April 2019

Examining the Factors Influencing Technology Integration in the Teaching-Learning Process: A Case Study

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Abstract

The present research aims to investigate the impact of the factors of technology-integrated attitude (TIA), computer self-efficacy (CSE), technological knowledge (TK), task-technology fit (TTF), teaching experience (TE) and technological pedagogical knowledge (TPK) on technology-integrated intention (TII) and provide a causal model tailored to the impact of these factors on TII in the teaching-learning process (TLP). The research is applied, and in terms of data acquisition method and date analysis, it is a descriptive, correlational research. The research was conducted among 370 high school teachers in Shiraz in 2017-2018. The questionnaire was used for the data acquisition. The path analysis method was used to analyze the research hypotheses. The results show that the variables of TK and CSE directly and indirectly, attitude toward integration and TTF directly and TPK indirectly had a significant impact on TII in the TLP. The highest impact is related to CSE and the lowest total impact to TK on TII in the TLP.

Keywords: Technology-integrated intention (TII), Technological pedagogical knowledge (TPK), Self-efficacy, Technological knowledge (TK), Teaching experience (TE), Task-technology fit (TTF).

Introduction

Currently, information is a strategic commodity, and is considered as one of the main development indicators among nations and communities. To do so, the concept of shifting power and substituting knowledge has been accepted instead of physical and material wealth. This has resulted in a major challenge for developing countries that are away from the developed world in terms of technology. In such a situation, developing countries, in order to achieve the full autonomy and self-sufficiency, in addition to providing and obtaining information technology (IT), should change their situation from a consumer-driven technology into a producer-driven technology. Recruiting and training the qualified, scientific manpower is the condition for realizing this strategic policy; because technology is just a tool, and what can use this capability is the skilled manpower, and this is the sole responsibility of education systems, such as Education and Training Organization, because, not only is the IT development without human development unsuccessful, but the bitter and fragile results may also follow; therefore, the role of IT is inevitable in education. In today's changing world, using the traditional ways to improve the learning process is not responsive in learners (Mistler-Jackson & Butler Songer, 2000). The results of the research show that since the 1980s, new approaches have emerged in learning environments that have driven the learning process from teacher-centered approaches to learner-centered approaches. As a result of these changes in the field of the educational technology, classroom design has also changed and educational designs of behaviorism have been shifted towards constructivism. In general, in educational designs, using the media, in particular, new ITs, has been considered as a useful tool for the development of learning in learners, and these tools should be tailored to the educational goals and objectives, content and educational methods. The educational methods are, in fact, the application of the procedures that the teacher adopts to facilitate the learning process. The research results show that, if coordinating the technologies with other teaching elements such as goals, content and methods, it can have a significant impact on learner achievement (Kulik, 1994).

The world in which we live is one that every day will benefit from dynamic and generative technology, and necessarily guides every thinker to recognize the importance and necessity of better understanding the technology and its implications, acquire the capabilities and skills necessary to use optimally. The development of this technology is so dramatic and inclusive that cannot be ignored its impacts on education. What is certain is that the reason of success of advanced countries in the education sector is the flexibility and ability to make timely changes in information-oriented education systems whose base is the development of IT. To do so, most countries are trying to prepare their schools for being efficient in the information era, and in this regard, they develop and implement various strategies. Teachers play a central role in education and can integrate new educational technologies into the teaching process as the first factor (Schank, 2000).

The amazing development of information and communication technology (ICT) and the inclusiveness of the World Information Network (WIN), in order to increase the speed and quality of service delivery, are part of the 21st Century characteristics. Hence, ICT has increasingly penetrated all sectors of society and has become an integral part of people's daily

lives(Bankole & Stephen, 2012) . In recent years, several studies have been conducted on how teachers improve their knowledge and on the technology use in the classroom and how to develop the successful technology integration. The ease of use and usefulness of technology are among the key factors in student success(Smarkola, 2007). (Dexter & Riedel, 2003) consider the acquiring of such technical skills as working with computers, working with internet browsers, and common software in the teaching learning as the most important factors influencing the technology integration into the learning process. Students need the more self-confidence and a more positive attitude toward the educational technology to encourage them to integrate work into technology during the learning(Chen, 2008). Easy access to this technology is one of the factors influencing the integration and application of educational technology. Accordingly, without the adequate technology, students will have little opportunity to integrate technology into the learning process (Greathouse, 2018; Muris, 2002; Schwenger, 2018). In recent years, the way of culturalization among students for the integration and application of technology has been controversial in the Iran's education system. Therefore, in the research, given the need for the teacher self-efficacy in technology use in the education system and the technology-integrated intention in education, the factors influencing the technology integration in the learning process will be examined.

Research Objectives

The research seeks to investigate the impacts of the variables of technology-integrated attitude (TIA), computer self-Efficacy (ASF), technological pedagogical knowledge (TPK), teaching experience (TE), task-technology fit (TTF), technological knowledge (TK), computer self-efficacy (CSE), and technology-integrated attitude (TIA) on technology-integrated intention (TII). To do so, in the research hypotheses section, predicting the relationships and the impacts of each of these variables on technology-integrated intention (TII) have been investigated directly or indirectly.

Research Hypotheses

1. There is a direct impact between TPK and CSE, TIA, and TII.
2. There is a direct impact between TE and TK, TIA and CFE.
3. There is a direct impact between TTF and TIA and TII.
4. There is a direct impact between TK and TIA, and TII.
5. There is a direct impact between CSE and TIA, and TII.
6. There is a direct impact between TIA, and TII.
7. There is an indirect impact between TTF and TII through TK and TIA.
8. There is an indirect relationship between TE and TII through TK, CSE, and TIA.
9. There is an indirect relationship between TPK and TIA through CSE and TII.
10. There is an indirect relationship between TK and TII through TIA.
11. There is an indirect relationship between CSE and TII through TIA.

Research Methodology

In the research, the relationships among the real-time variables are examined using the theories of previous researches, to ultimately help to make decisions, policies and future planning of education. Therefore, the present research is applied in terms of purpose and, it is a descriptive-correlational study in terms of its nature and method. The variables of this research are divided

into two categories: endogenous CSE, TK and TIA, and exogenous TTF, TPK and TE, to determine their impact on TII. In the research, we tried to identify the causal diagram, using structural equations and path analysis, to determine the efficiency level of each variable in TII in the classroom.

The research population includes all teachers of secondary and high school in Shiraz during 2017-2018. Their number is 18778 (13,720 secondary school teachers including 6925 women and 6795 men, and 11276 high school teachers including 6218 women and 5058 men). 370 people were selected as sample, using the Cochran formula.

Findings

Descriptive Indicators of the Research Variables

Given that 70 questionnaires were not considered due to defects in completing or not returning, 300 questionnaires were analyzed in the statistical analysis.

The results from the indicators of descriptive statistics are presented in Table1. Given the values obtained of skewness and kurtosis for the research variables, which are between -2 and +2, the distribution of all variables is normal, so we can use the path analysis model to analyze the research findings.

Table1. The Results of Calculating the Validity and Reliability of Questionnaires using Cronbach's Alpha

	AVE	SD	Skewness	Kurtosis
technological knowledge (TK)	3.65	0.60	-0.58	-0.20
technology-integrated attitude (TIA)	3.19	0.47	0/35	0.24
technological knowledge (TK)	4.5	0.43	-1.1	1.49
technological pedagogical knowledge (TPK)	4.49	0.43	-0.94	1.04
task-technology fit (TTF)	3.66	0.69	-0.50	-0.50
computer self-efficacy (CSE)	3.64	0.83	-0.87	0.38

The Correlation Matrix

Since the basis of the path analysis studies is the correlation among variables, the correlation matrix of the research variables is shown in the following table.

Table2. Correlation Matrix of the Variables Studied

	TII	TIA	TK	TPK	TTF	CSE	TE
TII	1						
TIA	0.45**	1					
TK	0.46**	0.26**	1				
TPK	0.19**	0.04	0.35**	1			
TTF	0.74**	0.27**	0.44**	0.21**	1		
CSE	0.75**	0.35**	0.40**	0.25**	0.84**	1	
TE	0.004	-0.02	-0.012	-0.045	0.015	0.025	1

According to the results shown in Table2, among the exogenous variables, TTF (0.74), TPK (0.19) and TE (0.004) have the highest correlation coefficient with TII, that these coefficients are statistically significant except for TE. Among the endogenous variables, CSE (0.75), TK (0.46), and TIA (0.45) have the highest correlation coefficient with TII, all of which are statistically significant.

Path Analysis

In this section, the results of examining the direct and indirect impacts of the studied variables and technology-integrated intention are presented based on the conceptual model of the research. In order to evaluate the hypothesized model of the research, we use the Maximum Likelihood Method to estimate the parameters. Estimated parameters include the coefficients of the direct impact, the indirect impact, and the total impact that for each of these parameters, a separate table containing standardized estimate coefficients, standard error of estimate and t-value is presented for the significance test of these parameters. In addition, according to these coefficients, the confirmation or rejection of research hypotheses has been investigated. Finally, the model fit characteristics are mentioned.

Estimating the Coefficients of Direct Impact

According to the results shown in Table3, we will discuss on confirming or rejecting hypotheses related to the direct impact of the variables on each other.

Table3. Estimating the coefficients of direct impact of the variables studied based on the conceptual model of the research

	Standardized parameter	St- estimation error	P
TPK direct impact with:			
technology-integrated attitude (TIA)	0.073	0.101	0.325
technology-integrated intention (TII)	0.253	0.158	0.229
computer self-efficacy (CSE)	0.182*	0.126	0.046
TE direct impact with:			
technological knowledge (TK)	-0.002	0.065	0.975
technology-integrated attitude (TIA)	-0.012	0.052	0.761
computer self-efficacy (CSE)	-0.027	0.064	0.783
TTF direct impact with:			
technological knowledge (TK)	0.663**	0.083	0.003
technology-integrated attitude (TIA)	-0.466**	0.127	0.010
technology-integrated intention (TII)	0.391*	0.107	0.018
TK direct impact with:			
technology-integrated attitude (TIA)	0.328*	0.116	0.036
technology-integrated intention (TII)	0.211*	0.104	0.012
CSE direct impact with:			
technology-integrated attitude (TIA)	0.570*	0.089	0.041
technology-integrated intention (TII)	0.435*	0.100	0.030
TIA direct impact with:			
technology-integrated intention (TII)	0.234**	0.084	0.009

Hypothesis1: There is a direct impact between technological pedagogical knowledge (TPK) and technology-integrated attitude (TIA), technology-integrated intention (TII) and computer self-efficacy (CSE).

According to the data presented in Table3, the direct impact of TPK on CSE is equal to 0.182 and given the p-value of 0.046, it is significant at the level of 0.05. The direct impact of TPK on TIA is also 0.073, and is not significant at 0.01 level given the p-value of 0.325. The direct impact of TPK on TII is equal to 0.253 and is not significant at the level of 0.01 given the p-

value of 0.229. Therefore, in hypothesis1 of the research, the direct impact of TPK on CFE is only confirmed.

Hypothesis2: There is a direct impact between teaching experience (TE) and technological knowledge (TK), attitude toward integration and computer self-efficacy (CSE).

According to the data presented in Table3, the direct impact of TE on TK is equal to -0.002 and is not significant at the level of 0.01 given the p-value of 0.975. The direct impact of TE on TIA is also equal to -0.012, and given the p-value of 0.761, it is not significant at the level of 0.01. The direct impact of TE on CSE is -0.027 and given the p-value of 0.783, it is not significant at the level of 0.01. Therefore, there is no evidence to confirm hypothesis2 of the research.

Hypothesis3: There is a direct impact between task-technology fit (TTF) and technological knowledge (TK), technology-integrated attitude (TIA) and technology-integrated intention (TII).

According to the data presented in Table 3, the direct impact of TTF on TK is 0.663 and given the p-value of 0.003, it is significant at the level of 0.01. The direct impact of TTF on TIA is -0.466 and given the p-value of 0.01, it is significant at the level of 0.01. The direct impact of TTF on TII is also 0.391, and given the p-value of 0.018, it is significant at the level of 0.05. Therefore, hypothesis3 of the research is confirmed.

Hypothesis4: There is a direct impact between technological knowledge (TK) and technology-integrated attitude (TIA) and technology-integrated intention (TII).

According to the data presented in Table3, the direct impact of TK on TIA is equal to 0.328 and is significant at the level of 0.05 given the p-value of 0.036. The direct impact of TK on TII is also 0.211, and given the p-value of 0.012, it is significant at the level of 0.05. Therefore, hypothesis 4 of the research is confirmed.

Hypothesis5: There is a direct impact between computer self-efficacy (CSF) and technology-integrated attitude (TIA) and technology-integrated intention (TII).

According to the data presented in Table 3, the direct impact of CSE on TIA is equal to 0.570 and given the p-value of 0.041, it is significant at the level of 0.05. The direct impact of CSE on TII is also 0.435 and is significant at the level of 0.05 given the p-value of 0.030. Therefore, hypothesis 5 of the research is confirmed.

Hypothesis6: There is a direct impact between technology-integrated attitude (TIA) and technology-integrated intention (TII).

According to the data presented in Table3, the direct impact of TIA on TII is 0.234 and given the p-value of 0.009, it is significant at the level of 0.01. Therefore, hypothesis 6 of the research is confirmed.

Estimating the Coefficients of Indirect Impact

According to the data presented in Table 4, we discuss on rejecting or confirming the hypotheses related to the indirect impact of variables on each other.

Table4. Estimating the Coefficients of Indirect Impact of the Variables Studied based on the Conceptual Model of the Research.

	Standardized parameter	St- estimation error	P
TPK indirect impact with:			
technology-integrated intention (TII)	0.120*	0.074	0.049
TE indirect impact with:			
technology-integrated intention (TII)	-0.018	0.042	0.745
TTF indirect impact with:			
technology-integrated intention (TII)	0.082	0.088	0.211
TK indirect impact with:			
technology-integrated intention (TII)	0.077*	0.044	0.015
CSE indirect impact with:			
technology-integrated intention (TII)	0.133**	0.000	0.008

Hypothesis7: There is an indirect impact between task-technology fit (TTF) and technology-integrated intention (TII) through technological knowledge (TK) and technology-integrated attitude (TIA).

According to the data presented in Table4, the indirect impact of TTF on TII is 0.082 and is not significant at the level of 0.01 given the p-value of 0.121. Therefore, there is no evidence to confirm hypothesis7 of the research.

Hypothesis8: There is an indirect relationship between teaching experience (TE) and technology-integrated intention (TII) through technological knowledge (TK), computer self-efficacy (CSE) and technology-integrated attitude (TIA).

According to the data presented in Table4, the indirect impact of TE and TII is equal to -0.018 and is not significant at the level of 0.01 given the p-value of 0.745. Therefore, there is no evidence to confirm hypothesis8 of the research.

Hypothesis9: There is an indirect relationship between technological pedagogical knowledge (TPK) and technology-integrated intention (TII) through computer self-efficacy (CSE) and technology-integrated attitude (TIA).

According to the data presented in Table4, the indirect impact of TPK on TII is 0.120 and is significant at the level of 0.05 given the p-value of 0.045. Therefore, hypothesis9 of the research is confirmed.

Hypothesis10: There is an indirect relationship between technological knowledge (TK) and technology-integrated intention (TII) through technology-integrated attitude (TIA).

According to the data presented in Table4, the indirect impact of TK on TII is 0.077 and is significant at the level of 0.05 given the p-value of 0.015. Therefore, hypothesis10 of the research is confirmed.

Hypothesis11: There is an indirect relationship between computer self-efficacy (CSE) and the technology-integrated intention (TII) through technology-integrated attitude (TIA).

According to the data presented in Table4, the indirect impact of CSE on TII is 0.133 and given the p-value of 0.008, it is significant at the level of 0.01. Therefore, hypothesis8 of the research is confirmed.

Estimating the Coefficients of Total Impact

Another estimated parameter is the measurement of the total impacts, which is derived from the combination of direct and indirect impacts. In some cases, the variables have a direct or indirect impact on each other, in which case, the total impact is equal to the direct or indirect impact. For example, in the current research, TIA only has the direct impact on TII. Therefore, the total impact of this variable on TIA is equal to direct impact.

TE only has the indirect impact on TII. Therefore, the total impact of this variable on TII is equal to the indirect impact. Given that the direct and indirect impacts of all variables are presented in the corresponding tables, the impact of exogenous variables is only mentioned here.

Table5. Estimating the coefficients of total impact of the variables studied based on the conceptual model of the research

	Standardized parameter	St- estimation error	P
TPK total impact with:			
technology-integrated intention (TII)	0.373*	0.144	0.031
TE total impact with:			
technology-integrated intention (TII)	-0.018	0.042	0.745
TTF total impact with:			
technology-integrated intention (TII)	0.473**	0.080	0.006

According to the data presented in Table5, the total impact of TPK on TII is equal to 0.373 and given the p-value of 0.031, it is significant at the level of 0.05. The total impact of TTF on TII is 0.473 and it is also significant at the level of 0.01 given the p-value of 0.006. However, the total impact of TE on TII is equal to -0.018 and is not significant at the level of 0.01 given the p-value of 0.745.

Comparing the direct, indirect impacts of all variables on technology-integrated intention with their explained variance

Other feature of the path analysis is the possibility to compare the total, direct and indirect impacts, as well as the measurement of the variance of each of the endogenous variables by the model. Accordingly, in Table6, in order to compare the total, direct and indirect impacts of the variables on TII, estimating the standardized coefficient of total, direct and indirect impacts of the variables on TII and its explained variance has been reported.

Table6. The Standardized Coefficients of the Direct, Indirect, and Total Impacts of the Variables on Technology-integrated Intention with their Explained Variance

	Direct impact	Indirect impact	Total impact	Variance explained
Technology-integrated intention (TII)				
Technology-integrated attitude (TIA)	0.234**	0.000	0.234**	
Computer self-efficacy (CSE)	0.435*	0.133**	0.568*	
Technological knowledge (TK)	0.000	-0.018	-0.018	
Teaching experience (TE)	o.211*	0.077*	0.288**	0.36
Technological knowledge (TK)	0.391*	0.082	0.473**	
Task-technology fit (TTF)	0.391*	0.082	0.473**	
Technological pedagogical knowledge (TPK)	0.253	0.120*	0.373*	

According to Table6, among the exogenous variables, TTF has a direct impact on TII, and TPK has an indirect impact on TII. However, TE does not have a significant direct and indirect impact on TII. While the total impact of two variables of the exogenous variables, i.e. TPK (0.373), TTF (0.473), on TII was statistically significant at levels of 0.05 and 0.01, respectively. Among the endogenous variables, CSE and TK have a direct and indirect impact on TIA. Attitude toward integration also has a direct impact on TII. The total impact of the endogenous variables in the research including CSE (0.568), TK (0.288) and TIA (0.234) is statistically significant at the level of 0.01. In this research, the variance explained for TII is 0.36. In the fitted model of the current research, the explained variance of attitude toward integration, TK and CSE is also 0.22, 0.19, and 0.70, respectively.

Table7. The Variance Explained for the Endogenous Variables.

	Variance explained
Technology-integrated attitude (TIA)	0.22
Technological knowledge (TK)	0.19
Computer self-efficacy (CSE)	0.70

Characteristics of Model Fit

Fit indices have been used to evaluate the model fit. In general, among the various fit indices, the fit indices of x^2/df, RMSEA, CFI[1], GFI and AGFI are reported in this research. table8 presents the model fit indices.

Table8. The Goodness-of-Fit Characteristics of the Prediction Model for Technology-integrated Intention.

Character	
X^2/df	4.75
P	0.000
CFI	0.541
GFI	0/525
AGFI	0.485
RMSEA	0.112

Given the goodness-of-fit characteristics reported in Table8, the square root of estimate of the variance of the approximation error is close to 0.1, and the values of the comparative fit index,

and the adjusted goodness of fit index, which are close to 0.50, indicate the fitting of the model in a medium level. Therefore, fitting the prediction model of TII is in a medium level.

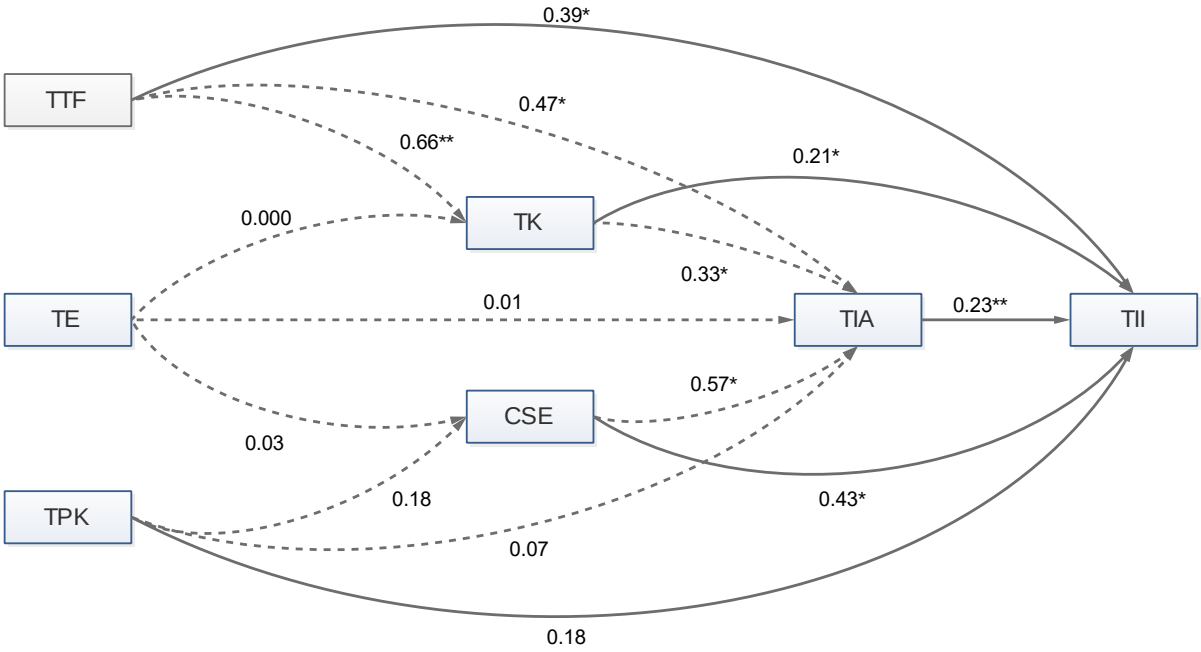

Fig1. The Fitted Model for Predicting the Technology-integrated Intention

Discussion and Conclusion

In the research, the impact of TTF, TK, TPK, TTF, CSE and TE on TII were investigated and their direct and indirect impacts on each other and the variable of TII were tested. According to the model fit characteristics, the fitting of the model is in a medium level, so the conceptual model of research can be a medium model for schools in terms of TII. In the overall review of the proposed model, the results show that the highest total impact is related to CSE on TII. In addition, CSE has the highest direct impact on TII. Therefore, schools should provide programs to enhance CSE among teachers. In addition, Education and Training Organization should provide the equipment necessary for the efficient and effective use of technology in schools. The results from examining and explaining the research hypotheses show:

According to the results of statistical analysis, in hypothesis1 of the research, the direct impact of TPK on CSE is confirmed. The result of the direct and significant impact of TPK on CSE in the current research is in line with those of (Akman & Guven, 2015; Al-Masaeed & Hamadneh, 2015; Hiğde, Uçar, & Demir, 2014; Kavanoz, Yüksel, & Özcan, 2015a; Kelly, 1993; Koh & Divaharan, 2011; Larose, Ratelle, Guay, Senécal, & Harvey, 2006).

Given the direct impact of TPK on CSE, it is argued when a teacher is motivated, interested, and efficient with an appropriate orientation toward his goal and can predict the ratio of success and failure in his work, self-efficacy beliefs is not influenced by the lack of progress.

Additionally, if the teacher believes his ability to work better through the adaptive approach, he remains motivated. As a result, one can expect that a teacher who has the strong self-efficacy beliefs is less influenced by the barriers to use the technology. The teachers, who have TPK, that is, the knowledge for using the technology to implement effectively the different teaching methods and can identify technological pedagogical constraints, can carry on teaching in other forms rather than mere texts and provide the different teaching methods using technology. They can also change the teaching to achieve a pedagogical goal. It is essential to understand the impact of technology on teaching methods and student learning, and achieve the educational goals. Selecting the technologies and identifying their constraints are among educational needs of teachers.

According to the results of statistical analysis, there is no evidence to confirm hypothesis2 of the research. The result of the lack of direct impact of TE on TK, attitude toward integration and CSE in this research is contradicted to those of(Akman & Guven, 2015; Garrett, 2014; Koh & Divaharan, 2011; Young, Young, & Hamilton, 2013).

The results show that the impact of TE on TK is negligible, but even this value is also negative that according to the research conducted in this field, one can say that a teacher with more TE has less intention to use the technology in the classroom. Because, an experienced teacher knows which teaching methods he use to increase the student's perception and understanding. Less-experienced teachers use more advanced TK in teaching. Because they have experience in TK compared to the experienced teachers. For explaining the findings of this research, it can be said that technological knowledge component has been well established among high school teachers in Shiraz.

The results from examining hypothesis3 of the research related to the direct impact of technology fit on TK, attitude toward integration and intention to integration are confirmed. The result of the direct impact of task-technology fit on technological knowledge in this research is in line with those of (Koh & Divaharan, 2011; Young et al., 2013). The direct impact of task-technology fit on TK shows that when teachers identify the subject matter and know which technology is appropriate for teaching a subject and how the content is influenced by technology or vice versa, they will be more successful in understanding TK and as a result of this perception, students will learn better.

In explaining the findings of this hypothesis, it can be argued that if the abilities and capabilities of a technology are tailored to the needs of teachers, teachers have more intention to use that technology. Therefore, by increasing the amount of knowledge that a teacher acquires on technology, which is TK, one can predict the performance of a person, and this technology fit helps the teacher to do his own work and increases the student's communication and learning. Research shows that the teacher acquires the TK in addition to TEs. Therefore, teacher in-service training should focus on improving their TK. The result of the direct impact of TTF on TK in this research is in line with those of (Akman & Guven, 2015; Koh & Divaharan, 2011; Mouza, Nandakumar, Ozden, & Karchmer-Klein, 2017; Young et al., 2013).

The direct and significant impact of TTF on TII shows that technology fit could be considered as a good predictor of technology use, because if the abilities and capabilities of teachers in technology are tailored to their needs, they have more intention to use that technology.

According to the results of statistical analysis, hypothesis4 of the research related to the direct impact of TK on TIA and TII is confirmed. The result of the direct impact of TK on attitude toward integration in this research is in line with those of (Akman & Guven, 2015; Koh & Divaharan, 2011; Mouza et al., 2017; Young et al., 2013).

Given the direct impact of TK on TIA, it is argued that when a teacher has TK and is aware of the state-of-art technologies; his attitude toward technology use is positive and has more intention to use the state-of-art technologies in classroom. Whether this technology has been acquired through education or exploration, having the technological literacy will make the teacher have more intention or attitude in using the training aids in the classroom. Using the technology by the teacher results in increasing the relationship between teacher and student, increasing the student learning, saving time in education, and achieving the teacher to his main goals of education. The direct impact of TK on TIA suggests that TK is important to improve the way teachers think and their belief about technology use in the classroom. Believing that beliefs affect behavior, teachers are keen to value and educate the technology and supports provided by Education and Training Organization. Therefore, to engage actively the teachers in students' learning, it is important that technological training be designed with the aim of technology integration.

According to the results of statistical analysis, hypothesis5 of the research related to the direct impact of CSE on attitude toward integration is confirmed. The result of impact of CSE on TII in this research is in line with those of (Al-Masaeed & Hamadneh, 2015; Demirci, 2009; Kavanoz, Yüksel, & Özcan, 2015b; Larose et al., 2006).

The direct impact of teacher self-efficacy beliefs on TII in this research suggests that self-efficacy beliefs about the ability to integrate technology into education are effective factors in teacher's decision-making to use the technology in the classroom. Therefore, as teachers' self-efficacy beliefs increase, knowledge of their technology-integrated intention also increases. The direct and significant impact of computer self-efficacy on attitude toward integration shows that when teachers have self-confidence in computer use during teaching, their behavioral attitude and intention to use the computer will be positive, and technology use leads to learn better in students. If teachers do not believe their ability to use technology in teaching, they will have a negative attitude toward computer and technology use in teaching and do not use new technologies in teaching because of fear of failure. According to the results, comparison of direct impacts of variables shows that the highest direct impact is related to the direct impact of computer self-efficacy on attitude toward integration. Teachers' CSE is their ability to use computer. The competence of teachers in computer technology is an effective factor for using ICT in education. In explaining this finding, it can be said that teachers' CSE affects their use of ICT in education and learning. According to the results of statistical analysis, hypothesis6 of the research related to the direct impact of TIA on TII is confirmed.

The result of the direct impact of TIA on TII in this research is in line with those of (Demirci, 2009; Pringle, Dawson, & Ritzhaupt, 2015).

It is argued that teachers' attitude toward technology largely depends on the acceptance and integration of computers in teaching. The success in starting educational technology in the curriculum strongly depends on the support and attitude of teachers. That is, if teachers do not realize the technological programs as a tool that meets their own and students needs, there is the possibility that they refuse of integrating the technology into education. If teachers' attitude toward educational technology use is positive, they can easily have an insight into the acceptance and integration of technology in educational and learning processes.

The result of the direct impact of attitude toward integration on intention to integration shows that a teacher who has a positive attitude toward technology integration, understands how, by integrating technology into the teaching-learning process, students create knowledge, acquire skills and improve their learning skills, and know which methods they use to make students' understanding easier.

According to the results of statistical analyses, the indirect impact of technology fit on intention to integration is not significant. Therefore, there is no evidence to confirm hypothesis7 of the research. The result of the lack of the indirect impact of TTF on TII through TK and attitude toward integration in this research is contradictory to those of (Akman & Guven, 2015; Staples & Seddon, 2004; Young et al., 2013).

Given the lack of indirect impact of TTF on intention to integration through TK and attitude toward integration in hypothesis7, as well as the direct impact between the TTF and attitude toward integration in hypothesis3, it can be argued that teachers who understand the use of appropriate technologies in the classroom and know which technology is appropriate for teaching a subject, can directly have the better perception of TII. However, having knowledge in the subject-to-present by using technology and positive attitude toward the TIA does not have indirect effect on their perception of TII.

According to the results of statistical analyses, hypothesis8 of the research related to the indirect impact of TE on intention to integration was not confirmed through TK, CSE, and TIA. The results of this section are contradictory to those of (Akman & Guven, 2015; Koh & Divaharan, 2011; Mouza et al., 2017; Young et al., 2013).

According to hypothesis2, that is, examining the relationship between TE and TK, attitude toward integration and CSE, it might be argued if existing a weak relationship between teaching experience and TII, this will be reversed, meaning the experienced teachers have less TII in the teaching-learning process. Because the experienced teachers know which teaching methods they should use to increase the student's perceptions and the less-experienced teachers use more TK in teaching, as they have experience in TK compared to the experienced teachers.

According to the results of statistical analyses, hypothesis9 of the research related to the indirect impact of TPK on intention to integration was confirmed through self-efficacy and attitude toward integration. The result of the indirect impact of TPK on TII through CSE and

attitude toward integration in this research is in line with those of (Akman & Guven, 2015; Al-Masaeed & Hamadneh, 2015; Hiğde et al., 2014; Koh & Divaharan, 2011; Larose et al., 2006; López-Vargas, Duarte-Suárez, & Ibáñez-Ibáñez, 2017)

Let assume the indirect impact of TPK on TII with the mediating role of CSE and attitude toward integration. One can argue when teachers have self-confidence in computer use during teaching and positive behavioral attitude and intention to use computer, this will result in technology use and better student learning, indirectly increasing their TII into the teaching-learning process.

The subsequent indirect impact of such knowledge on TII with the mediating roles of self-efficacy and attitude toward integration shows that increasing the CSE and positive beliefs about technology integration leads to increase in classroom technology use. It is logical to expect that both self-efficacy and beliefs about the teacher's ability influence the successful classroom technology use.

According to the results of statistical analyses, hypothesis10 of the research related to the indirect impact of TK and TII was confirmed through attitude toward integration. Given the indirect impact of TK on TII with the mediating role of the attitude toward integration, it can be acknowledged that when the teacher identifies the educational needs and the constraints of a wide range of technology tools used according to the appropriate educational designs and corresponding planning and has a positive attitude toward technology integration in the classroom and can also use existing software in accordance with educational needs to advance educational goals, his planning skills, classroom management, and planning skills improves, and accordingly, his intention to integrate technology into the teaching-learning process indirectly increases. It can also be argued that when a teacher knows how to use the technology in teaching, his attitude toward TII into the teaching-learning process will be positive for achieving a high goal, and therefore, can indirectly have more intention to integrate the technology. In explaining this finding, it can be argued that a teacher who knows the basic and conceptual knowledge of technology and knows which teaching methods are best for teaching the different subjects and knows how to teach a subject in different ways through the technology integration into teaching, he also knows how to make subject matter easier to understand, thus he tries to create the positive attitudes in students toward the TII into education so as to indirectly improve the TII in the teaching-learning process.

According to the results of statistical analyses, hypothesis11 of the research related to the indirect impact of CSE and TII was confirmed through attitude toward integration.

Given the indirect impact of CSF and TII with the mediating role of attitude toward integration, one can acknowledge that if teachers believe their ability to use the technology in teaching, they will have a positive attitude toward computer and technology use, and will use new technologies, and thus their TII into the teaching-learning process will indirectly increase.

Educational technology is a useful way to advance student engagement and interaction, learning and effectiveness. However, external and internal barriers are considered as factors contributing to the TII and decisions related to use the educational technology. In addition,

CSE on TIA is important for students to learn effectively using technology, while affecting teachers' intention to integrate technology into the teaching-learning process.

Given the result of the impact of TIA, technology fit, TK, and TII, in order to optimize these impacts, it is suggested that ICT development plans adopt strategies to assist teachers in developing both TK and application of technology, and promote the TPK of teachers. This, in turn, can contribute to promote TPK and facilitates meaningful learning.

Given the result of the impact of TK on TII in this research, it is suggested that teacher preparation programs should be such that they acquire a deeper knowledge of the content and subject matter, which this facilitates the students learning.

From the indirect impact of TK and intention to integration through attitude toward integration in the research model, it is suggested that teachers elucidate their point of view on why they should use the technology. Technological tools should be seen as innovations that turn the insipid and uninterested classroom into a passionate and entertaining classroom, or perhaps as a relaxing or emotional factor.

The result of the indirect impact of TK and intention to integration through attitude toward integration suggest that the importance of teacher's beliefs and values in the researches on technology integration cannot be ignored. Therefore, it is suggested that education authorities hold the in-service training courses for teachers on the formation and dynamics of teacher beliefs about the technology integration, motivation and interest to use the technology in classroom.

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