The effect of information technologies on the development of moral values of future teachers based on innovations in education

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Abstract

This study aims to examine the impact of information technologies on the development of spiritual values of future teachers based on innovations in education. The research was carried out in the fall semester of 2021–2022. The study was conducted in a screening model with the participation of 306 prospective teachers attending their studies at various universities of Kazakhstan. In the research, pre-service teachers were given 4 weeks of distance education and training on information technologies. In the study, the 'information technologies' measurement tool developed by the researchers was used to collect data. The scale used in the research was delivered to and collected from the university students via the online method. The analysis of the data was carried out using the SPSS programme; frequency analysis was carried out using the *t*-test, and the results obtained were added to the study accompanied by tables. As a result of the research, it was found that pre-service teachers have a high degree of knowledge and degree of predisposition towards information technologies.

Keywords: Innovation, Pre-Service Teachers, Information technologies, Distance Education

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1. Introduction

Information technologies affect and shape every field without exception around the world. Information technologies have become factors that show their presence in every sector of all nations today, gradually increasing their influence in all fields. One of these areas is undoubtedly the field of education (Turalbayeva et al., 2021). Information technologies have become important investments worldwide due to their efficient and effective conduct in educational activities and their role in increasing the success of educational environments. Indeed, in the context of the ability of future generations to live in the information age, it seems that information technology is not only the backbone of a society, but also a very important catalyst for the desired change in education in the race to educate learners as individuals who can produce information (Kalinina et al., 2020). In many educational systems around the world, educational environments are moving towards a more technology-based structure (Rosli et al., 2020). In this case, in many countries, a large amount of resources are used to integrate information technologies into education (Rosli et al., 2020). Investments are being made in subtitles and equipment related to information technologies, and plans are being put forward to intensify investments in information technologies (Cavus et al., 2016). In parallel with these studies, the importance of information technologies is becoming more obvious and the use of information technologies in education is increasing more and more (Hasanov et al., 2020). As a matter of fact, IT has increased the quality of the effectiveness and productivity of education, has enabled researchers to focus their attention on this point, has become an important issue for educational research and has witnessed the introduction of IT technologies into the educational world in a deep-rooted way (Stosic, 2017). In this direction, studies have been carried out by researchers for many years in order to reveal the value of the use of technology in education, and the necessity of educational environments in which technology is integrated for effective education has begun to emerge (Tortorella et al., 2021).

How to use information technologies, how to integrate them into education and how to manage these processes have been considered as the subject of many studies and the effects of information technologies on education have been studied in both national and international dimensions in the field of literature (Larsen et al., 2021). In this context, the research studies conducted have emphasised that computers and similar information technologies remain at the centre at all levels of education and training and continue the importance of technology and education integration. Many countries also regularly review and evaluate integration programmes in a national sense in order to compare the results of their investments related to the integration of information technologies with education in other countries (Oz et al., 2021). Considering the developments and the findings revealed by the research, it is clear that the contribution of information technologies to education is being agreed throughout the world and trends in this direction are continuing to increase (Sherman et al., 2021). In this direction, many nations are accelerating their research in the field of information technologies in order to train qualified individuals who can effectively use the facilities in accordance with the needs of the age and continue to work for the successful realisation of the integration of technology with education. The fact that the potential of information technologies in education has been realised and regulations have been made in this direction alone cannot be sufficient. The key point is that the integration of information technologies into educational environments can be successful at the implementation stage. Information technologies have been adopted as important elements in the effectiveness of learning, and new technologies have been introduced. However, despite the high expectation levels, it is also stated that the developments

related to information technologies have not led to the desired level of positive changes in the activities in educational settings (Uzunboylu et al., 2021). Despite the fact that many educational technologies have taken their place in classrooms, the desired change in schools is below expectation. The point is behind the targets and the integration efforts of information technologies in the fields of education and training are insufficient. In this context, teachers who are vital to the use of information technologies and their integration with education should be addressed at the centre of the problem (Abouzahra et al., 2021).

1.1. Related Studies

Huda's (2019) study stated that information technologies provide an innovative way to achieve good lives by evaluating information about the concept of wisdom; they aimed to propose technical guidelines as a reference model to strengthen both professional and ethical foundations associated with educational practice; and when considering the results of the study and the common characteristics of information technologies in innovative education, they came to the conclusion that phenomenological and grounded theories and ideas that have been deduced to determine their elements and functionality can be integrated. It can be said based on the research that the teachers of the future are better off with this new educational model.

Biletska et al. (2021), in the work they carried out in the year of information and technology, were inspired by the future foreign language teachers to develop a programme that attempted to teach using digital technologies; and as a result, thanks to the information technology approach, students could complete their work more quickly and they could learn how to correctly apply the new tools. It is seen that information technologies have taken shape in education, thanks to their contributions to students and prospective teachers.

According to Bati et al. (2021), first of all one's work is done with access to technologies for the integrated use of information technologies for quality education, skills and motivation. In terms of the level of readiness, the secondary education system in Ethiopia aims to examine student learning and as a result for better use of information technology in in-school and out-of-information technology resources and services they concluded that they revealed the importance of an integrated strategy. In this context, it is seen that education and resources are important in relation to the use of information technologies in research.

Based on the observations obtained from related studies, the importance of information technologies is seen and it is expected that future teacher candidates will use these technologies well to provide better education. The research will continue on the impact of information technologies on the development of spiritual values of future teachers.

1.2. Purpose of the Study

In this study, the effect of information technologies on the development of spiritual values of future teachers based on innovations in education is examined. The answers to the following questions were sought for the general purpose of the study:
1. What are the digital environments used by pre-service teachers for information technologies?
2. How are the use cases of information technologies of pre-service teachers?
3. What are the opinions of pre-service teachers about information technologies and spirituality?
4. Is there a difference between the information technology situations of pre-service teachers according to DEC gender criterion?
5. What is the status of information technologies according to the age criterion?

2. Method

In this section, information about the method used in the study, the group participating in the study, the type and source of data, data collection tools and statistics used in the study are included and patterned.

2.1. Research Model

This study used the quantitative research method to discuss this research. The quantitative research method was used to scan the model located under the basic purpose of the quantitative research method for bias, objective and cause and effect, describing the relationship of the sample to obtain information that can be generalised to the universe (Yang et al., 2021).

2.2. Working Group/Participants

The participation group included in the study consisted of 306 volunteer university students who continue to study at various universities of Kazakhstan. In the research, the measurement tool was applied to pre-service teachers with the help of an online questionnaire and it was accepted.

Gender
In this section, the gender differences of pre-service teachers are given in Table 1.

Table 1. Distribution of Pre-Service Teachers According to the Gender Variable

Gender	Male		Female	
	F	%	F	%
Variable	160	52.28	146	47.72

Table 1 presents the distribution of teacher candidates identified as the study group and research participants according to gender variable. In this context, it is seen that 52.28% of the teacher candidates (160 people) are male, while 47.72% (146 people) are female. In the gender section, the findings reflect the actual gender distribution.

Digital Environments Used by Pre-Service Teachers for Information Technologies

In this section, the digital environments used by pre-service teachers for information technologies are investigated and examined. Detailed information is given in Table 2.

Table 2. Distribution of Pre-Service Teachers According to the Digital Environments They Use for Information Technologies

Digital Media	Google Chrome		WhatsApp Documents		Google Drive		Other	
	F	%	F	%	F	%	F	%
Variable	102	33.33	58	18.96	107	34.97	39	12.74

When Table 2 is examined, the digital environments used for information technology by teacher candidates are examined and detailed information is presented in Table 2. In this context, 33.33% (106 people) expressed using Google Chrome, 18.96% (58 people) used WhatsApp documents,

34.97% (107 people) used Google Drive and 12.74% (39 people) expressed using other environments. It can be seen that the most commonly preferred environment in research is Google Drive.

Age Status

In this section, the age status of the pre-service teachers of the study group is examined and detailed information is given in Table 3.

Table3. Distribution of Pre-Service Teachers According to Their Age Status

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Age	18-22		23-25		26 and above	
	F	%	F	%	F	%
Variable	285	93.14	12	3.92	9	2.95

When Table 3 is examined, the distribution of the working group teacher candidates according to their age status is considered and the relevant information according to the age scale is presented. In this context, it is seen that 93.14% (285 people) are in the age range of 18–22, 3.92% (12 people) are in the age range of 23–25 and finally 2.94% (9 people) are in the age range of 26 and above. In this section, the findings reflect the actual distribution. In addition, the fact that the age is in the range of 18–22 years is important for the use of information technologies in feelings of spirituality.

2.3. Data Collection Tools

The data collection tool used in the research was created by the people who created the problem situation of the research, and the data collection tool was simplified by removing unsuitable substances from the research after examination by experts in the field of information technology and spiritual values. A personal information form called the 'information technologies' measurement tool was used, which was developed by researchers and applied to pre-service teachers. The validity of the measurement tool developed in the scope of the information technology platforms and technologies was examined by experts with the title of professor; eight unnecessary items were removed from the measurement tool and re-arrangements were made.

1. Personal information form (demographic data): In the personal information form, information such as age, gender and digital media usage environments are provided.
2. Information technology data collection tool: A 5-point Likert-type questionnaire was prepared to obtain information about information technologies and spiritual values. A total of 16 items of the measurement tool, which consisted of 20 items, were used, with 4 items being removed from the measurement tool, thanks to the expert's opinions. The opinions of university students on two factorial dimensions, such as 'Information technologies' and 'spiritual values', were obtained. Cronbach's alpha reliability coefficient of the measurement tool as a whole was calculated as 0.97. The answers were rated as 'I strongly disagree' (1), 'I disagree' (2), 'I am undecided' (3), 'I agree' (4) and 'I definitely agree' (5). The information for the measurement tool was collected from the university students via an online environment.

2.4. Application

This study consisted of researchers and volunteers who continue their education in various universities in the Kazakhstan region. A total of 306 ICT teacher candidates used technology in their

live lessons, spiritual values and the environment in this live lessons Adobe Connect training course was prepared and organised by people who are experts in the field of the environment, showing, live dersr part in research when it is completed, the visuals for ICT student teachers and spiritual values within the scope of education is scheduled to be shown. Within 4 weeks of training, 'information technologies', 'innovative methods', 'spiritual values', etc. related to the live lessons of prospective teachers. Such information was provided to pre-service teachers in the form of distance learning, and pre-service teachers were allowed to participate in this programme every week. After 4 weeks of training, an online measurement tool and an information form were applied to the prospective teachers, and the data were given in the form of tables in the findings section. Most universities preferred education programmes through the Adobe application distributed and each section so students will be limited to designated in Section 5 of the week is set in the distributed maximum of 62 62 the reason for the division as a person in every sense of the authority of the teacher candidates were thought to be aimed at increasing the knowledge of em, 45 minutes each training programme training 5-minute question and answer in the time frame that has been processed in the form of total 50 minute online training of teacher candidates in the tablet, it was expected that they would participate in the training with images and microphones using devices such as telephone computers. The measurement tool applied to pre-service teachers was collected through an online questionnaire and transferred to the SPSS programme by coding them in the environment of the calculation programme.

2.5. Analysis of the Data

In the analysis part of the data, statistical data obtained from university students were analysed in the statistics programme using frequency (f), percentage (%), mean (M), standard deviation (SS), *t*-test and one-way ANOVA with IRA. The data obtained from the programme are presented in tables accompanied by numerical values, findings and comments.

3. Findings

In this section, the numerical findings obtained as a result of the analysis of the statistical data are presented in the form of tables and various interpretations are included in accordance with the findings.

3.1 Information Technology Use Cases of Pre-Service Teachers

In order to determine that the use cases of information technologies of pre-service teachers are good, they are examined on a daily basis. In this context, it is seen that the information about the use of information technologies of pre-service teachers is given in Table 4.

Table 4. Use of Technology by University Students

Information Technologies Usage	1-3 Time		4-5 Time		6 and above	
	F	%	F	%	F	%
Variable	74	24.18	58	18.95	174	56.87

In Table 4, the use of information technologies of pre-service teachers is examined and detailed information is presented. Among the information technology use cases, 24.18% (74 people) preferred the 1–3 hours range, 18.95% (58 people) preferred the 4–5 hours range and 56.87% (174 people)

chose the 6 hours and above. It can be seen that majority of the teacher candidate has 6 hours and above in light of the observed information.

3.2 Information Technologies and Spirituality Value Views of Pre-Service Teachers

In this section, information technology and spirituality value views of pre-service teachers are included and all the findings are shown in Table 5.

Table 5. Information Technologies and Spirituality Value Views of Pre-Service Teachers

No	Information technologies and spirituality value views of pre-service teachers	M	S
1	I have learned to use information technologies	4.52	0.40
2	I can easily access the information I want with information technologies	4.82	0.32
3	My spiritual feelings have improved with information technologies	4.63	0.33
4	Thanks to information technologies, I can devote more time to my normal work	4.52	0.50
5	I was able to use information technologies from anywhere whenever I wanted	4.72	0.53
6	My feelings about teaching were strengthened by information technologies	4.80	0.69
7	He helped me with my information technology teaching practical classes	4.75	0.80
8	I was able to use information technologies easily in my teaching internship	4.63	0.77
9	I am looking forward to using information technologies in the teaching profession	4.88	0.53
10	I think that information technologies are always an advantage in teaching	4.78	0.58
11	I believe that prospective teachers will receive better education with information technologies	4.74	0.67
12	Every time I spent with information technologies, it has benefited and benefited me	4.81	0.52
13	I believe that there is a difference between people who do not take information technologies and people who do	4.41	0.48
14	My spiritual value direction has developed thanks to information technologies	4.65	0.62
15	I would have been more successful if I had used information technologies earlier	4.63	0.72
16	I would also like to see the information technology platform in my other live classes.	4.60	0.52
	Overall average	4.68	0.56

When Table 5 is examined, it is observed that the opinions of teacher candidates of information technology and spirituality are presented, with separate meaning in each answer. After the training of teacher candidates regarding the value of information technology and spirituality, it can be said that the opinions in Table 5 are high. In the research, the most obvious expression was 'I can't wait to use information technologies in the teaching profession' (M = 4.88). In addition, it was found that one of the most obvious expressions of the research was 'I can easily access the information I want with information technologies' (M = 4.82). It is seen that the opinions of prospective teachers about the field of information technologies are quite high, while another finding is that 'Every time I spent with information technologies, it benefited me and benefited me' (M =4.82). Another finding of the research was 'I think that information technologies are always an advantage in teaching' (M= 4.72), followed by 'I believe that prospective teachers will receive better education with information technologies' (M=4.74). In addition, other values of the research were 'IT helped me in my applied

courses of teaching' (M= 4.75), and finally, when the overall average was considered, it was found to be M= 4.68.

Table 5 shows that the values of spirituality teacher candidates with information technology developed, they might learn the information they seek when they want this technology to benefit from the lessons of this application, courses and other courses they want to see in area. It was also determined that they gave very positive responses. In this regard, based on the findings, it can be said that the opinions of prospective teachers about the values of information technologies and spirituality are positive, since all the values in the table have a positive meaning.

3.3 Information Technology Situations According to Gender Criteria

In this section, the information technology situations of teacher candidates according to the gender variable were examined and the information about whether there is a significant difference is given in Table 6.

Table 6. Information Technology Situations According to the Gender Criterion

Information Technology Situations	Gender	N	*M*	SD	Df	t	p
	Male	160	84.55	8.8	306	-1.239	.142
	Female	146	83.97	9.7			

When Table 6 is examined, the information technology situations of teacher candidates according to the gender variable are examined and it was found that there was no significant difference according to the gender criterion [t(306)= -1.239, p<.05]. The ICT status of the teacher candidates was examined, the average score of male teacher candidates was M = 84.55 compared to female teachers in relation to ICT, with a high mean score of M = 83.97 observed. In this context, it can be said that there is no difference between the information technology scores of male students in this study compared to female teacher candidates in the findings of the research.

3.4 Information Technology Situations according to the age criterion

In this section, the use cases of information technologies according to the age criterion are examined and detailed findings are given in Table 7.

Table 7. Use cases of information technologies according to the age criterion

Age	N	Order Average	SD	X²	P
18-22	285	93.14	3	1.962	.147
23-25	12	3.92			
26 and up	9	2.95			

In Table 7, the criteria of the age of the teacher candidates are presented. According to the results, there is no significant difference between the comparison of ICT usage situations, as no evidence was found (χ2(3)= 1.962; P=.147; P>0.05). The results are discussed according to the criteria of distance education of teacher candidates: the 18–22 age range is seen to be the highest, and the second highest value was in the range of 23–25 and 26 and above. It can be said that there is no significant difference between the use cases of information technologies for the DEC criteria of prospective teachers.

4. Discussion

Tokareva et al. (2019), in their studies conducted in the year on college students from the perspective of the implementation of information technology and the organisation, attempted to develop a survey to determine the quality. As a result, the completeness of the training programme teachers technological literacy of students in universities and technical support that is provided by the results show that they want a quiet place to study. In this context, when the results of the research and the values are combined, it can be concluded that teacher candidates would like to see the application of information technologies in their other courses. In this context, it can be said that according to the two values of the research information technologies provide bagpipes and benefits for students and prospective teachers.

In their study, Waruwu et al. (2020) aimed to measure the effect of teachers on innovation capacity by adopting a model aimed at building teacher innovation capacity and as a result, they concluded that it has a positive and meaningful effect on innovation capacity. In this context, when this value is combined with the results of the research, it has been concluded that positive developments have occurred in pre-service teachers with information technologies on innovative education. It is seen that the studies conducted from the past to this day provide benefits for students and prospective teachers. It can be said that information technologies benefit educators and learners.

Arkorful et al. (2021) integrated ICT in teaching in the high school in the work they had done and sought to develop hypotheses aimed at studying the diffusion of innovations theory. As a result, the acceptance of the integration of ICT in education the study also concluded that there is no significant difference in the gender. In this context, it has been concluded that there is no significant difference between the results of the study, and it is observed that the opinions of prospective teachers are always high within the research. According to these two values, it can be said that there is no significant between generations over time.

When the research is considered, it is seen that the research conducted in the field of information technologies has maintained its place over the years, and it also seems to provide benefits and meaning to educators and prospective teachers in every sense. This study has meaning and importance in order for information technologies to maintain its place from a spiritual point of view. It is thought that repeating this study in the coming years will contribute to both these studies and the research problem. It is expected that this study will be conducted at another time and in another place.

5. Conclusion

When the results of the research were discussed, first, it is seen that the values are number and gender of participants. The study consisted of a total of 306 participants in the working group of teacher candidates, with 160 female and 146 male teacher candidates. Nowadays, digital media has taken its place everywhere and has printed its name on the top spots. In this context, among the results of the research, the use cases of pre-service teachers regarding the digital environment they use for information technologies were examined, and as a result, it was concluded that they mostly used Google Drive. The results of the research and other values interpreted individually in the teachers' ICT usage, and as a result, the use cases have been investigated to be 6 hours and above, reaching a conclusion that innovative ICT usage situations for them mean education teacher candidates are expected to do this for a better user and the interpreter result.

It is always important to express an opinion about a value. It is believed that each opinion expressed on a topic will take this field to the next level. In this context, in another result of the

research, teachers' ICT and spirituality specify a value; it is observed that the opinions of each answer had a separate conclusion. After the training of teacher candidates, the opinions of information technology and spirituality are high. They are impatient to use information technology in the teaching profession, information whenever they want easily able to achieve with technology, information technology and benefit them every time with benefit they provide, they stated that information technologies are always an advantage in teaching, that they believe that prospective teachers will receive better education with information technologies and that applied courses in information technology teaching also help them. In addition, it has been concluded that prospective teachers have improved their spirituality values with information technologies, they can learn the information they want at any time, they benefit from the lessons of this technology, they also want to see this application in other courses besides field courses and they have given many more positive responses. It can be said that the opinions of these prospective teachers about information technologies and spirituality values are positive.

The values of each study are of importance in the concept of gender; the issue of gender in research bears a direct relationship with the situation of equal value to be high. In this context, the research discussed another value when the variable of teacher candidates according to gender and gender according to the criteria of information technology cases studied. It is concluded that there is a significant difference; also, the value of this field is high and an average of points relating to both sexes is higher inferred that it was. Finally, another value of the results of the research showed that according to the criteria age was not found to be significantly different between ICT use cases reached the conclusion when comparing the results. The results were discussed according to the criteria of distance education of teacher candidates: the 18–22 age range is seen to be the highest, and the second highest value is in the range of 23–25 age and 26 and above. It can be said that there is no significant difference between the use cases of information technologies for the DEC criteria of prospective teachers.

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