionnaire items, and the items with a content validity value of less than 0.99 were excluded from the questionnaire. Then, two independent experts examined the questionnaire in terms of construct and language validity, and the final questionnaire form was prepared. The findings obtained from the questionnaire were presented as percentages and frequencies in tables.

### Validity and Reliability

In order to ensure the validity of the study, preliminary interviews were conducted with teachers before the interview questions were formed. Two independent experts examined the focus group interview questions and the questionnaire took its final form. Teachers' opinions were provided without quantification and grouped per their similarities in the form of teacher statements. For the coder validity, the Miles-Huberman coder reliability formula was used (Miles-Huberman, 1994). According to the coding control, which yields internal consistency, the consensus between coders is expected to be at least 80% (Patton, 2002). As a result of applying the coder reliability formula, the consistency between the two coders was found to be 0.90 (90%) in this study. This value shows that the coding is carried out reliably. The Lawshe technique (1975) was used to calculate the content validity ratios of the teacher opinion questionnaire on using information and communication technologies as educational tools. In this technique, the content validity ratios are obtained by collecting the views of experts on every item. In order to ensure the content validity of the questionnaire, five teachers evaluated the questionnaire items. Given that there were five experts in our study, the minimum value for content validity was considered 0.99 as suggested by Lawshe (1975), and items with content validity below this value were excluded from the questionnaire.

### Research Authorization

All participants in the study were informed. An official and approved permission document was obtained from the institution where the research was conducted.

## FINDINGS

### 1. Findings Obtained from The Focus Group Interview

Table 1 below presents the views of teachers on the positive effects of using ICT Applications in education.

**Table 1.** Views regarding the positive effects of ICT applications on students

Views	Teachers					
	T1	T2	T3	T4	T5	T6
Have more fun.	X	X		X	X	X
Get motivated towards the lesson more easily.		X		X	X	X
Learn faster by seeing, hearing, and 3D applications.	X		X	X	X	
Access information faster and easier.	X	X			X	X
Become more successful in establishing a cause and effect relationship.		X	X	X		X
Can develop their own strategies and techniques.		X	X		X	
Become media-literate.	X		X	X		
Improve creativity.		X	X		X	
Their research and investigation skills improve		X	X	X		
Their decision-making and problem-solving skills improve.			X			X
The opportunity for individual learning and repetition increases.		X		X		
Increase their participation in the lesson.				X		X
Facilitate deep learning.	X	X				
Reach everywhere and relevant people more easily regarding a subject.		X		X		
Improve cooperative-group learning skills.			X			
Facilitate socialization.	X					

According to the findings in Table 1 above, teachers who participated in the focus group interview mostly stated that information and communication technologies enable students to learn while having fun, get motivated to the lesson more easily, learn faster with 3D applications, access information faster and easier, and become more successful in establishing a cause and effect relationship. Some sentences including the views of teachers are given below.

"Enables knowledge retention by visualizing what is taught in the classroom environment."

"Students access information researching on their own, and thereby increase their self-confidence."

"They can make individual comments on the subject they are researching."

"They share the subject (information) they are researching with others."  
"Using information and communication technologies in education saves time and energy."  
"Using information and communication technologies in education provides quick access to information."  
"Information and communication technologies enable learning retention due to its visual features."  
"Information and communication technologies enable effective learning, for they appeal to more sense organs in education."  
"Using information and communication technologies in education increases motivation and participation."  
"With the use of information and communication technologies in education, information is internalized through games."  
"They enable keeping up with the current age, offering an opportunity to follow and compare what other nations do."  
"By accessing different applications in a short time, they enable comparing and accessing new ideas."

Table 2 below presents the views of teacher on the negative effects of using ICT Applications in education.

**Table 2.** Views regarding the negative effects of ICT applications on students

Views	Teachers					
	T1	T2	T3	T4	T5	T6
Dissocialize students.	X	X		X		X
Computers and technologies connected to the internet can be addictive.	X	X	X			
Make them lazy and inactive.		X		X		X
Can isolate them by making it difficult for them to establish friendships.		X		X	X	
Decrease sharing and individualize students.	X	X				
Can hinder the development of social skills.		X	X			
Make it difficult to concentrate on learning.		X	X			
Difficult to control.	X	X				
Unwanted or inappropriate content and information may be encountered when using technology that include internet.		X	X			
Their long-term use adversely affects students' health (eyes, skeleton, circulation system, etc.).	X				X	
Their long-term use may cause behavioral and expression disorders.		X				
Keep them away from reading books.			X			

According to the findings in Table 2 above, teachers who participated in the focus group interview stated that using information and communication technologies may have negative effects such as making students asocial, addicted, lazy, and inactive. Some sentences including the views of teachers are given below.

"Their excessive use causes health problems."  
"Cause laziness and passivity."  
"Real and concrete sharing turn into virtual sharing."  
"Can cause expression disorder."  
"Individualize students."

Teachers who participated in the focus group interview had some suggestions regarding the utilization of ICT in education. These suggestions are as follows: "Using technology in today's educational environments is essential, and this is of great importance in today's education for attracting the attention of the z-generation, motivating students, and making the lesson more attractive and enjoyable.", "When using technologies containing new digital applications in education, particular attention should be paid to their age-appropriateness, duration, and type of content, and so forth.", and "In addition to the technology-based education, organizing activities that develop psychomotor and social skills should not be ignored."

## 2. Findings Relating to the Views of Teachers Obtained from the Questionnaire

A questionnaire consisting of 28 items prepared to determine the views of teachers on using information and communication technologies as educational tools were completed by 60 classroom teachers. The views of teachers were analyzed and the findings were presented as frequencies and percentages in Table 3 below.

**Table 3.** Views of teachers regarding the effects of using ICT in education

Items	Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
	f	%	f	%	f	%	f	%	f	%
<i>It is entertaining for students.</i>	45	75	10	16.66	3	5	2	3.33	0	0
<i>Motivates students to the lesson.</i>	43	71.66	12	20	2	3.33	3	5	0	0
<i>Enables faster learning by seeing, hearing, and 3D applications.</i>	36	60	18	30	2	3.33	2	3.33	2	3.33
<i>Students access information faster and easier.</i>	48	80	6	10	2	3.33	4	6.66	0	0
<i>Enables students to establish a cause and effect relationship.</i>	24	40	13	21.66	19	31.66	3	5	1	1.66
<i>They can develop unique strategies and techniques through ICT.</i>	25	41.66	15	25	10	16.66	7	11.66	3	5
<i>Enables them to become media-literate.</i>	32	53.33	17	28.33	6	10	3	5	2	3.33
<i>Improves creativity.</i>	18	30	14	23.33	10	16.66	12	20	6	10
<i>Improves research and investigation skills.</i>	35	58.33	14	23.33	6	10	2	3.33	3	5
<i>Improves decision-making and problem-solving skills.</i>	20	33.33	16	26.66	19	31.66	3	5	2	3.33
<i>Increases the opportunity for individual learning and repetition.</i>	15	25	16	26.66	17	28.33	10	16.66	2	3.33
<i>Increases participation in the lesson.</i>	21	35	17	28.33	17	28.33	4	6.66	1	1.66
<i>Enables deep learning.</i>	13	21.66	15	25	21	35	9	15	2	3.33
<i>Facilitates reaching everywhere and relevant people about a subject.</i>	35	58.33	15	25	14	23.33	3	5	3	5
<i>Improves cooperative-group learning skills.</i>	12	20	15	25	11	18.33	15	25	7	11.66
<i>Socializes them.</i>	4	6.66	4	6.66	12	20	21	35	19	31.66
<i>Difficult to control.</i>	35	58.33	15	25	5	8.33	4	6.66	1	1.66
<i>Technologies connected to the computer and internet can be addictive.</i>	42	70	13	21.66	2	3.33	3	5	0	0
<i>Makes them lazy and inactive.</i>	37	61.66	14	23.33	6	10	2	3.33	1	1.66
<i>Can isolate them by making it difficult for them to establish friendships.</i>	41	68.33	12	20	3	5	2	3.33	2	3.33
<i>Decreases sharing and individualizes students.</i>	39	65	12	20	4	6.66	4	6.66	1	1.66
<i>Can prevent the development of social skills.</i>	36	60	14	23.33	7	11.66	2	3.33	1	1.66
<i>Makes it difficult to concentrate on learning.</i>	24	40	18	30	14	23.33	3	5	1	1.66
<i>Dissocializes students.</i>	36	60	14	23.33	4	6.66	2	3.33	4	6.66
<i>Unwanted or inappropriate content and information can be encountered when using a technology containing internet.</i>	45	75	8	13.33	2	3.33	3	5	2	3.33
<i>Its long-term use negatively affects students' health (eyes, skeleton, circulation system, etc.).</i>	50	83.33	4	6.66	1	1.66	4	6.66	1	1.66
<i>Its long-term use may cause behavioral and expression disorders in students.</i>	46	76.66	11	18.33	2	3.33	0	0	1	1.66
<i>Keeps students away from reading books.</i>	39	65	12	20	7	11.66	1	1.66	1	1.66

According to the findings given in Table 3, teachers demonstrated the highest level of agreement with the statements "students access information faster and easier" and "it is entertaining for students" relating to the positive effects of using ICT in education. However, teachers agreed the most with the statements "its long-term use negatively affects students' health" and "its long-term use may cause behavioral and expression disorders in students" relating to the negative effects of using ICT.

## DISCUSSION, CONCLUSION AND RECOMMENDATIONS

According to the findings obtained as a result of the research, the use of information and communication technologies in education is inevitable today. The use of information and communication technologies in education makes today's students more motivated. Students prefer ICT applications more than other traditional methods. ICT and digital technologies provide great importance and convenience in terms of usefulness in terms of time and space. Today, we are going through the pandemic process, and distance education applications and therefore digital technologies have started to be used more and more. Distance education applications have led to an increase in the digital skills of both our teachers and students. In the [OECD \(2020\)](#) report, it is emphasized that students' technology skills have increased

during the pandemic process. On the other hand, it is observed that students' digital addiction increases. While the pandemic is developing digital competencies in one aspect, it has also been a process that increases digital addiction. At this point, the importance of adjusting the level and amount in the use of ICT has emerged.

In this study, the effects of ICT use in education on students were examined from a multidimensional perspective. In the literature, there are many studies on the use of ICT in education (Adam & Metljak, 2022; Guillén-Gámez & Mayorga-Fernández, 2020; Rana, Greenwood & Henderson, 2022; Putri, et al., 2020; Spiteri & Chang Rundgren, 2020; Zubković, Pahljina-Reinić & Kolić-Vehovec, 2022). On the other hand, no study has been found that examines the effects of ICT use in education on primary school students with a mixed method design. The results obtained in this study are considered important in this respect.

Open-ended questions were directed to the focus group study group in the study, and the interview was structured using different questions. The views of classroom teachers on using information and communication technologies in education, obtained during the focus group interview, were evaluated in three sections, positive effects, negative effects, and opinions. Being entertaining, motivating students to the lesson more easily, enabling faster learning through seeing, hearing, and 3D applications, providing faster and easier access to information, and increasing student success in establishing cause and effect relationships were considered as the positive effects of using information and communication technologies. Likewise, according to the results of the teacher opinion questionnaire on using information and communication technologies in education, teachers demonstrated the highest agreement with the statements "it is entertaining for students", "motivates students to the lesson", and "students access information faster and easier." When the qualitative and quantitative findings are combined and interpreted together, it is seen that teachers believe that using information and communication technologies in education has the most important positive effects on entertaining and motivating aspects. Similar to the results obtained in this study, many studies in the literature concluded that teachers have positive views toward using ICT in education (Becker, 2001; Carnoy, 2004; Eng, 2005; Fernández-Gutiérrez, Gimenez & Calero, 2020; Gök, Turan & Oyman, 2011; Gömleksiz & Pullu, 2017; Istiningsih, 2022; Livingstone, 2012; Milliken & Barnes, 2002; Olaore, 2014; Voogt et al., 2013).

According to the findings that are also supported by the literature, using information and communication technologies in education positively affects variables such as motivation (Jasna & Natalija, 2022; Xiao & Sun, 2022), academic achievement (Ben Youssef, Dahmani & Ragni, 2022; Yildirim & Usluel, 2022; Xiao & Sun, 2022) and fast learning (Jadhav, Gaikwad & Patil, 2022; Shah, 2022). As highlighted in the views of teachers, its positive effects on some variables could be because today's students, whom we describe as a digital generation, have more fun with digital technologies and are more creative in this field.

According to the views of classroom teachers, the negative effects of using information and communication technologies in education comprise dissocializing students, the probability of computer and internet-connected technologies causing addiction, making students lazy and inactive, and making it difficult for them to establish friendships. As such, according to the results from the teacher opinion questionnaire on using information and communication technologies in education, the statements "technologies connected to the computer and internet can be addictive", "its long-term use negatively affects students' health (eyes, skeleton, circulation system, etc.)", and "can isolate them making it difficult for them to establish friendships" were the statements that teachers agreed the most. When the qualitative and quantitative findings are combined and interpreted together, it is seen that teachers believe that causing addiction and having a negative effect on mental and physical health are the most important negative effects of using information and communication technologies in education. Teachers are of the opinion that only ICT-based education practices throughout the theme or subject will have negative effects. For this reason, they do not recommend long-term use, for example, throughout the theme. ICT applications should be enriched with activities such as experimentation, observation, drama, role playing, and STEM that students can interact with. ICT applications should be used to support educational environments.

In parallel with these findings, some studies in the literature have found that using ICT in education has negative effects (Akbiyık & Kestel, 2016; Aksoy, 2003; Güllüpinar et al., 2013; Korkmaz, 2016; Türel & Gür, 2019; Türkyılmaz, 2012).

The negative effects of using information and communication technologies in education may be because student interest is directed to different aspects of technology, and students are exposed to different unpredictable factors when using technology. According to the findings, besides having positive effects such as increasing motivation, enabling fast learning by diversifying teaching, providing easy access to information and attracting student attention, the use of ICT in education also has adverse effects such as causing addiction, dissocializing students, isolating them, and negatively affecting their health. Yet, the use of technology has become inevitable in education. The level and amount of technology used in educational settings should be adjusted in such a way that suits student level and age. The technology-based education alone is not enough.

### **Recommendations**

- ICT in education should be organized as a supporter of methods and techniques that provide student interaction.
- When using ICT in education, care should be taken to ensure that the applications and activities are appropriate for the age and readiness of the student
- All these positive and negative effects should be paid attention to when using ICT in education.
- Arrangements should be made to minimize the negative effects of using ICT in education.
- ICT in education should be a tool, not a goal.
- When using ICT in education, educators should pay attention to the continuity of students' social interactions.

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## Eğitimde Bilgi İletişim Teknolojilerinin Kullanımı: Sınıf Öğretmenlerinin Görüşlerinin İncelenmesi (Bir Karma Yöntem Araştırması)

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### Özet

Bu çalışmada ilkokullarda eğitimde bilgi iletişim teknolojilerinin kullanımının öğrenciler üzerindeki etkilerine yönelik sınıf öğretmenlerinin görüşleri incelenmiştir. Görüşlerin belirlenmesinde nitel ve nicel desenin bir arada kullanıldığı karma yöntem araştırma desenlerinden keşfedici sıralı desen kullanılmıştır. Çalışmada iki araştırma grubu bulunmaktadır. Odak grup araştırma grubunu alanında en az on yıl öğretmenlik deneyimi bulunan ve teknolojiyi etkin olarak kullanan 6 sınıf öğretmeni oluşturmaktadır. Anket maddelerini cevaplayan öğretmenlerin oluşturduğu araştırma grubunu ise 60 sınıf öğretmeni oluşturmaktadır. Araştırma, 2020 yılının başında Mersin'de bir devlet okulunda gerçekleştirilmiştir. Çalışmada veri toplama araçları olarak odak grup görüşmesi açık uçlu soru formu ve bilgi iletişim teknolojilerine yönelik öğretmen görüş anketi kullanılmıştır. Odak grup görüşmesinde tüm görüşme dijital yolla kayıt altına alınmış ve iki uzman tarafından analiz edilmiştir. Bulgular cümle temelli olarak tabloda verilmiştir. Anketten elde edilen bulgular ise analiz edilerek yüzde ve frekans olarak tabloda verilmiştir. Odak grup görüşmesinden ve anketten elde edilen bulgular harmanlanarak analiz edilmiş ve yorumlanmıştır. Elde edilen bulgulara göre eğitimde bilgi iletişim teknolojileri öğrenciler için eğitici ve eğlencelidir. Bunun yanında öğrencileri sosyallikten uzaklaştırması ve bazı durumlarda bağımlılık oluşturması olumsuz yönleridir. Öğretmenler günümüzde eğitimde bilgi iletişim teknolojilerini kullanmanın kaçınılmaz ve önemli olduğu görüşündedir.

**Anahtar Sözcükler:** Eğitim, İlkokul, Sınıf öğretmenleri, Bilgi iletişim teknolojileri



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## Genişletilmiş Özet

**Problem:** Özellikle 21. yüzyılda teknolojinin toplumdaki yeri gün geçtikçe daha çok ağırlık kazanmakta ve giderek vazgeçilmez bir hale gelmektedir. Eğitimde Bilgi ve İletişim Teknolojileri (BİT) kullanımının akademik başarıdan, tutuma pek çok değişken üzerinde olumlu etkilerinin olduğu çeşitli çalışmalarda görülmüş, bilgi iletişim teknolojilerinin öğrenme ve öğretme süreçleri ile bütünleştirilmesinin gerekli ve önemli olduğu vurgulanmıştır (Allegra, Chifari & Ottaviano, 2001; Loveless, 2003; Çoklar, 2015; Kerr, 1996; Whitton, 2007). Bilgi iletişim teknolojileri kavramı, bilginin başat olduğu ve bu bilginin gittikçe yoğunluk kazanan şebekeler vasıtasıyla iletildiği teknolojiler bütünüdür (Erdoğan ve Bilir 2002: 50). Usluel, Mumcu ve Demiraslan (2007) eğitimde ve öğrenme ortamlarında BİT'in bir amaç değil öğrenme hedeflerinin kazandırılmasında bir araç olarak kullanılması gerektiğini vurgulamışlardır. Bu noktada öğretmenlerin sınıf etkinliklerinde özel konu alanlarına bağlı olarak BİT'i düzenli olarak kullanmaları gerektiği belirtilmektedir. Eğitimde bilgi ve iletişim teknolojilerinin kullanımı, sağladığı olumlu çıktılar nedeniyle eskiden beri eğitimcilerin vazgeçilmezi olmuştur. Günümüzde, artırılmış gerçeklik uygulamaları, kodlama etkinlikleri, robotik çalışmalar ve STEM etkinlikleri gibi eğitim teknolojilerine dayanan yeni uygulamalar ve bunun yanında mobil öğrenme araçlarının gelişimi eğitimde bilgi iletişim teknolojilerinin kullanımını daha da yaygın ve önemli hale getirmiştir.

Bu araştırmanın amacı eğitimde bilgi iletişim teknolojilerinin kullanımının öğrenciler üzerindeki etkilerine yönelik sınıf öğretmenlerinin görüşlerini incelemektir. Bu amaçla çalışmada sınıf öğretmenlerinin, teknolojinin öğrenciler üzerindeki olumlu-olumsuz etkilerine yönelik görüşleri ve yapılabilecekler için önerileri karma araştırma desenlerinden keşfedici sıralı desen kullanılarak belirlenmiştir. Bu doğrultuda araştırmanın problem cümlesi, "Eğitimde bilgi iletişim teknolojileri kullanımının öğrenciler üzerindeki etkilerine yönelik sınıf öğretmenlerinin görüşleri nelerdir?" şeklinde oluşturulmuştur.

**Yöntem:** Bu araştırma, karma yöntem araştırmalarından keşfedici sıralı desen modeline göre yapılandırılmıştır. Creswell ve Clark (2017) ise karma yöntem çalışmalarını açıklayıcı desen (explanatory design), keşfedici desen (exploratory design), çeşitleme-üçgenleme desen (triangulation design) ve iç içe geçmiş desen (embedded design) olarak sınıflandırmışlardır. Bu çalışmada çalışmanın yapısına uygun olduğu için keşfedici sıralı desen kullanılması tercih edilmiştir. Keşfedici sıralı desen araştırmalarında amaç, nitel desenle ulaşılan bulguların nicel olarak sınanmasıdır (Creswell & Creswell, 2017).

Araştırmada 2 adet veri toplama aracı bulunmaktadır. İlk veri toplama aracı, odak grup görüşmesi soru formudur. Araştırmanın ikinci veri toplama aracı ise odak grup görüşmesinden elde edilen nitel bulgulardan geliştirilen bilgi iletişim teknolojilerinin eğitim aracı olarak kullanımına yönelik öğretmen görüş anketidir.

Bu çalışmada ilk çalışma grubu 6 kişiden oluşmaktadır. Araştırmanın ikinci çalışma grubu ise bir devlet okulunda etkin olarak öğretmenlik görevi yürüten ve bilgi iletişim teknolojilerinin eğitim aracı olarak kullanımına yönelik öğretmen görüş anketini cevaplayan 60 sınıf öğretmeni oluşturmaktadır.

Bu çalışmada verilerin içerik analizleri sonucunda bulgular kelime ve cümle temelli sunulmuştur. Araştırmanın diğer bir veri toplama aracı olan bilgi iletişim teknolojilerinin eğitim aracı olarak kullanımına yönelik öğretmen görüş anketi ise odak grup görüşmesinden elde edilen görüşlere göre ifadelerin benzerliklerine göre sınıflandırılarak hazırlanmıştır. Anket maddelerini 5 öğretmen değerlendirmiş ve kapsam geçerlilik değeri 0.99 altındaki maddeler anket formundan çıkarılmıştır. Ardından bağımsız iki uzman anketi yapı ve dil geçerliliği açısından incelemiş ve ankete son hali verilmiştir. Anketten elde edilen bulgular yüzde ve frekans olarak tabloda verilmiştir.

**Bulgular:** Öğretmenler çoğunlukla bilgi iletişim teknolojilerinin öğrencilerin eğlenerek öğrenmesini sağladığını, bu yolla derse daha kolay motive olduklarını, 3 boyutlu uygulamalarla daha hızlı öğrendiklerini, bilgiye daha hızlı ve kolay ulaştıklarını ve sebep-sonuç ilişkisi kurmada daha başarılı olduklarını belirtmişlerdir. Öğretmen görüşlerini içeren bazı cümleler aşağıda verilmiştir.

*"Sınıf ortamında öğretilenleri görselleştirerek bilginin kalıcı olmasını sağlar"*

*"Öğrenciler kendileri araştırıp bilgiye ulaşıyor ve böylece kendilerine güvenleri artıyor"*

*"Araştırdığı konunun üzerinde bireysel yorumlar yapabilir."*

*"Araştırdıkları konuyu (bilgileri) başkalarıyla paylaşır."*

Öğretmenler, bilgi iletişim teknolojileri kullanımının öğrencileri asosyalleştirme, bağımlılık yapabilme, öğrencileri tembelleştirme ve hareketsizleştirme gibi olumsuz etkileri olabileceğini belirtmişlerdir. Öğretmen görüşlerini içeren bazı cümleler aşağıda verilmiştir.

"Aşırı kullanımı sağlık sorunlarına neden oluyor."  
"Tembellik ve hareketsizliğe neden oluyor."  
"Gerçek, somut paylaşımlar sanal paylaşımlara dönüşüyor."  
"İfade bozukluklarına neden olabiliyor."  
"Öğrencileri bireyselleştiriyor."

Öğretmenlerin eğitimde BİT kullanımının olumlu etkileri olarak en yüksek katılımı, "Öğrenciler bilgiye daha hızlı ve kolay ulaşır." ve "Öğrenciler için eğlencelidir." ifadelerine gösterdiği görülmektedir. "Uzun süreli kullanımı öğrencinin sağlığını olumsuz etkiler." ve "Uzun süreli kullanımı öğrencilerde davranış ve ifade bozukluklarına neden olabilir." ifadeleri ise öğretmenlerin BİT kullanımının olumsuz etkileri olarak en çok katılım gösterdiği ifadeler olmuştur.

**Sonuç ve Öneriler:** Nitel ve nicel bulgular birleştirilip yorumlandığında görülmektedir ki öğretmenler, eğitimde bilgi iletişim teknolojileri kullanımının bağımlılık oluşturma, ruh ve beden sağlığını olumsuz etkileme yönünün en önemli olumsuz etkileri olduğu görüşündedirler. Öğretmenler tema veya konu boyunca sadece BİT'e dayalı eğitim uygulamalarının olumsuz etkileri olacağı görüşündedir. Bu nedenle örneğin tema boyunca uzun süreli kullanımı önermemektedirler. BİT içerikli uygulamalar deney, gözlem, drama, rol yapma gibi öğrencilerin karşılıklı etkileşimde bulabileceği etkinliklerle zenginleştirilmelidir. BİT uygulamaları eğitim ortamlarını destekleyici nitelikte kullanılmalıdır. O Eğitimde BİT kullanımı sırasında bütün bu olumlu ve olumsuz etkilere dikkat edilmelidir. O Eğitimde BİT kullanımında olumsuz etkileri en aza indirecek düzenlemeler yapılmalıdır. O Eğitimde BİT amaç değil araç olmalıdır. O Eğitimde BİT kullanırken eğitimciler öğrencilerin sosyal etkileşimlerinin sürekliliğine dikkat etmelidir. O Eğitimde BİT öğrenci etkileşimini sağlayan yöntem ve tekniklerin destekleyicisi olarak düzenlenmelidir. O Eğitimde BİT kullanırken uygulama ve etkinliklerin öğrenci yaş ve hazır bulunuşluğuna uygun olmasına dikkat edilmelidir.