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Science Teacher Candidates' Views on Digital Game Addiction

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Abstract

This research was carried out to determine the opinions of science teacher candidates about digital game addiction. For this reason, the phenomenology method which one of the qualitative research methods, was used. The sample of this study consists of 5 science teacher candidates studying at different universities in the 2022-2023 academic year. Criterion sampling method was used when determining the participants. A semi-structured interview form develop by the researcher was used as a data collection tool in the study. The data obtained from the interview form was analyzed using the content analysis method. Through the interviews, it was concluded that the participants saw digital game addiction as constantly playing games, escaping from daily life and moving to the next level. In addition, it has been determined that individuals with digital game addiction display angry and antisocial characteristics. For this reason, it has been suggested to develop games that will make individuals less angry and socialize, and to conduct studies on the effectiveness of these games.

Introduction

It is an undeniable fact that the development of technology day by day provides many conveniences to human life and shapes many basic areas of human life, from education to health, from communication to entertainment. Technology has many positive effects on education, which is one of these areas, such as early literacy, development of students' skills such as reading, writing-speaking, and the opportunity to discover new information (Mustafaoğlu et al., 2018). Technological developments in the field of entertainment have an impact on positive situations such as individuals having a good time and relieving stress (Kalkan, 2021). This situation has generally had an impact on games, which are one of the areas of entertainment shaped by technology (Hazar and Hazar, 2017).

According to TDK (2022), games are "entertainment that develops talent and intelligence, has certain rules, and helps you have a good time." or "Any competitions based on agility, held for the purpose of improving physical and mental abilities". Even though play is an important part of daily life, it is one of the meaningful learning processes that forms the basis of the development of the child's physical, sensory, cognitive, social and language skills (Yılmaz and Erduran, 2016). In short, the game can be expressed as a tool that contributes to the development of the individual's skills and having fun. The meanings attributed to games have varied throughout

history. Although games were initially seen as imitative behavior, over time they included different areas of life such as war and adventure (Hazar et al., 2017a). In addition, each game contains its own unique rules and combinations (Samur, 2016). Although the game rules differ from each other, games with similar game rules and serving similar purposes are grouped under certain headings to make up game types (Aytaş and Uysal, 2017). There are many types of games such as educational games, object games, dramatic games and digital games (Aytaş and Uysal, 2017).

An important activity for children, has changed as a result of developments in technology and children's playing styles have changed day by day (Güllü et al., 2012). As technological developments progress day by day, traditional games (hide and seek, rope jumping, football, etc.) have been replaced by digital games (computer games) owing to urbanization and inadequate playgrounds (Yalçın Irmak and Erdoğan, 2016). One of the innovations brought by the computer field, which attracts the attention of individuals of all ages, especially to the lives of children, is the concept of "digital game" (Erboy and Akar Vural, 2010).

Frasca (2001), a digital game is a leisure time activity software in which the individual has fun using a screen or similar output units, thanks to the interaction established by the individual with an electronic device. Deterding et al. (2011) defined the concept of digital games as software that enables individuals to compete or compete with others while performing predetermined tasks using technological tools in the digital environment. To define digital game in the most general sense, it is stated as the use of technology for the purpose of playing games (Işıkoğlu Erdoğan, 2019). Digital games include all games played through applications on websites, computer and video games, game consoles, tablets, mobile phones and electronic toys (Budak and Işıkoğlu, 2022).

When the literature was scanned, it was seen that there were a limited number of studies in the literature on the effects of digital games integrated into individuals daily lives and that there were discussions about this newly brought up issue (Budak and Işıkoğlu, 2022; Bozkurt et al., 2014; Ardıç and Irmak, 2018). Researchers are divided into two groups: those who support the use of digital games and those who do not. Those who support the use of digital games say that digital games enable children to learn by having fun, socialize, acquire early literacy and some skills (problem solving, strategic thinking, etc.), have positive features such as relaxation, foreign language education, stress relief, attention development, ability to make quick and correct decisions, etc. it is seen that they expressed it (Hazar and Hazar, 2017; Goodwin , 2018; Liu et al., 2020). In addition, it is also included in the literature that digital games contribute to education and therefore can be used in lessons within the scope of game-based learning (Akgül and Kılıç, 2020; Dehghanzadeh et al., 2021; Noroozi, 2017; Öner, 2020; Serrano, 2019). Those who are against the use of digital games say that children internalize aggression and violent behavior, problematic behaviors, sleep problems, communication gaps (loneliness), excessive weight gain/loss, problems caused by insufficient physical movements in long-term gaming situations (respiratory, circulatory, muscular and skeletal systems). It is emphasized that it has limitations (disadvantages) such as problems, decrease in academic success, and addiction (Ataman-Yengin, 2019; Aydoğdu-Karaaslan, 2015; Hazar and Hazar, 2017; Ergün, 2015; Kars, 2010). It is one of the significant issues to emphasize that people are addicted to games, as one of the consequences of the increasing activity of playing digital games (Akçayır, 2013; Arslan et al., 2014; Aydoğdu Karaaslan, 2015; Hazar and Hazar, 2017; Horzum et al., 2008; Şengül and Büber, 2016).

Digital game addiction is defined by researchers working on this subject as "excessive, irregular and uncontrollable use that causes social and emotional problems in the individuals daily life, disrupts the work that needs to be done" (in Budak and Işıkoğlu, 2021). In other words, in the Diagnostic Manual of Mental Disorders (DSM-5), digital game addiction is stated as "greatly affecting and distressing the individual's life in various aspects" (in Budak and Işıkoğlu, 2021). Digital game addiction affects individuals physically, socially and psychologically (Uzunoğlu, 2021). As a consequence of the increase in addiction to digital games, there is a decrease in the individual's social activities and relationships (Uzunoğlu, 2021). Individuals with digital game addiction experience anxiety about the game, trying to hide that they are playing games or lying about not playing games, decreasing interest and desire in life activities carried out outside the game and disappearing over time, social introversion, getting angry, psychological withdrawal, playing games as an escape from problems. Symptoms such as preference and continuing to play despite being negatively affected may also be observed (Erkılıç, 2021).

Once the literature is scanned, it is possible to come across many studies on digital game addiction. In the literature, adolescents and digital game addiction studies (Barut, 2019; Dursun and Çapan, 2018; Kılıç, 2019), game addiction level studies in the Covid-19 period (Aktaş and Bostancı, 2021; Suna Dağ et al., 2021; Güzen, 2021), scale development studies on digital game addiction (Horzum Ayas and Çakır Balta, 2008; Kaya, 2013; Lemmens, 2009; Şahin et al., 2019; Yalçın Irmak and Erdoğan, 2015), studies on calculating students' digital game addiction levels according to demographic characteristics (Aksel, 2018; Dursun and Çapan, 2018; Göldağ, 2018; Oral and Abacıoğlu, 2020; Yiğit and Gündeç, 2020; Wang et al., 2014) more quantitative studies have been conducted such as. Among these studies, Dursun and Çapan (2018) concluded that there was a significant difference according to gender (in favor of men) in their study on digital game addiction in adolescents, while Hartmann and Klimmt (2006), Şahin and Tuğrul (2012), Aydın and Horzum (2015) also reached similar results. However, Fisher (1994), Taş et al. (2014), Yiğit and Gündeç (2020) concluded in their study that there was no significant difference in the digital game addiction levels of the participants in terms of gender. In addition, Wang et al. (2014), in their study to determine the level of digital game addiction, concluded that the addiction level of the participants was low.

Horzum Ayas et al. (2008) conducted a study to develop a digital game addiction scale for children. Another scale for digital game addiction for children is Şahin et al. (2019). Another scale developed for digital game addiction is the "Game addiction scale for adolescents" and this scale was developed by Lemmens et al. (2009). In this context, the fact that this study was conducted with a qualitative research method and that no study has been found in the literature asking the opinions of science candidate teachers about digital game addiction shows the importance of the current study.

This study was carried out to determine the opinions of science teacher candidates about digital game addiction. While most studies in the literature investigate the addiction level of the participants, this study, unlike other studies, investigated the reasons for the participants' addiction to digital games. Moreover, thanks to this study based on the opinions of science teacher candidates; It is thought that it will contribute to future research on the place of digital games in our lives, digital game addiction, characteristics of individuals with digital game

addiction, the impact of digital game addiction on the individual and his life, and what to do to overcome digital game addiction, in terms of both interview questions and findings. In this regard, the aim of the study was determined to reveal the opinions of science teacher candidates about digital game addiction. For this purpose, the research question is "What are the views of science teacher candidates about digital game addiction?" It is determined as follows. The sub-questions of the research are;

1. What is the place of digital games in the lives of science teacher candidates?
2. Am I addicted to digital games? Why am I addicted?
3. What are the characteristics of individuals with digital game addiction?
4. What is the impact of digital game addiction on life?
5. What is the impact of digital game addiction on an individual's psychological, physical and emotional states?
6. What can we do to overcome digital game addiction?

Method

Research Method

A qualitative research approach was used in this study, which was conducted to determine the opinions of science teacher candidates about digital game addiction. Qualitative research is research in which qualitative data collection tools such as observation, document analysis and interview are used, and the process of examining and presenting the facts in their natural environments in a realistic and holistic way is followed (Yıldırım and Şimşek, 2013). There are research methods such as qualitative research, ethnographic research, phenomenology, and case study (Johnson and Christensen, 2014). In this research, the phenomenology method was used. Phenomenological research is one of the qualitative research designs that investigates in depth the phenomena that individuals experience in their daily lives but do not have detailed information about or do not think about (Yıldırım and Şimşek, 2013). In other words, phenomenology tries to explain the common meanings underlying the phenomena experienced by individuals (Creswell 2013, 2021). Phenomenological studies aim to investigate phenomena that are not foreign to individuals but cannot be fully comprehended (Yıldırım and Şimşek, 2013). In this study, the phenomenological pattern was preferred since the phenomenon of digital game addiction, which the participants knew but were not fully aware of, was investigated.

Participants

Participants of this research consists of 5 teacher candidates (3 female, 2 male) who graduated from the Science Teaching undergraduate department and live in the Central Anatolia Region in the 2022-2023 fall semester. The science teacher candidates who will form the participants were determined using the criterion sampling method, which is one of the purposeful sampling methods. The criterion sampling method is that the participants consists of people, facts, objects or situations that have qualities (criteria) determined to be relevant to the problem (Büyüköztürk et al., 2008). In this study, the criteria determined in accordance with the research question and research purpose were determined as teacher candidates who graduated from the Science Teaching undergraduate department and science teacher candidates who have experienced digital game addiction. Candidate teachers who

met these criteria were reached through the universities where they graduated or received their master's degree. A short preliminary interview was held with the candidate teachers to determine whether they met the criteria. The individuals in the participants of the research were named P1, P2, P3, P4 and P5. The demographic characteristics of the individuals in the participants (gender, profession/class level, type of games they play, time spent in the game, mobile devices owned) are explained one by one in Table 1.

Table 1. Demographic Characteristics of Participants

Participants	Gender	Profession/Class Level	Game Type	Time Spent in the Game	Mobile Devices Owned
P1	Female	STC and MS	Violence and fun	16 hours	Tablet, phone, computer and television
P2	Male	STC and MS	Violence and strategy	13 hours	Computer and phone
P3	Female	STC	Violence and car	6-7 hours	Computer and phone
P4	Male	STC	Violence and simulation	10 hours	Computer
P5	Female	STC and MS	Entertainment	2-3 hours	Tablet, phone and computer

*STC: Science Teacher Candidate

*MS: Master's Student

Data Collection Tool

In studies conducted to determine individuals' opinions about a particular phenomenon, data are generally collected by interview technique (Fraenkel et al., 2012). In this study, a semi-structured interview form, one of the interview types, was used as a data collection tool to determine the participants' opinions about digital game addiction. In the semi-structured interview, the researcher can ask additional and follow-up questions depending on the moment of the interview, along with the questions he/she has prepared beforehand, thus obtaining more detailed answers (Bogdan and Biklen, 2007; Patton, 2014). For this reason, semi-structured interviews were conducted as a data collection tool in this study.

This interview form prepared for this study consists of eight questions. For this interview form, the opinions of two faculty members who are experts in the field of science education were taken and the necessary arrangements were made. The fourth question planned to be asked within the framework of expert opinions is "How would you define the place of digital games in your life?" changes have been made both in the place and structure of the question "Why". Therefore, the question is "How would you define the place of digital games in your life?" Can you explain why it is this way?" It was corrected as follows and asked to the participants as the first question of the interview. No corrections were made to the other seven interview questions based on expert opinions. The

final version of the interviews form is included in the Appendix.

Collection of Data

In this study, five prospective science teachers studying at different universities and who stated that they were addicted to digital games were interviewed. Since the participants reside in different provinces and districts the interviews were held on the Zoom platform and took place in a conversational manner between the researcher and the participant. The interviews were held over a total of five days and each interview lasted 20-30 minutes. During the interviews with the participants, before starting the interview, the participants were told that the data obtained during the interview would be recorded for analysis and their permission was obtained. After the interviews were held, the audio recordings were listened to, converted into written documents and sent to the participants for approval.

Analysis of Data

In this study, content analysis was used to document the voice recordings obtained consequence of semi-structured interviews with science teacher candidates and to examine the information obtained from the interviews in detail. Content analysis, which is used in the analysis of qualitative data, is frequently preferred in analyzing interview questions (Fraenkel et al., 2012). The primary purpose of content analysis is to reach themes, categories and codes that explain the relationships between concepts based on the data (Yıldırım and Şimşek, 2013). While conducting content analysis in this study, before proceeding to the analysis phase, all interviews were audio recorded with user permission, listened to, transcribed and turned into a written document. In addition, themes, categories (subcategories) and codes were created as a result of the data converted into written documents. All of the created codes, categories and themes are included in Table 2.

Table 2. Theme, Code and Categories

Theme	The place of digital games in our lives	Digital game addiction	Characteristics of individuals with digital game addiction	The impact of digital game addiction on life	The impact of digital game addiction on health	Suggestions for overcoming digital game addiction
Category	Aim Simulation	The connotation it makes to the individual	Features	Family Social Environment School	Psychological Emotional Physically	Things to do
Code	Escapes from real life Thinks about the new topic It is a leisure	Plays games all the time Wants to move on to the next level Disconnects	Annoyed Asocial Impatient	Communication time spent Make friends	Relaxation Stress Entertainment	He should find a new hobby Must be willing Should reduce

activity	from daily life					game time
relieves stress	Affects you physically	Be a good person		Listening to lectures	Be angry	Family should show interest
It is a hobby	Links to games	Lazy		attendance status	Be sad	Should improve his/her social environment
becomes happy	Restricts social life	Harmless		Focusing	Regret	Age appropriateness of the application should be checked.
puts it in the center	forgets the truth	Fun		Academic success	Remorse	Teachers should inform parents
Sees them as twins/friends	He always thinks about games	Able to focus			Inability to feel emotions	Should stay away from digital devices
Sees it as a port		Irresponsible			eye problems	Must get expert support
It is an indispensable item		Stressful			Insomnia	
		bored easily			Back pain leg pain Not enough feeding Headache	

Validity and Reliability

In order to ensure reliability in the study, expert opinion, researcher consistency, participant approval and direct quotations were included. The transcript files created as a result of the interview were sent to the participants to read and the documents were confirmed. The transcripts were analyzed to determine whether there were any misunderstandings or errors within the feedback received, without the need for any changes. In addition, an attempt was made to increase the credibility of the study by making direct (verbatim) quotations in the findings section. Purposive sampling was chosen to ensure the transferability of this research. In this context the participants consists only of science teacher candidates who are/have been addicted to digital games. Analyzing the research data in detail within the framework of determined themes and presenting it to the reader without adding comments is another practice aimed at ensuring external validity.

To ensure objectivity in this study, the findings were appropriately discussed in the discussion section. In addition,

the data obtained from the participants were analyzed by the researchers and themes, categories and data codes were created. Then, the interview transcripts were presented to a different researcher (evaluator), and the researcher analyzed the interview transcripts thoroughly and created themes, categories, and codes. As a result of the examinations, if the coding created by the evaluator and the researchers were the same, it was accepted as "consensus", and if the codings were different, it was accepted as "disagreement". Developed by Miles and Huberman (1994) to find the reliability of the coding; The formula "Reliability = Consensus ÷ (Consensus + Dissent) x 100" was used and as a result of the calculation, the reliability coefficient of the coding was determined to be 87%. If the reliability coefficient obtained is greater than 70%, it means that the coding is reliable (Miles and Huberman, 1994).

Results

In this section, the themes, categories and codes created according to the answers given by science teacher candidates to the interview questions are expressed in the relevant tables. In some questions, the thoughts expressed by teacher candidates in a question were explained under multiple codes and subcategories. Also, "What does digital game addiction mean to you?" and "Do you think you have a digital game addiction?" since the answers to the question were the same, they were combined and given in Table 3.

The Place of Digital Games in Your Life

"What does digital game addiction mean to you?" and "Do you think you have a digital game addiction?" the themes, categories and codes created from the answers given by teacher candidates regarding the questions are presented in Table 3.

Table 3. Teacher Candidate Opinions about the Place of Digital Games in Your Life

Theme	Category	Code	P1	P2	P3	P4	P5	F
	Aim							
The place of digital games in your life		Escapes from real life	X	X				2
		Thinks about the new topic		X				1
		It is a leisure activity			X			1
		Relieves stress					X	1
		It is a hobby				X		1
		Becomes happy			X			1
	Simulation							
		Sees it as a port					X	1
		Puts it in the center					X	1
		Sees them as twins/friends				X		1
		It is an indispensable item		X				1

*P: Participant

When Table 3 is examined, it is seen that digital games have a different place in the lives of each of the participants. Participants explained the place of digital games in their lives within the structure of purpose and simulation categories. In the aim category, he explains it with codes such as escaping from real life and thinking about the new subject, while in the simulation category, he explains it by associating it with codes such as putting it in the center and seeing it as a port. In this context, the explanation of P1, which gives the code of escaping from real life in the purpose category, is "... Life gets a little bad sometimes. That's why I want to break away from life a little and live in a virtual world. That's why its place in my life is actually like this...", while P2, who gave the same code, explained: "...For example, I usually play for the sake of, you know, when I have a problem, when I have a problem, I bring myself into the computer. After that, escape from life. That's why it's very important for me..." he expressed. The explanation of P5, who gave the port code in the simulation category of the place of digital games in his life, was: "... Since we live in the digital age, I see digital games as a port where you can relieve stress or take shelter when you are sitting at home and wondering what to do." it is in the form.

Digital Game Addiction

“What does digital game addiction mean to you?” Themes, categories and codes created from the answers given by teacher candidates regarding the question are presented in Table 4.

Table 4. Teacher Candidate Opinions about What Is Digital Game Addiction?

Theme	Category	Code	P1	P2	P3	P4	P5	f
What is digital game addiction?	The connotation it makes to the individual	Plays games all the time		X	X	X	X	3
		Wants to move on to the next level			X	X		2
		Disconnects from daily life	X	X				2
		Affects you physically				X	X	2
		Links to games			X	X		2
		Restricts social life				X		1
		Forgets the truth				X		
He always thinks about games				X			1	

When Table 4 is examined, it is seen that the participants explain the concept of digital game addiction with the category of association it makes to the individual. Participants mostly tried to explain digital game addiction with the codes of constantly playing games (cannot give up games) and wanting to move on to the next level. P2, one of the participants who stated that he plays games all the time, said: "... For me, it's like not giving up playing the computer." So, for example, I have homework to do on one side and computer games on the other. I usually play games. I keep assignments waiting until the last moment. I keep waiting as long as I can because I don't like doing homework when I can play games...", while K4 expressed this code as "...Sometimes I would play games on the computer for 10-12 hours and sometimes my eyes would get tired and my head would hurt. "The computer was entering an indispensable field ... " he expressed. P3, who explained his digital game addiction with the code of wanting to move to the next level, said: “First of all, because I waste a lot of time playing games, I give a lot of my time. For something that wasn't very useful to me, for example, while I was eating or sleeping, I was thinking

about the play I would play the next day or the next day. While I was playing, I wanted to do this play like this, while I was playing, I wanted it to be like this...." he explained.

Characteristics of Individuals with Digital Game Addiction

“What characteristics do you think individuals who are addicted to digital games have?” Teacher candidates' opinions regarding the question are presented in Table 5.

Table 5. Teacher Candidate Opinions on the Characteristics of Digital Game Addiction

Theme	Code	Category	P1	P2	P3	P4	P5	f	
Characteristics of individuals with digital game addiction	Features	Annoyed	X	X		X		3	
		Asocial		X	X			2	
		Impatient	X					1	
		Be a good person		X				1	
		Lazy				X		1	
		Harmless		X				1	
		Fun				X		1	
		Able to focus						X	1
		Irresponsible					X		1
		Stressful					X		1
Bored easily			X				1		

Table 5 shows the participants' answers regarding the characteristics of individuals with digital game addiction. When the table is examined, it is understood that the participants mostly explain the theme of characteristics of individuals with digital game addiction by using the concepts of angry and asocial. P1, who gave the code "angry" from the features category, responded to this question by saying " ... I think they are a little aggressive." I think they don't have much tolerance for the world..." , while another participant (K5) who gave the same code expressed his thoughts as "... for example, they might act aggressively because they don't want to interrupt my computer game and focus on anything else..." for the characteristics of individuals with digital game addiction, responded to this question by saying, "...At the same time, game addiction can also be a bit asocial." Because we do something, we prefer not to go out. "We generally prefer to stay at home..." he explained. P3, another participant who gave the code asocial, expressed his thoughts as follows: "... Maybe not all of them, but I think most of them are slightly more asocial individuals. Because we do not mix with real people in real life, I think we are trying to mix with the digital in a digital environment ..." he expressed.

The Social Dimension of Digital Game Addiction

“Is there any change in your life when you play or don't play digital games?” The opinions of teacher candidates regarding the question are given in Table 6.

Table 6. Teacher Candidate Opinions on the Social Dimension of Digital Game Addiction

Theme	Category	Subcategory	Code	P1	P2	P3	P4	P5	f	
The effect of digital game addiction on the social dimension	Family	Positive	Communication	X					1	
			Time spent	X					1	
		Negative	Communication	X	X	X	X	X	5	
			Time spent	X	X	X		X	4	
	social environment	Positive	Make friends	X					1	
			Negative	Communication			X	X	X	3
		Negative	Time spent			X	X	X	3	
			Positive							
	School	Negative	Listening to lectures	X					X	2
			Focusing						X	1
		Positive	Academic success	X						1
			Attendance status			X				1

Looking at Table 6, it can be seen that the participants explained the social dimension of digital game addiction within the categories of family, social environment and school. Participants expressed these categories with two subcategories: positive and negative impact. Participants explained both the positive and negative subcategories within the family category using the codes of communication and time spent. One of these participants, P1, stated: " ... My relationship with my family affects me in this way; when I play games, I generally do not answer the questions asked to me at all." I don't interact with anyone, focusing only on the game, but when I'm not playing, of course, I go to work, watch TV with my father, and sit and chat with my mother. It has a negative impact in this aspect. Because with my friends, sometimes there are games with sound like this. I'm talking to my friends there. So, it can hinder his communication with the family, but for example, my brother is also a bit addicted to games. Since he plays a lot of games, we do not normally talk face to face, but since I am in a different city, even if we do not talk on the phone, we come across games and we always talk to each other in the game. In other words, it can be positive or negative depending on the situation in which it is used ...", while P5 explained his explanation as follows: "... To give an example from the phone, since it is always at our disposal, for example, while sitting in the living room with my family, when I suddenly focus on something different and pick up the phone, I have the possibility of opening a game from there. What the hell is this? In that process, it reduces our social relationships..." He expressed it as follows.

Participants explained the positive subcategory within the social environment category with the code of making friends, and the negative subcategory with the codes of communication and time spent. P1, who stated that digital game addiction positively affects the social environment in terms of making friends, said: "...I think it actually improved my social circle because I had friends from so many different cities that I even made friends from foreign countries, I was talking to them too." I met many different people from many different cities, I know them, I can add them on Instagram, we talked etc. Whether it is a girl or a boy, my social circle has expanded. " Right now, I'm still meeting with the friends I added from the game on Instagram, but I can't comment on my work because I'm not working." He expressed it as follows. P4 stated that digital game addiction has a negative impact on the

social environment in terms of communication and social activities and added: "...Our social life is restricted to the outside world. For example, how can I say it on the street with my friends? "I was playing on the computer at home when I should have been playing games, and when I wasn't playing, I noticed this..." he expressed.

Participants explained the school category only with a negative subcategory. They explained this subcategory using the codes of listening to lectures, focusing and academic success. P1 said that playing digital games has a negative impact on school life in terms of listening to lectures: "It is definitely negative for my school. Because, as I said, when I go to school without sleeping, I sleep in class and do not listen to the lesson. Since I do not listen to lectures, my knowledge remains incomplete. ", while P5 stated that playing digital games has a negative impact on school life in terms of listening to lessons and focusing: "... It is definitely negative about my school. Because, as I said, when I go to school without sleeping, I sleep in class and do not listen to the lesson. Since I do not listen to lectures, my knowledge remains incomplete. On exam day, I now collect notes from others. Of course, it affects it negatively..." he explained.

The Effect of Digital Game Addiction on Health

"Does playing digital games have any effect on your psychological, emotional or physical state?" The opinions of teacher candidates regarding the question are presented in Table 7.

Table 7. Teacher Candidate Opinions regarding the Impact of Digital Game Addiction on health

Theme	Category	Subcategory	Code	P1	P2	P3	P4	P5	f	
The impact of digital game addiction on health	Psychological	Positive	Relaxation	X	X	X		X	4	
		Negative	Decline					X	1	
	Emotional	Positive	Entertainment				X		1	
			Relaxation					X	1	
		Negative	Be sad		X					1
			Regret				X			1
			Remorse				X			1
			Be angry		X					1
	Inability to feel Emotions					X		1		
	Physically	Positive		Eye pain (problems)			X	X		2
				Back pain			X			1
		Negative		Leg pain			X			1
				Headache				X		1
				Insomnia		X				1
Not enough feeding					X				1	

Looking at Table 7, it is seen that the participants explained the health theme of digital game addiction within the framework of psychological, emotional and physical categories. Participants expressed these categories with two

subcategories: positive and negative impact. While participants explained the positive subcategory within the psychological category using the code of relaxation, they explained the negative subcategory using the code of tension. Among the participants who said that it had a positive psychological impact, P2 thought: "... *Of course, it is very psychologically comforting. Now let me tell you that. It feels really good psychologically. Because we all have troubles and problems in life. We have to deal with these problems and troubles, and sometimes the solution is not in our hands ...*", while P5, one of the participants who said that it negatively affected them psychologically, expressed the thought as "...*It is constantly circulating in our minds so that we can move on to the next part immediately. These ideas. When these ideas circulate, we think that we are actually psychologically relieved, but at some point we become nervous...*" he expressed.

Participants expressed digital game addiction with a positive code, such as emotional relief, and a negative code, such as sadness, remorse and regret. P4, one of the participants who said that it had a positive emotional impact, expressed his opinion as "... *After all, you are having fun, I don't know, something else happens, you laugh, etc...*" P3, who explained that he was negatively affected emotionally with the codes of regret and remorse, expressed his thoughts as follows: "... *Emotionally, I felt good while playing the game. You know, it was fun, but when did I quit the game? I returned to real life, I spent so much time, but what did I get? You know, I didn't do anything or spend time with my family. How is it going to be? Well, to what extent am I going to play games all the time? You know, as a person gets older, he feels more guilty ...*" , while explaining that he was negatively affected emotionally with the code of sadness, "... *I am experiencing a situation, I feel very sad. When I feel very sad about this situation, I forget about it by playing this game. That's why it's good for my psychology about the issue I feel sad about. In fact, this also gets emotional...*" he stated.

Participants explained the physical category only with the negative subcategory. They explained this subcategory with codes such as eye pain, back pain, leg pain and headache. Among these negatives, P3, who gave the codes of insufficient eye pain, back pain, and leg pain, expressed the thought "*Because it's physical. How can I say anything else that affects your situation? You know, it can be visibly followed. There is especially a lot of back pain. My legs went numb very often because I forgot myself in the sitting position while playing games. I'm cross-legged, I've been sitting cross-legged for hours. Then, when I come to my senses and let go of my legs, I feel incredible pain. Because of inactivity, there is already joint pain. Then physically I have different eyes. My eyes are really tired. Sometimes I had blurred vision like this, but I still didn't care and washed it, rubbed it and continued...*" , while P4, who expressed the negative impact of digital game addiction on the physical condition with the codes of eye pain and headache, said : "... *I just thought that these were not physical sports activities, for example, It causes eye and headache. After all, after sitting for a certain amount of time, these had an effect...*" he expressed.

Suggestions for Overcoming Digital Game Addiction

"What do you think can be done to overcome digital game addiction? What are your suggestions on this matter? The opinions of teacher candidates regarding the questions are presented in Table 8.

Table 8. Teacher Candidate Opinions on Suggestions to Overcome Digital Game Addiction

Theme	Category	Code	P1	P2	P3	P4	P5	f
Suggestions for overcoming digital game addiction	Things to do	He should find a new hobby	X	X	X			3
		should want				X	X	2
		Should reduce game time				X	X	2
		Family should show interest	X					1
		Should improve his/her social environment	X					1
		Age appropriateness of the application should be checked.					X	1
		Teachers should inform parents	X					
		Should stay away from digital devices				X		1
		Must get expert support	X					1

When Table 8 is examined, the suggestions made by the participants to overcome digital game addiction can be seen. Among the suggestions, it is seen that the participants mostly gave the code "should find a new hobby". P3, who gave this code, explained the explanation: "... *If he doesn't like reading books, we can study languages. Language, if we don't like studying, we have a lot of options such as sudoku things, puzzles, official music, really ...* " P2 explained, "*I get up and go to the match because, for example, I like playing football on an astroturf field, rather than playing the computer, because in fact it is also an escape, all you have to worry about there is the ball.*" like hitting, passing. "*If you can find other hobbies like this that can distract you, take you away from life, and that you like...*" he said. Participant P4 suggested that in order to overcome digital game addiction, the individual should ask for it himself, check the age appropriateness of the applications and reduce the playing time: "*In order to overcome game addiction, first of all, sitting in front of a computer, for example, for indefinite or unlimited hours, you know, let me tell you for yourself.*" *It's a very negative situation. Because you are always in front of the computer for hours and I have overcome eye strain, headaches and all that. I have a physical problem that is hindering my life outside in a big way. I realized this. After that day, I had already started to quit computer games. In order to overcome computer addiction, I think people should give themselves limits. Let's say I was doing something before. When I felt that I was playing with the computer too much, that is, after I felt the first discomfort, I started to quit the games I was playing and now I say that even if I play for an hour at most, I get bored. People should get to know themselves for a while, give it some time, and I think this varies depending on the games they play, but it depends on the game. "I think the content of the games should be age-appropriate."* explained as follows.

Discussion and Conclusion

The results obtained in this study, which was conducted to determine the opinions of science teacher candidates about digital game addiction, were explained in six main themes. These themes are: the place of digital games in your life, what is digital game addiction?, characteristics of individuals with digital game addiction, the effect of digital game addiction on the social dimension, the effect of digital game addiction on health and suggestions for

overcoming digital game addiction.

The place of digital games in your life; It has been determined that individuals position digital games in their lives for the purpose of escaping from real life and relieving stress. As a matter of fact, Ayhan and Koselioren (2019) stated in their study that students sometimes forget the thoughts that disturb them through games. Moreover, Wood and Griffiths (2008) stated in their study that playing addictive digital games can be seen as a way of coping with the problems faced by the individual in real life. Similarly, Kneer et al. (2014) stated that one of the best ways that individuals can use to escape from the problems in daily life is to play digital games. The results of the study conducted in this context are parallel to the results of other studies. The study concluded that students prefer digital games to forget their disturbing thoughts from time to time and reduce stress. It can be said that the reason for this is that while playing digital games, the individual focuses on the game and forgets about the problems or stress in daily life for a while.

Digital game addiction; In the research, it was determined that individuals explained their digital game addiction with the concept of constantly playing games. A similar situation was seen in the study by Soyöz Semerci and Balcı (2020). Soyöz Semerci and Balcı (2020) stated in their study that digital game addiction increased due to the increase in game playing time. Furthermore, Aktan (2018) conclude in his study that as individuals' duration of use increases, their addiction levels also increase. As a matter of fact, the results of these studies are parallel to the results of the study. The study concluded that digital game addiction requires continuity. It can be said that this situation arises from the fact that the individual allocates a certain part of his day to digital games and as a result, the individual now sees digital games as a complementary meal. In addition, it was determined in the research that individuals expressed the concept of taking digital game addiction to the next level. In their study, Ayhan and Köseliören (2019) stated that individuals with digital game addiction cannot stop playing digital games and from time to time they say that they will play a little more and turn them off while playing digital games. Based on this, it can be expressed that digital game addiction binds the individual to constantly playing games and wanting to move on to the next level. As a result of the research, it was concluded that the more frequently individuals play digital game addiction, the more they become involved in the game, and the more they become involved in the game, the more their addiction increases.

Characteristics of individuals with digital game addiction; In the study, it was observed that individuals with digital game addiction were mostly angry and asocial. As a matter of fact, Güvendi et al. (2019) stated in their study that increasing levels of digital game addiction reduces the socialization level of individuals and makes individuals much more nervous. In addition, Arslan et al. (2015) and Mustafaoğlu and Yasacı's (2018) studies indicate that digital game addiction increases the level of aggression and anger and turns the individual into an asocial person. Additionally, Cihan and Ilgar (2019) stated in their research that digital games cause negativities such as turning participants into asocial individuals. As a result of this research, it was concluded that individuals with digital game addiction are generally angry and asocial. It can be said that the reason why individuals are angry is because they constantly lose in games, and the reason why individuals are asocial is because they spend all their free time playing games.

The effect of digital game addiction on the social dimension can also be grouped as its effects on the individual's family, social environment and school life. When family life is examined within the scope of the study, it is seen that individuals have difficulty communicating with their families and communication becomes more limited. As a matter of fact, Young (2004) stated in his study that digital game addiction causes the deterioration of social and family relationships. In addition, Dursun and Çapan (2018) emphasized in their study that individuals who are likely to have digital game addiction are likely to have difficulty communicating with their family. In this context, the results of the study are parallel to these studies in the literature, and as a result of the research, it has been concluded that individuals with digital game addiction have a decrease in the time they communicate with their family and their communication does not progress in a healthy way. One of the reasons for this situation may be that the individual finds digital games close to him and thinks that his family does not understand them.

It has been observed that digital game addiction has negative effects on the time spent and communication with the social environment, and positive effects on making new friends. As a matter of fact, Dursun and Çapan (2018) stated in their study that digital game addiction may be an obstacle in terms of establishing and maintaining relationships with the social environment. Moreover, Güvendi et al. (2019) stated in his study that playing digital games for long periods of time is effective on distancing from the social environment. For this reason, it is seen that digital game addiction negatively affects the individual's socialization, the time he spends with his environment, and his communication. Similar to these studies, the research concluded that digital game addiction spends all of the individual's free time with digital games and therefore their relationships with their social environment are negatively affected. It can be said that one of the reasons for this situation is due to the developmental period of the individual and the fact that he feels more comfortable while playing digital games. However, unlike other studies, this study also concluded that digital game addiction contributes to making new friends. It is thought that the reason for this difference is that there may be situations in the games played by the participants that require cooperation, and in this case, the necessity to communicate with the group members.

It has been observed that digital game addiction has negative effects on school life in terms of listening, focusing and academic success. A similar situation is revealed in the study by Gentile (2009). Gentile (2009) stated that students who play digital games have difficulty concentrating and get worse grades. As a matter of fact, Gentile (2009) stated in his study that even when students controlled the digital game time they played weekly, students showed lower school performance. Furthermore, Chan and Rabinowitz's (2006) study revealed that playing digital games for more than an hour a day negatively affects academic success. In this study, it was concluded that digital game addiction negatively affects school performance. It can be said that one of the main reasons for this situation is that the individual spends all his time playing and does not spare time for studying. Unlike the results of this study and other studies, Drummond and Sauer (2014) stated in their study that the time spent on digital games has a slightly positive effect on school life in terms of success in science, mathematics and reading. It can be said that the reason for this difference is that the digital games played by students have educational content and the development of students' skills such as problem solving and analytical thinking through complex games. Based on this, it has been concluded that it may be important not to ignore that using digital games in education may have positive effects on students' academic success.

The effects of digital game addiction on health can also be grouped as its effects on the individual's emotional, psychological and physical state. In the study, it was determined that digital games have a positive effect on the individual, such as psychological relaxation. Similarly, Lin and Hou (2016) and Sağlam and Topsümer (2019) stated in their studies that digital games help individuals relax emotionally and have fun. The result of this study is parallel to the studies of Lin and Hou (2015) and Sağlam and Topsümer (2019). As a consequence of the study, it was determined that being addicted to digital games has a positive effect on the psychology of the individual. Unlike the study and other studies, Ayhan and Çavuş (2015) also state that digital games cause psychological disorders in the individual. It can be said that the reason for this difference is that the participants are different and play different games.

In addition, the study discovered that digital games have negative effects on the individual, such as emotional upset, regret and remorse. As a matter of fact, this may be owing to the fact that the individual constantly spends time playing games and does not spare time for any activities other than games. For this reason, it has been concluded that digital game addiction causes emotional negative feelings such as regret and remorse in skiers, as it causes excessive time wasting.

Additionally, in the study, it was determined that digital games had negative effects on the individual, such as pain in physical parts of the body. As a matter of fact, Hazar et al. (2017b) stated in their study that there is a negative relationship between digital game addiction and physical activities. Similarly, Marufoğlu and Kutlutürk (2021) emphasized in their study that the physical activity levels of individuals with digital game addiction decrease over time. A similar situation was obtained as a result of this research. The study concluded that individuals with digital game addiction do much less daily physical activity and therefore experience pain in their body parts. It can be said that the reason for this situation is that the individual prefers to sit on a chair in the same position instead of doing physical activities such as walking, cycling, playing volleyball.

Suggestions for overcoming digital game addiction; In the research, suggestions were made for individuals with digital game addiction to find new hobbies and want to stop playing digital games in order to overcome digital game addiction. As a matter of fact, the fact that these suggestions were made by people with digital game addiction demonstrate that the suggestions are feasible and effective. For this reason, it has been concluded that individuals with digital game addiction can deal with addiction by acquiring new hobbies and truly wanting to quit digital games.

Suggestions

In the research, it was determined that prospective science teachers emphasized escaping from daily life and relieving stress in their statements about digital games. In this context, it is recommended to carry out studies to eliminate such deficiencies with educational games. Additionally, participants in the study stated that individuals with digital game addiction are angry and asocial. For this reason, it is recommended to develop games that will make individuals less angry and enable them to socialize, and to conduct studies on the effectiveness of these games. Another suggestion that can be made within the framework of the research is to design field-specific games

that will contribute to the development of skills such as analytical thinking and problem solving and to determine what effects these games have on students. Because in the study, participants stated that digital games had almost no positive impact on school life. For this reason, it is thought to be especially important to include digital games in the education and training process.

In the study, participants stated that digital game addiction has negative effects on physical condition. For this reason, it is recommended to develop practices to increase the physical activity of individuals and to conduct research in this context. It is also recommended to investigate the effectiveness of the suggestions offered by the participants to overcome digital game addiction on individuals with digital game addiction.

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Appendix. Interview Questions

Demographic features:

- your gender
- Your grade level/Profession
- Type of digital game you play
- Time spent in game
- Mobile devices you own

Interview Questions:

1. How would you define the place of digital games in your life? Can you explain why it is this way?
2. What does digital game addiction mean to you? Can you explain?
3. Do you think you have a digital game addiction?
 - a) If yes, why do you think you are addicted? How did you come to this conclusion?
 - b) If no, why do you think you are not addicted? How did you come to this conclusion?
4. What characteristics do you think individuals who are addicted to digital games have? Can you explain these features? Why do you think they would have these characteristics?
5. Are there any changes in your life when you play or not play digital games? From where.
 - a) any changes regarding your family ?
 - b) Are there any changes regarding your school?
 - c) Are there any changes regarding your social circle?
 - d) Are there any changes regarding your business?
6. Does playing digital games have any impact on your psychological, emotional or physical state?
 - a) Does it have any positive psychological effects?
 - b) Does it have any negative psychological effects?
 - c) Does it have any positive emotional effects?
 - d) Does it have any negative emotional effects?
 - e) Does it have any positive physical effects?
 - f) Does it have any negative physical effects?
7. Have you ever stopped playing digital games?
 - a) If yes, how long did you take a break?
 - b) Do you think there is a change in your usage time when you start again?
8. What do you think can be done to overcome digital game addiction? What are your suggestions on this matter?