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Understanding Future Special Education Teachers Think About Their Profession and the Using of Assistive Technologies: A Mixed-Method Study*

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ABSTRACT

Children with special educational needs face difficulties in school and social activities during the day. Assistive technologies can be used in learning environments to overcome these difficulties. On the other hand, it is thought that the attitude towards the profession plays an important role in using assistive technologies. We examined the attitude toward using assistive technologies in special education teaching and the attitude towards the profession of special education teachers through different variables. We also looked at the relationship between them. A sequential explanatory mixed-method research approach was used, consisting of a quantitative phase in which the scale data are analyzed and a qualitative phase in which the interviews are conducted. As a result, it has been determined that male teacher candidates who choose the special education teaching profession consider the economic conditions, while female teacher candidates are mostly affected by emotional factors. The participants' desire to learn and their emotional closeness to the profession regressed over the years and the attitudes of pre-service teachers towards their profession have moved away from the pedagogical context over the years. On the other hand, it has been concluded that with the use of assistive technologies, productivity in education/teaching environments can increase. It has been observed that there can be positive developments in the life skills of children with assistive technologies. It has been determined that pre-service teachers' awareness of these technologies was low in the beginning, but increased in line with the lessons taken about assistive technologies in the following years. In addition, it has been determined that pre-service teachers who have a positive attitude towards the profession can be more successful in using assistive technologies effectively.

Keywords: Special education, assistive technologies, professional attitude

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1. INTRODUCTION

The field of special education is affected by technological developments. The main advantages of using new technologies in special education are; facilitating learning and providing equal opportunities. These technologies are generally referred to as assistive technologies in the field. Assistive technologies are tools and methods that enable students with special educational needs to benefit from education and training processes at a high level and are used to improve their current abilities (Johnston et al., 2009; Pettersson and Fahlström, 2010). Assistive technology is not only a tool used to improve teaching conditions but also a preferred tool to compensate for the inadequacies of individuals and to minimize the situations that may prevent individuals with disabilities from living independently. (Çakmak, 2016). In addition, assistive technologies do a great job of increasing the internal and external motivation of people with disabilities, increasing their learning skills, improving their social skills, and actively using these skills (Özdamar, 2016). Therefore, it can be said that assistive technologies are a concept that provides services for people with special needs that they can benefit from in one or more areas and includes tools and equipment included in these services.

Assistive technologies are examined in three different categories. These are low-level, intermediate-level, and high-level, respectively (Aslan, 2018; Bozkurt, 2017; Çakmak, 2016). As examples of low-level assistive technologies, picture cards, stickers, notepads, calendars, pencil holders, chalk, and blackboard can be presented as examples (Çakmak, 2016). Examples of intermediate assistive technologies are reading pens, timers, talking calculators, talking dictionaries, simple electrical circuits, and voice recorders. Tablet computers, smartphones, smart personal assistants, digital books, and mobile and

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computer software can be presented as examples of high and complex assistive technologies (Bozkurt, 2017; Çakmak, 2016). When we look at all these, it is of great importance that teachers and pre-service teachers have positive attitudes towards assistive technologies, use these technologies effectively and as a result, provide a positive increase in students' success (Garcia and Seevers, 2005; Kim et al., 2003).

On the other hand, the professional and field competencies of teachers are very important (Dikmen and Tuncer, 2018). Teachers who have a positive attitude towards their profession are expected to perform better in fulfilling their duties and responsibilities (Çeliköz and Çetin, 2004). When this situation is reduced to special education teaching, teachers with positive attitudes towards the profession can meet the academic and other needs of the students in the classroom environment and control the general situation of the classroom (Meijer and Foster, 1988). It has been observed that other special education teachers usually direct their students to the guidance service without much effort (Podell & Sodak, 1993). In addition, it has been observed that the behaviors exhibited by special education teachers have a significant effect on students (Çapa and Çil, 2000).

When the literature is examined, it is seen that there are studies on attitudes towards assistive technologies and attitudes towards the profession. Ledger (1999) and Maushak, Keley, and Blodgett (2001) stated in their research that special education teachers have sufficient and even high-level knowledge about assistive technology. On the other hand, Campbell (2000) and Kim et al., (2003) concluded that special education teachers had very little knowledge about assistive technologies. These findings clearly show that the knowledge levels of teachers and pre-service teachers about assistive technology differ from each other. There is more than one research that examines the attitudes of teachers and teacher candidates about assistive technology (Aslan, 2018).

When we look at these studies, it is seen that teachers' attitudes toward assistive technologies are generally positive (Chukwuemeka and Samaila 2020; Garcia and Seevers, 2005; Guggenberger, 2008; Kim et al., 2003; Maushak et al., 2001; Murugaiyan and Arulsamy, 2013; Onivehu. et al., 2017). Kışla (2008) stated that teachers have positive attitudes towards the use of computers in education. Aslan (2018), Bahceci (2019), and Sertkaya (2021) stated in their studies that the attitudes of special education teachers and teacher candidates towards assistive technology are positive. On the other hand, while Memet and Şentürk (2021) stated in their research that teachers were willing to use assistive technology, as a different result, Alkahtani (2013) and Demirok, Haksız, Cahit (2019) concluded that special education teachers' attitudes towards assistive technology were neutral in their studies. Bozkurt (2017) stated that with good planning on assistive technologies, it will be a fun and effective learning environment for both students and teachers.

When we look at the literature on attitudes towards the teaching profession, there are many studies on subjects such as self-efficacy, self-esteem, and life satisfaction of teachers and teacher candidates. Considering the related studies, it has been stated that the individual characteristics of teacher candidates are effective in their attitudes towards the teaching profession (Çapa and Çil, 2000; Çapri and Çelikkaleli, 2008; Oral, 2004; Şimşek, 2005). Özokcu (2021) stated that there is a predictive relationship between the personality traits of special education teacher candidates and their attitudes towards the profession. When we look at the attitude studies towards the teaching profession, it is seen that the attitudes of teacher candidates towards their profession are mostly high and positive (Özder et al., 2010; Tunçeli, 2013). In their study, Bayrakdar, Batık and Barut (2016) stated that there is a relationship between special education teacher candidates' self-perceptions and their positive attitudes and that special education teacher candidates' attitudes towards the teaching profession are positive.

Studies have shown that lack of knowledge is one of the most important obstacles to the use of assistive technologies. (Alkahtani, 2013; Alper and Raharinirina, 2006; Yıkmış and Tekinarslan, 2005; Todis, 1996). It is striking that eliminating the lack of knowledge is related to the attitude towards the teaching profession (Guskey, 1988), and it is seen that teachers with high perceptions of competence have a structure that opens the door to differences. According to Gibson and Dembo (1984), these teachers mostly focus on academic learning and as a result, they provide more benefits to their students.

In summary, it can be said that teachers who have a positive attitude towards their profession will be more successful in eliminating the possible knowledge deficiencies they experience in the use of assistive technologies. Therefore, it can be thought that the attitude towards the profession is directly related to the attitude towards assistive technologies. Although there are studies on assistive technologies and attitudes towards the teaching profession in the literature, there is no research examining the relationship between them.

This study aims to examine the attitudes of special education teacher candidates towards their profession and their attitudes towards assistive technology over different variables and then to see if there is a relationship between these two variables.

In line with this determined purpose, the sub-problems of the research are as follows:

1. Does gender have an effect on the attitude towards the special education teaching profession?
2. Does the grade level have an effect on the attitude towards the special education teaching profession?
3. Does gender have an effect on attitudes towards assistive technologies?
4. Does the grade level have an effect on the attitude towards assistive technologies?
5. Is there a relationship between the attitude towards assistive technologies and the attitude towards the special education teaching profession?

2. METHODS

We used a sequential explanatory mixed methods design, including a quantitative phase followed by a qualitative phase. In the quantitative phase, scale data were collected and analyzed. In the qualitative phase, qualitative data were collected through interviews and analyzed to explain and elaborate on the initial quantitative findings in more depth.

The sequential explanatory mixed methods design was adopted because the quantitative findings were assumed to provide a general understanding of the research problem, whereas the qualitative data and analysis were assumed to 'refine and explain those statistical results by exploring participants' views in more depth' (Creswell and Clark 2017).

2.1. Participants

In the quantitative phase, the study group consists of 201 pre-service teachers studying in the Department of Special Education Teaching at a state university in Türkiye. 63% of the participants are female and 37% are male. 24% are studying 1st year of undergraduate, 26% are studying 2nd grade, 30% are studying 3rd grade, and 20% 4th grade.

In the second phase, interviews were conducted with 80 randomly selected people who participated in the quantitative phase. Half of the interviewees were female and the other half were male. In addition, interviews were held with 20 people from each grade level.

2.2. Instruments

Quantitative data were collected by applying the scales "Attitude Scale Towards Assistive Technologies" and "Attitude Scale Towards Special Education Teaching Profession" to 201 participants after obtaining necessary permissions. Missing or incorrectly filled data could not be found. Qualitative data were collected from 80 participants through a semi-structured interview form. In the semi-structured interview technique, the questions are flexible. There are no predefined question details, but participants respond to the same questions, which increases the comparability of the answers (Merriam and Tisdell, 2015).

2.2.1. Attitude scale towards assistive technologies

This scale was developed by Aslan and Kan (2017) to determine the attitudes of special education teachers and pre-service teachers towards assistive technologies. It consists of 4 sub-factors and 18 items in total with behavioral, affective, negative emotion, and cognitive components. The scale is graded with a 5-point Likert type. The Cronbach's alpha value of the scale was determined as 0.88, and the reliability coefficients of the sub-factors ranged from 0.71 to 0.83.

2.2.2. Attitude scale towards special education teaching profession

The scale was developed by Küçüközyıldız, Könez, and Yılmaz (2017) to determine the attitudes of special education teacher candidates towards their profession. The scale is graded with a 5-point Likert type. It has three sub-factors: cognitive, affective, and behavioral. There are 19 items in total on the scale. The Cronbach alpha value of the scale was determined as .88 and the reliability coefficient is .89.

2.2.3. Semi-structured interview form

We designed a semi-structured interview form to collect the opinions of pre-service teachers about the special education profession and the use of assistive technologies.

We distributed the form through an online platform and all participants voluntarily answered the questions. The semi-structured interview form included the following open-ended questions:

- Do you think special education teaching is a suitable profession for you?
- What do you think about the necessity of using assistive technologies in special education teaching and the convenience or difficulties it can provide?

2.3. Analysis

Before starting the quantitative data analysis, we checked whether there were missing markings or more than one marking in the answers. At the end of the controls, a total of 28 scales belonging to 14 students were excluded from the analysis. We analyzed the scale data of 201 participants in total.

The Skewness value for the attitude scale towards assistive technologies was -0.500, and the Kurtosis value was 0.714. The Skewness value for the other scale, the attitude scale towards the special education teaching profession, was -0.709, and the Kurtosis value was -0.322. Hair et al (2014), Skewness and Kurtosis values should be between +1,0 and -1,0 for normality. In this respect, it can be said that both scales show a normal distribution.

In quantitative data, we used the independent samples t-test to examine differences by gender, and a one-way ANOVA test to determine differences by grade level. Pearson correlation analysis was also used to examine the relationship between the scores of the two scales.

Since statistical or experimental calculations are not included in qualitative research methods (Brink, 1991), the issue of validity and reliability is associated with reliability, which is defined as an effort to persuade readers. (Altheide ve Johnson, 2011). Qualitative data consists of a total of 2435 words. We pre-analyzed these data separately as two researchers using coding (Miles and Huberman 1994) and then sorted them using inductive coding (Strauss and Corbin 1998). In the next step, we performed control coding (Miles and Huberman 1994) of approximately 25% of the individual coding results. As a result of control coding, the reliability was found to be 91.40%.

3. RESULTS

3.1. Does Gender Have A Significant Effect On The Attitude Towards The Special Education Teaching Profession?

Independent samples t-test was used to examine the difference by gender. The findings are presented in Table 1.

Table 1.
Variation of Attitudes towards Special Education Teaching Profession by Gender Independent Samples T-Test Results

Groups	N	x̄	S	sd	t	p
Male	77	83,9351	8,44695	199	-3,571	0,00
Female	124	87,8145	6,82698			
Total	201					

*p< 0.05

It can be said that gender has a significant effect on the attitude scores towards the special education teaching profession in favor of female participants.

According to the Independent samples t-test results, the mean rank scores of female participants (87.9351) are higher than the mean rank of male participants (83.9351). The difference between them is statistically significant ($t(199) = -3.571$, $p < 0.05$)

On the other hand, the opinions of the participants about the profession were evaluated in terms of gender variable and the following results were obtained.

Table 2.
Themes, Codes, Frequencies Regarding Professional Suitability in Terms of Gender

Themes	Codes	F
Reasons for Eligibility of the Profession for Male Teacher Candidates	Ability to correlate personal characteristics with the profession	17
	Supporting children with special needs and contributing to their development	12
	Finding a job fast	7
	Emotional satisfaction	7
	Having people with special needs among their relatives	3
	Finding the special education teaching profession special and sacred	2
	Being a special needs person	1
Reasons for Eligibility of the Profession for Female Teacher Candidates	Supporting children with special needs and contributing to their development	17
	Ability to correlate personal characteristics with the profession	14
	Emotional satisfaction	12
	Finding a job fast	8
	Having people with special needs among their relatives	2
	Finding the special education teaching profession special and sacred	2
	Being a special needs person	1

When the answers given to the theme of the reasons for the suitability of the special education teaching profession for male teacher candidates are examined, it has been determined that all of them consist of positive opinions and no negative opinions have been encountered. In total, 7 categories constitute the positive opinion codes of teacher candidates.

Sample participant response to the code “Ability to correlate personal characteristics with the profession” among the prominent opinions of male teacher candidates:

> P4: *"Yes, I think it is a suitable profession for me. Because I think that it is a situation that requires patience and courage to deal with children who need special education, and I believe that I have this patience and courage, and I am sure that it is a very good feeling to add something of yourself to these children."*

Example participant response to the code “Supporting children with special needs and contributing to their development”:

> *P2: “Yes, I think my personality is compatible with this profession. I am also someone who enjoys helping and teaching these people.”*

Example participant response to “Finding a job fast” code:

> *P17: "Yes, I chose the special education department because of its ease of finding a job and its good assignment. When I first came to this department, there were question marks as if I could do it. As I entered the department, I got more used to it and thought that I could do it."*

When the answers given to the theme of the reasons for the suitability of the special education teaching profession for female teacher candidates were examined, it was determined that all of them consisted of positive opinions and no negative opinions were encountered. As with male teacher candidates, the opinions of female participants were grouped under 7 categories.

Sample participant response to the code “Supporting children with special needs and contributing to their development” among the prominent opinions of female teacher candidates:

> P27: "Yes, because I feel happy when working with children and I think that I serve a purpose. Touching their lives and helping them adapt to life, being their voice for the rights they cannot seek makes me feel suitable for this profession."

Sample participant answer regarding the code “Ability to correlate personal characteristics with the profession”:

> *P13: “Yes. Because I think my character and thoughts are suitable for this profession. It is a great happiness to be able to touch the life of a child and to see him/her in society and social life.”*

Example participant response to the “Emotional satisfaction” code:

> *P29: "Yes. Because I can associate my character and thoughts with this profession. It is a great happiness to be able to touch the life of a child and to see him/her in society and social life. A child's happiness is a unique feeling. One of the things that connect me to life is the smile on a child's face. This is especially true of this profession." I believe I did it by choice."*

3.2. Does The Grade Level Have A Significant Effect On The Attitude Towards The Special Education Teaching Profession?

ANOVA test was applied to analyze the second problem statement of the research. The obtained results are given in Table 3.

Table 3.
Change of Attitudes towards Special Education Teaching Profession by Grade Levels Anova Test Results

Source of Variance	Sum of Squares	sd	Mean Square	F	p
Between Groups	311,700	3	103,900	1,771	0,154
Within Groups	11558,628	197	58,673		
Total	11870,328	200			

*p< 0.05

In order to test whether there is a difference between the attitude scores of 201 participants at 4 different grade levels towards the special education teaching profession, the mean scores of the groups were compared with one-way analysis of variance. As a result of the test, the average of the pre-service teachers in the 1st year (88,2083), the average of the pre-service teachers in the 2nd year (86,3396), the average of the pre-service teachers in the 3rd year (86.0500), and the average of the pre-service teachers in the 4th year (84.4750) was found. However, no statistically significant difference was found between grade levels.

On the other hand, the opinions of the participants about the profession were evaluated according to their grade levels and the following results were obtained.

Table 4.
Themes, Codes, Frequencies Regarding Professional Suitability in Terms of Grade Level

Themes	Codes	F
Reasons for the Profession's Eligibility for 1st-grade Teacher Candidates	Emotional satisfaction	13
	Supporting children with special needs and contributing to their development	13
	Ability to correlate personal characteristics with the profession	6
	Finding a job fast	4
	Finding the special education teaching profession special and sacred	2
	Having people with special needs among their relatives	2
	Being a special needs person	2
Reasons for the Profession's Eligibility for 2nd-grade Teacher Candidates	Ability to correlate personal characteristics with the profession	10
	Supporting children with special needs and contributing to their development	5
	Emotional satisfaction	3
	Having people with special needs among their relatives	2
	Finding a job fast	2
Reasons for the Profession's Eligibility for 3rd-grade Teacher Candidates	Ability to correlate personal characteristics with the profession	10
	Supporting children with special needs and contributing to their development	6
	Finding the special education teaching profession special and sacred	2
	Emotional satisfaction	2
	Having people with special needs among their relatives	1
Reason for the Profession's Eligibility for 4th-grade Teacher Candidates	Finding a job fast	10
	Ability to correlate personal characteristics with the profession	5
	Supporting children with special needs and contributing to their development	4

When the reasons for the suitability of the special education teaching profession for different grade levels are examined, it is seen that the 1st-grade teacher candidates express the opinion of "Emotional satisfaction" most frequently, while the 4th-grade teacher candidates focus on the "Finding a job fast" view.

3.3. Does Gender Have A Significant Effect On Attitudes Towards Assistive Technologies?

The independent samples t-test was performed for the third research problem. The results obtained are presented in Table 5.

Table 5.
Changes in Attitudes Towards Assistive Technologies by Gender Independent Samples T-Test Results

Groups	N	x̄	S	sd	t	p
Male	77	75,1948	8,69527	199	1,966	0,51
Female	124	72,7581	8,72198			
Total	201					

*p< 0.05

According to the independent samples t-test results, the mean rank of male's attitude scores towards assistive technologies (75.1948) is higher than the mean rank of female's scale scores (72.7581). As a result of the analysis, the difference between them was not statistically significant ($t(199) = 1.966$, $p > 0.05$). In this case, it can be said that gender does not have a significant effect on attitude scores towards assistive technologies.

On the other hand, the opinions of the participants on the use of assistive technologies were evaluated in terms of the gender variable and the following results were obtained.

Table 6.
Themes, Codes, Frequencies Regarding Assistive Technologies in Terms of Gender

Themes	Codes	F
Opinions of Male Teacher Candidates on the Use of Assistive Technologies	Facilitates and supports teaching	14
	Increases the quality of life of individuals with special needs	13
	Saves time	9
	Increases the motivation of individuals with special needs	6
	It is costly	3
	Teachers have a lack of knowledge about assistive technologies	4
Opinions of Female Teacher Candidates on the Use of Assistive Technologies	Facilitates and supports teaching	20
	Increases the quality of life of individuals with special needs	18
	Saves time	5
	It is costly	4
	Increases the motivation of individuals with special needs	4
	Causes adaptation problems in the beginning	4
	Teachers have a lack of knowledge about assistive technologies	3
	Access to assistive technologies is difficult	2
	Offers the least restrictive environment for individuals with special needs	1

When the opinions of male teacher candidates on the use of assistive technology are examined, 4 categories constitute the positive opinion codes, while 2 categories, "It is costly" and "Teachers have a lack of knowledge about assistive technologies", constitute the negative opinion codes.

Sample participant response to the code “Facilitates and supports teaching” among the prominent opinions of male teacher candidates:

> *P12: "I think technology is very important because it has positive effects in terms of education as well as facilitating people. As an educator, I think that technology should be used in all areas of education."*

Example participant response to the code “Increases the quality of life of individuals with special needs”:

> *P64: “I think that assistive technologies or equipment will be very beneficial when classified according to the disability types of individuals with special needs because this equipment and technologies can increase their life activities and can be effective in their learning as well. This will enable them to improve in all areas of development.”*

Example participant response for the “Saves time” code:

> *P25: "The use of assistive technologies in special education teaching is extremely necessary. Because without assistive technologies, it becomes very difficult for teachers to train individuals in need of special education. Thanks to assistive technologies, more productive work can be accomplished in a shorter period."*

When the opinions of female teacher candidates on the use of assistive technologies are examined, it is seen that the 6 categories of "Facilitates and supports teaching", "Increases the quality of life of individuals with special needs", "Saves time", "Increases the motivation of individuals with special needs", and "Offers the least restrictive environment for individuals with special needs" constitute the positive opinion codes of the teacher candidates. And the 4 categories of "It is costly", "Causes adaptation problems in the beginning", "Teachers have a lack of knowledge about assistive technologies" and "Access to assistive technologies is difficult" constitute the negative opinion codes of the teacher candidates.

Among the prominent opinions of female teacher candidates, sample participant response regarding the code "Facilitates and supports teaching":

> *P16: "It should be used more. It provides effectiveness in learning and facilitating learning. I think that enriching visuals and using assistive technologies for children with special needs will be easier to learn."*

Example participant response to the code “Increases the quality of life of individuals with special needs”:

P54: "Using assistive technologies is a necessity for me. Because they increase the quality of life of individuals who need help or have disabilities and support their inadequacies. As for the convenience, we can say the following; They enable individuals with special needs to act independently in their daily and social life without the need for help. The difficulties are that some individuals cannot obtain some assistive technologies due to their financial situation."

Example participant response for the "Saves time" code:

P44: "I think that assistive technology is a savior for special education, it is very important and necessary in terms of facilitating learning in special education, which is a wide field in every sense, and saving time at the same time."

3.4. Does The Grade Level Have A Significant Effect On The Attitude Towards Assistive Technologies?

The data of the fourth problem sentence was analyzed by using the ANOVA test. The results are given in Table 7.

Table 7.
The Change of Attitudes Towards Assistive Technologies According to Grade Levels Anova Test Results

Source of Variance	Sum of Squares	sd	Mean Square	F	p
Between Groups	549,762	3	183,254	2,534	0,58
Within Groups	14247,113	197	72,320		
Total	14796,876	200			

*p< 0.05

To test whether there is a difference between the attitude scores of 201 pre-service teachers towards assistive technologies, the mean scores of the groups formed according to their grade levels were compared with one-way analysis of variance.

As a result of the test, the average of the pre-service teachers in the 1st grade (72.0625), the average of the pre-service teachers in the 2nd grade (72.1509), the average of the pre-service teachers in the 3rd grade (74.7667) and the average of the pre-service teachers in the 4th grade (76,0750) was found. When the statistical results were examined, it was seen that there was no significant difference between grade levels (p> 0.05).

On the other hand, the opinions of the participants on the use of assistive technologies were evaluated in terms of the grade levels and the following results were obtained.

Table 8.
Themes, Codes and Frequencies of Assistive Technology Use in Terms of Grade Levels

Themes	Codes	F
Opinions of the 1st Grade Teacher Candidates on the Use of Assistive Technology	Facilitates and supports teaching	12
	Increases the quality of life of individuals with special needs	10
	Increases the motivation of individuals with special needs	4
	Saves time	3
	Causes adaptation problems in the beginning	2
	Offers the least restrictive environment for individuals with special needs	1
Opinions of 2nd Grade Teacher Candidates on the Use of Assistive Technology	Facilitates and supports teaching	8
	Increases the quality of life of individuals with special needs	4
	Increases the motivation of individuals with special needs	3
	Saves time	2
	Teachers have a lack of knowledge about assistive technologies	2
	It is costly	2
	Access to assistive technologies is difficult	1
Opinions of the 3rd Grade Teacher Candidates on the Use of Assistive Technology	Facilitates and supports teaching	7
	Saves time	6
	It is costly	4
	Teachers have a lack of knowledge about assistive technologies	4
	Increases the quality of life of individuals with special needs	3
	Increases the motivation of individuals with special needs	2
	Access to assistive technologies is difficult	1
Opinions of 4th Grade Teacher Candidates on the Use of Assistive Technology	Increases the quality of life of individuals with special needs	16
	Saves time	3
	Causes adaptation problems in the beginning	2
	Teachers have a lack of knowledge about assistive technologies	2
	Increases the motivation of individuals with special needs	1
	Teachers have a lack of knowledge about assistive technologies	1
	It is costly	1

When Table 8 is examined, it is seen that pre-service teachers' opinions on the use of assistive technology are similar to each other, even though their levels have changed. The 4 categories of “Facilitates and supports teaching”, “Increases the quality of life of individuals with special needs”, “Increases the motivation of individuals with special needs”, and “Saves time” constitute the common opinion codes of pre-service teachers.

3.5. Is There A Relationship Between The Attitude Towards Assistive Technologies And The Attitude Towards The Special Education Teaching Profession?

A simple linear correlation analysis was performed for the analysis of the last problem statement of the research. The findings are presented in Table 9.

Table 9.
Simple Linear Correlation Analysis Results Between Attitude Scores Towards Special Education Teaching Profession and Attitudes Towards Assistive Technologies

	Attitude Towards Profession	Attitudes Towards Assistive Technologies
Attitude Towards Profession	1	0,212**
Attitudes Towards Assistive Technologies	0,212**	1

The simple linear correlation procedure performed to determine whether there is a relationship between pre-service teachers' attitudes towards the special education teaching profession and there is a positive and significant relationship between the two-scale scores ($r = 0.212$, $p < 0.01$). Looking at the range of the correlation score ($r = 0.212$), it was concluded that the relationship strength was weak.

4. DISCUSSION AND RECOMMENDATIONS

In this study, the relationship between the attitude towards the special education teaching profession and the attitude towards assistive technologies was examined. In addition, pre-service teachers' attitudes towards the special education teaching profession and their attitudes towards assistive technology were examined in terms of various variables by using a mixed-method.

When the quantitative data on the examination of attitudes towards the special education teaching profession in terms of gender variables are examined, it is seen that females have higher average scores than males. Other studies in the literature (Aşkar and Erden, 1987; Gökçe and Sezer, 2012; Küçük, 2012; Tekerek and Polat, 2011) support this finding. When the qualitative results were examined, it was seen that men preferred the special education teaching profession for economic reasons such as easy employment and financial independence, while women preferred the special education teaching profession for emotional reasons such as helping more, enjoying spending time with students and being happy about it. Johnston et al., (1999) and Saban, (2003) can be said that female teacher candidates with higher intrinsic motivation have higher professional attitudes than male teacher candidates.

As a result, it can be said that the economic independence of male teacher candidates is more important, while female teacher candidates approach individuals with special needs more emotionally and therefore give more importance to emotional satisfaction. Özbek (2007), in a study examining the factors in choosing the teaching profession, stated that male pre-service teachers scored higher than female pre-service teachers in the factor of economic reasons, and female pre-service teachers scored higher than male pre-service teachers in personal and social factors.

Considering the quantitative data on the examination of attitudes towards the special education teaching profession in terms of the grade level variable, it was determined that the scores of the teacher candidates from the Attitude Scale towards the Special Education Teaching Profession did not differ significantly according to the grade level. However, when the scores were examined, it was seen that the average score decreased as the grade level increased. In addition, when the views obtained from the qualitative method are examined, the views of the 1st-grade teacher candidates are "Emotional satisfaction" and "Supporting children with special needs and contributing to their development", but the opinions of the 4th-grade teacher candidates are focused on "Finding a job fast".

In the light of these findings, it can be said that the desire and emotional state of the teacher candidates who started the teaching undergraduate program have regressed over the years and the attitude towards the profession has moved away from the pedagogical context. Similarly, in the study conducted by Küçükoğlu, Kaya, and Turan (2010), it was seen that the first-grade teacher candidates' perceptions of achievement orientation were higher than those of the 4th-grade teacher candidates.

Attitudes of special education teacher candidates towards assistive technologies were examined in terms of gender variable and it was seen that there was no significant difference between gender variable and pre-service teachers' attitudes towards assistive technologies. There are studies in the literature supporting this finding (Demirkıran, 2005; Murugaiyan and Arulsamy, 2013; Arslan, 2018). When we look at the findings of the research obtained from the qualitative method, the most repeated common positive opinions for both genders are "Facilitates and supports teaching" and "Increases the quality of life of individuals with special needs". Therefore, it can be said that assistive technologies can increase the quality of education and support these individuals to develop their daily and social life skills. When we look at the negative opinions of the pre-service teachers, the common thought of both genders is "It is costly" and "Teachers have a lack of knowledge about assistive technologies". Based on these data, it can be said that there are difficulties in accessing assistive technologies and that teachers do not have enough knowledge to recognize and use these technologies.

When the findings regarding the examination of special education teachers' attitudes towards assistive technologies in terms of the grade level variable were examined, no significant difference was found between the grade level and the average attitude scores. Similar findings were also found as a result of the research conducted by Yılmaz, Üredi, and Akbaşlı (2014). However, when the mean scores were examined, it was seen that the mean score increased as the grade level increased. Şahin and Namlı (2019), when they looked at the attitudes of teacher candidates to use technology in education, stated that the third and fourth-grade students had more positive attitudes than the first-grade students. Looking at the qualitative data of the research, it is observed that as the grade level increases, the number of participants who state that the use of assistive technologies is advantageous also increases. On the other hand, while the 1st-grade teacher candidates did not express negative opinions about the technologies used, the negative opinions of the 2nd, 3rd, and 4th-grade teacher candidates about the assistive technologies such as "It is costly" and "Teachers have a lack of knowledge about assistive technologies" are remarkable.

As the reason for the negative opinions to be expressed, it can be shown that the pre-service teachers' awareness of the use of assistive technology was low at the beginning and this awareness increased in line with the lessons taken as the grade level increased. In the study conducted by Arslan (2018), it was seen that the teachers who took lessons during the undergraduate programs related to these technologies had higher attitudes than their colleagues who did not. It can be said that the "Instructional Technologies" and "Technology-Supported Teaching in Special Education" courses in the 2nd grade are effective as the reason for the increase in the attitude scores of the teacher candidates as the grade level increases. In addition, it can be said that their awareness has increased as a result of their exposure to more and more technology in their lives.

Within the scope of the last problem sentence of the study, it was seen that there was a significant and positive but low-level relationship between the professional attitudes of the special education teacher candidates and their attitudes towards assistive technology. When the collected quantitative and qualitative data are evaluated in general, it can be seen that pre-service teachers who have positive attitudes towards the profession tend to use assistive technologies more efficiently in

terms of preparing efficient educational environments in their professional lives, providing the least restrictive environment for special students, supporting their independent life skills and increasing their quality of life. can be said.

As a result, the following highlights can be summarized within the scope of the study:

- It has been observed that male teacher candidates consider economic conditions more when choosing the special education teaching profession, while female teacher candidates approach children with special needs more emotionally and therefore give more importance to emotional satisfaction.
- Teacher candidates' desire to learn and their emotional closeness to the profession decrease as the grade level increases.
- It has been determined that the quality of teaching environments can be increased with the use of assistive technologies and it can contribute to the development of social and daily living skills of these children. However, it has been determined that there are difficulties in obtaining these technologies and that some teachers do not have sufficient knowledge about recognizing and using these technologies.
- It was determined that the awareness of pre-service teachers about the use of assistive technology in the special education teaching profession was at a low level at the beginning, but this level of awareness increased thanks to the technology-related courses they took in the undergraduate program.
- It has been observed that pre-service teachers who have a positive attitude towards the special education teaching profession tend to use assistive technologies more efficiently in their professional lives in terms of preparing educational environments more efficiently, supporting the independent living skills of individuals with special needs, increasing their quality of life and providing them with the least restrictive environment.

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