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The Degree of Teachers' Willingness to Use Technology in Education Based on the Competence of Knowledge of Technological Educational Content from their Perspectives

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Abstract:
The study adopted technological pedagogical and content knowledge (TPACK) framework to assess the degree of teachers' willingness to use technology in education It is important to know the impact of technology on education, especially when using technology and improving a teacher's TPACK. This study used a survey and a comprehensive sampling technique that included 267 male and female teachers from different schools in the Kingdom of Saudi Arabia, who were randomly selected. The researcher collected the responses and provided descriptive statistics, including the mean, standard deviations, and rank. The results of the study indicated the extent of teachers' willingness to use technology in education based on the competency of technological pedagogical and content knowledge, which reached a high degree. There were no statistically significant differences at the level of (0.05) in the responses of the study samples to the extent of teachers' willingness to use technology in education according to the variables of gender, specialization, stage, experience, age, and training.

Keywords: Willingness; Competence; Content knowledge; Pedagogical knowledge; Technological knowledge; TPACK.

درجة استعداد المعلمين لاستخدام التكنولوجيا في التعليم على أساس كفاءة المعرفة بالمحتوى التربوي التكنولوجي من وجهة نظرهم

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المستخلص:
اعتمدت الدراسة على المحتوى المعرفي التكنولوجي التربوي لتقييم درجة استعداد المعلمين لاستخدام التكنولوجيا في التعليم. ومن المهم معرفة تأثير التكنولوجيا على التعليم، خاصة عند استخدام التكنولوجيا وتحسين المعرفة بالمحتوى التربوي التكنولوجي لدى المعلم. تم استخدام الدراسة المسحية وأسلوب أخذ العينات الشامل الذي شمل ٢٦٧ معلمًا ومعلمة من مدارس مختلفة في المملكة العربية السعودية، تم اختيارهم عشوائيًا. وقام الباحث بجمع الإجابات وتقديم إحصائيات وصفية، بما في ذلك المتوسط الحسابي والانحرافات المعيارية والرتبة. وأشارت نتائج الدراسة مدى استعداد المعلمين لاستخدام التكنولوجيا في التعليم على أساس كفاءة المعرفة بالمحتوى التربوي التكنولوجي والتي بلغت درجة كبيرة. ولا توجد فروق ذات دلالة إحصائية عند مستوى (٠,٠٥) في استجابات أفراد عينة الدراسة لمدى استعداد المعلمين لاستخدام التكنولوجيا في التعليم تبعاً لمتغيرات الجنس، والتخصص، والمرحلة، والخبرة، والعمر، والتدريب.

الكلمات المفتاحية: الاستعداد؛ الكفاءة؛ معرفة المحتوى؛ المعرفة التربوية؛ المعرفة التكنولوجية؛ إطار TPACK.

INTRODUCTION

With the growing digitalization that the world has been witnessing recently, learning management systems have become integral parts of learning and teaching contexts. Not only learning management systems allow for improved instruction, learning, and performance, but also help instructors to design meaningful educational activities (Turnbull et al., 2021). Consequently, e-learning has become a crucial platform in the educational environment between instructors and students, which saves time and effort to develop teaching and learning environments. Therefore, the current study sought to explore the perceptions and satisfaction of instructors towards the appropriate educational method.

The TPACK model is an extension of pedagogical content knowledge model. The swift development of technology has had a critical role in teaching to increase students' achievements in academic environment in Saudi schools. Kao, et al. (2014), stated that a primary task of technology is to save time and space for teachers in learning and teaching which may increase access to free and beneficial technology programs.

Teachers in Saudi schools use technology in teaching and learning due to its ease of use at any time and place, flexibility, timely learning, and can be delivered in a synchronous and asynchronous format. Therefore, teachers were screened for basic predictors of using technology and making education adaptable to the changing way of learning and teaching in school environment. The questionnaire was used to find out the teachers' willingness of using technology. Listiaji, et al. (2020), suggested TPACK model identifies the basic knowledge for teachers to organize innovation in the education environment.

With the increasing integration of technology into education, as a solution to education problems within the education system and to support for teachers in the teaching environment. Amin (2016) believes that education faces increasing demands to find innovative solutions that transform the roles of teachers from transmitters of knowledge to directing students on how to access and employ it in different contexts. Technological pedagogical and content knowledge provide the teacher with more knowledge and information and everything that others have produced. Ibrahim, Adzra'ai, Sueb and Dalim (2019) teachers must realize their role as a major element and an important agent of change in educational institutions, as they must possess the necessary skills to use technology in education.

A study carried out by Yulisman, et al. (2019), said teachers' views toward technology integration can enhance the positive relationship between technology competence and science teacher's TPACK. Therefore, the teacher's attitude is a significant component to focus on improving the teacher's TPACK. Thus, TPACK is a beneficial frame for considering the knowledge that teachers should include technology in teaching and how they can improve this information. TPACK can be used as a framework for defining educational awareness. It has an influence on the type of training and professional development experiences designed for both pre-service and in-service teachers. Hence, there is an ongoing

need to rethink about teacher education preparation practices and propose new strategies that better prepare teachers to effectively integrate technology into their teaching. Therefore, teachers should be aware of technology within the framework of Technological pedagogical and content knowledge (TPACK). From the role of TPACK, teachers' knowledge will influence teachers' willingness to use technology in the teaching environment. For this reason, exploring teachers' awareness and use of technology for TPACK supports the technology acceptance model.

Technology is useful and effective depending on specific circumstances including teachers and learners. Understanding the TPACK model is a way to teach well using technology in developing teaching. The TPACK model shed lights on incorporation technology to enrich student learning in the classroom. It becomes a fruitful way to think how teachers integrate technology into the classroom. Technological environments based on TPACK can also be employed to enhance educational environment.

STATEMENT OF THE PROBLEM

Teachers must be competent in technological, pedagogical and content knowledge. However, based on researcher's observation, some teachers did not implement technology in classroom based on their usual teaching due to their unwillingness to transition with technology. The TPACK model is appropriate for using, exploring and examining technology integration and teacher willingness.

The need to change teaching strategy is required in the 21st century. However, teachers integrate technology into their teaching minimally. Therefore, it is important to check whether teachers are integrating technology or not. Based on these needs, this paper discussed teachers' willingness, understanding and applying of the TPACK model. The results of this study can also provide a significant contribution to teacher training, both for pre-service and in-service teachers. Continuous professional and personal development among teachers is important to ensure a quality education for students (Shafie, Majid& Ismail, 2019).

The researcher first conducted a pilot study with a group of 30 teachers outside the study sample to determine any problems with the study. The results of the pilot study revealed that 87% of teachers do not have knowledge about technology in education due to the dominant traditional method, low understanding of using technology, pedagogical techniques, and knowledge. Therefore, the study problem can be summarized in the lack of willingness to use technology.

The process of transferring from a traditional classroom to technology-based classroom can be difficult, due to a lack of facilities, effective model, poor Internet access, and low level of using e-learning tools among teachers. Therefore, teachers are incapable of incorporating technology into teaching due to their lack

of competencies within technological pedagogical and content knowledge (TPACK) framework.

Vagale and Niedrite's study (2014), conceptualized the electronic learning environment through which content is presented, but they were not based on educational design in light of a specific model of educational design.

According to Sankoff (2014), traditional lectures often waste valuable resources and fail to benefit from the expertise of teachers, knowledge, and capabilities by having them present the same information to different groups.

The researcher's solution is through the frequent use of technology. Studies by Hassan (2014) and Muhammad (2015) indicated the ineffectiveness of traditional methods used to develop knowledge, and thus recommended using technological innovations to develop students' knowledge. According to Alghamdi (2015) the findings highlight the requirement for teachers to completely understand the pedagogical use of technology that supports student learning, through greater student participation in technology practice.

In the meantime, the Ministry of Education concerning about technology as a new platform of teaching and studying suitable way to educate students. Hence, the study problem was found in the following statement: teachers lack knowledge related to e-learning method. Therefore, the advantage of technology exploration to address this deficiency is required. Technological pedagogical and content knowledge (TPACK) can be viewed as a teacher's capabilities in selecting and using technology successfully. However, information about the contribution of teachers' attitudes toward technology competencies and science teacher TPACK is limited.

QUESTIONS OF THIS STUDY

RQ1. What is the degree of teachers' willingness to use technology in education based on the competence of Knowledge of technological Educational Content from their Perspectives?

RQ2. What is the statistical significance of the degree of teachers' Willingness to use technology in education based on the proficiency of knowledge of technological pedagogical content in relation to the gender, specialization, stage, experience, age and training variables?

AIM OF THIS STUDY

The purpose of this study was to explore the competence of TPACK on a sample of teachers in Saudi Arabia. Data was collected via questionnaire which distributed to 268 male and female teachers. Studying the effect of multiple variables on the extent of use (gender, specialization, stage, experience, age, and training. Unfortunately, most teachers in schools are not aware of the advantage of using the technology, so TPACK discussed the teachers' willingness to use technology. Thus, the Kingdom of Saudi Arabia (Ministry of Education) has

prepared teachers to apply technology in classroom. The TPACK model helped to obtain information about teachers' willingness to use technology.

OBJECTIVES OF THE STUDY

By monitoring the method of teaching in schools. Teachers have demonstrated different ways of teaching with and without technology. Moreover, it is important to mobilize and develop teachers' readiness to integrate technology into classrooms, to solve some of the challenges facing learning and teaching. The researcher sought to discuss the extent of teachers' readiness to use technology in the classroom. The results of the study will be useful in identifying the reality of the use of technology in education and ways to conduct further research based on the TPACK model in education. Enhancing the positive willingness of teachers, dealing with negative attitudes and modifying them, and identifying their tendencies and desires in order to make the learning process successful. The findings of this study may help teachers in Saudi Arabia to consider the best method as a factor for improving students' skills and knowledge in the educational system.

LIMITATIONS OF THE STUDY

The place was at schools in the Kingdom of Saudi Arabia, and human reached 267 teachers during the time for the second semester of 2022-2023. The researcher tries to track the extent to which teachers are prepared to use technology in education based on the competence of Technological pedagogical and content knowledge, since this idea involves the use of a large amount of teaching. Teachers have been using a technological approach, which included a questionnaire, as well as well-planned questions designed to find out the willingness to use technology in classroom.

TERMS OF THE STUDY

Al-Adwan, et al. (2013) defined technology as a learning system that deliver course materials and information to students with interactions through computer interfaces anytime and anywhere.

National eLearning Center (2021) defined technology as the use of educational, information and communication technologies to raise the adequacy of the educational and training process in all its forms, and to control its quality. On the other hand, the researcher refers technology to education based on computers use, the internet, multimedia, and educational software to deliver educational content to students through communication between the teacher as a guide and students as a searcher for information in school teaching. Also the researcher defined technology as the learning method that relies on the Internet in delivering educational content, sharing it, and communicating between students without being restricted to a specific place and time.

Operationally, TPACK is a term that shows what a teacher should know to effectively integrate technology into curriculum. The teacher practices and represents the combination of technological pedagogical, and content knowledge

of teachers. TPACK allows teachers to think about what needed knowledge to integrate technology into teaching and how to do it. It refers to knowledge in three main areas (technology - pedagogy - content). It is a framework for understanding and describing the types of knowledge teachers needed for effective pedagogical practices in a technology-enhanced learning environment. TPACK is the knowledge of using different technologies to teach, represent and enhance the creation of knowledge about the content of a particular subject.

Operationally, Pedagogical knowledge refers to knowledge of the nature of learning and teaching. While technological knowledge refers to how technologies are applied in learning and teaching. Content knowledge refers to teachers' knowledge of the content they teach.

Operationally, Technology is defined as electronic, digital, and multimedia devices that are used to achieve goals efficiently and effectively. It is characterized by being digital and possessing innate personalities that special skills in using it.

LITERATURE REVIEW

A study by Alrehaili and Alghanmi (2021) aimed to reveal the opinions and Academics' knowledge of faculty members at Taibah University in the Kingdom of Saudi Arabia about the use of hybrid learning in the virtual educational process. A mixed method research of explanatory sequential approach was used. The study tool consisted of a questionnaire for faculty members distributed to the study sample consisting of (263) members, and a semi-structured interview with three academics. The study reached that there was an appropriate average level of academic TPACK at an agreeable level. Content knowledge (CK) was the highest measurement, followed by pedagogical content knowledge (PCK), and then pedagogical knowledge (PK). In Compared to technological content knowledge (TCK) element measured at the lowest level of TPACK for Academics. The results of this study will benefit academics and stakeholders involved in the development and implementing blended learning strategies in the virtual environment.

A study carried out by Yulisman, et al. (2019) aimed to explore teachers' opinions as a moderating influence on the relationship between teacher technology competencies and their technological pedagogical and content knowledge. The study sample was 88 junior high school science teachers from Kota Banda Aceh, Indonesia The achievement test and questionnaire were designed to collect data. Results indicated that technological competencies have a positive relationship with TPACK. Likewise, teachers' views toward technology integration were able to enhance the positive relationship between technology competence and science teacher's TPACK. Therefore, the teacher's attitude is a significant component to consider for improving the teacher's TPACK.

The study aimed to discover technology competence (TPACK) among teachers. Mixed method research designs were used in this study. Two open and closed interviews and questionnaires were designed to collect data. The study reached that the variables in TPACK, the knowledge content variable, and the educational knowledge content variable obtained a high average compared to the other variables, which are 73.50 and 73.10. The results showed that the technological knowledge and pedagogy variable achieved 48.30, while the TPACK variable achieved 52.40. These results indicate that educational technology graduates still need to improve their TPACK competence to become professional teachers in the era of Industrial Revolution 4.0. **(**Agustini, Santyasa & Ratminingsih , 2019).

The results of study by Santoso, et al. (2019) showed that the Indonesian language teachers' capability of content knowledge was 79.11% (good), the capability of pedagogical knowledge was 80.41% (good), and the capability of PCK pedagogical content knowledge was 83.2% (good).

A study conducted by Onal (2016) aimed to improve the TPACK scale to discover teachers' opinions about technological pedagogical content knowledge and provided valid and reliable results. The scale consists of 59 items and nine variables was calculated and studied on 316 Turkish pre-service mathematics teachers at seven different universities in Turkey. The Cronbach's alpha reliability coefficient for the scale was calculated as 0.97. In conclusion of the confirmatory and exploratory factor analysis results, TPACK was divided into two additional dimensions: online and offline technological pedagogical knowledge. Improving a reliable and valid measure related to pre-service mathematics teachers' technological pedagogical content knowledge would enhance more studies. Therefore, future studies could modify the scale to fit other disciplines and use it to identify TPACKs for novice and expert teachers.

According to Alhashimi (2014), the study refers to the use of technology by faculty when teaching Arabic skills, its challenges, attitudes, and suggestions. The researcher built a survey and attitudes scale. Also, the participants of study were 12 faculty members at college in Oman. The findings showed the high degree of using technology tools in teaching setting. However, there were obstacles of applying technology such as blackboard usage and designing programs. Technology was defined as the science focuses on applying theories and research results to improve teaching ability. Many agencies in Oman have used technologies, however there are some obstacles in terms of possibility, difficulties, and attitudes.

The current study presents the reality of using technology in teaching. The study is needed to keep up with contemporary trends in the employment of modern educational innovations in teaching and learning. And to be a starting point for further research that can be applied to different areas across range of education institutes. The results of this study are expected to fill out the knowledge gap of using instructional techniques in teaching and learning. To

explore the barriers during instructional techniques implementation at school teaching. To determine the differences in the mean responses of the respondents on the study instrument attributed to each variable (gender, specialization, stage, experience, age, and training). To reveal teachers' perceptions about technology usage during teaching and learning. What are the obstacles of using technology in teaching and learning from the point of view of teachers? What is the effect of (gender, specialization, stage, experience, age, and training) on their perspective? Confirmatory factor analyses provided evidence that the designed Arabic instrument is a reliable and valid assessment for determining the TPACK of Saudi in-service teachers in the context of the study location.

METHODOLOGY

The study used a descriptive research design using a questionnaire to achieve the objectives of the study. The study sample consisted of 267 teachers from schools participated in this study. This study employed a questionnaire uploaded to an online Google Form asking about teachers' profile that included gender, specialization, stage, experience, age, and training. The t-test method was used in this study to analyze the data. Table (1) shows the distribution of teachers in the study sample according to the study variables.

Table (1):

Frequencies and percentages of distribution of study sample members according to study variables

Variable	Category	No	%
Major	special education	66	24.7
	Other Majors	201	75.3
Gender	M	186	69.7
	F	81	30.3
Level	Elementary	85	31.8
	Intermediate	71	26.6
	High	111	41.6
Years of experience	Less than 5 years	79	29.6
	From 5 years to 10 years	75	28.1
	More than 10 years	113	42.3
Age	Less than 30 years old	86	32.2
	(30-40) year	108	40.4
	More than 40 years	73	27.3
Training Courses	No training	69	25.8
	One course	53	19.9
	(2-4) courses	68	25.5
	More than (4) courses	77	28.8
Total		267	100

STUDY TOOL

In the current study, the researcher used the questionnaire as a tool for collecting data, as the questionnaire was specifically built to reveal the extent of teachers' willingness to use technology in education, after reviewing previous studies and the educational literature related to the current study to build the questionnaire according to the scientific methodology followed in the steps of constructing the questionnaire from its preliminary preparation. To produce it in

its final form after verifying its validity and reliability, the questionnaire consists of (33) items, according to the five-point rating scale.

The validity of the scale was determined by 'Exploratory Factor Analysis' (EFA) and 'Confirmatory Factor Analysis' (CFA). While (EFA) SPSS was used, Lisrel 8.8 was used for (CFA). For (EFA), multivariate analysis method was applied to extract the underlying factors of the TPACK instrument. Oblique rotation was employed because the factors of the scale were likely to 9 correlates with each other. The Barlett test result and KMO coefficient were determined for the applicability of data for factor analysis (Ozudogru & Ozudogru, 2019). The survey is a reliable and valid instrument that will help educators design longitudinal studies to assess preservice teachers' development of TPACK (Schmidt, Baran, Thompson, Mishra, Koehler& Shin, 2009).

The aim of the questionnaire was to measure teachers' technological pedagogical and content knowledge. This survey includes items 1 to 33 for teachers' opinions from a 5-point Likert scale in which 1=strongly disagree, 2=disagree, 3= not sure, 4=agree and 5=strongly agree. A survey to indicate the level of teachers' evaluation of their willingness to use technology in teaching and learning. Based on the nature of the study, the quantitative method was employed to obtain information about the extent of teachers using technologies in classroom. Gathering information from teachers about their attitudes, opinions, preferences, demographics, practices, and procedures (Gay & Airasian, 2003). Very large samples are feasible because of the administered surveys and this increases the likelihood of results that are statistically significant, even in cases when multiple variables are investigated.

VALIDITY OF THE INSTRUMENT (QUESTIONNAIRE)

The validity of the study tool (questionnaire) was verified through:

A - Face validity (Trustees)

The validity of the questionnaire was verified by presenting it to several experienced and specialized arbitrators (10), and their directions and suggestions were considered, including adding new items, deleting or amending inappropriate items, placing the items in the skill to which they belong, clarity of wording, and soundness of the language.

B - True consistency: Validity of internal consistency:

The study tool was applied to an exploratory sample from outside the study sample, consisting of (20) male and female teachers, and the Pearson correlation coefficient was calculated between the items with the total score of the tool, and Table (2) shows this:

Table (2):

Pearson correlation coefficients between the items with the total score of the tool.

N. Element/items	correlation coefficient	Statistical significance
1	.512*	.021
2	.770**	.000
3	.763**	.000
4	.581**	.007
5	.473*	.035
6	.872**	.000
7	.797**	.000
8	.735**	.000
9	.934**	.000
10	.872**	.000
11	.934**	.000
12	.859**	.000
13	.706**	.000
14	.771**	.000
15	.934**	.000
16	.846**	.000
17	.936**	.000
18	.719**	.000
19	.771**	.000
20	.769**	.000
21	.777**	.000
22	.633**	.003
23	.704**	.001
24	.789**	.000
25	.872**	.000
26	.739**	.000
27	.771**	.000
28	.765**	.000
29	595**	.006
30	.837**	.000
31	.770**	.000
32	.739**	.000
33	.771**	.000

** Statistically significant at (0.01), * Statistically significant at (0.05)

Table (2) shows that the Pearson correlation coefficients between the items with the total score are statistically significant at the significance level (0.01) and (0.05). The Pearson correlation coefficients between the items with the total score ranged between (0.473* - 0.936**), and they are all significant at (0.01) or (0.05).

Reliability OF THE STUDY TOOL

Reliability coefficients for the total score of the tool were calculated through the Cronbach's alpha equation. The study tool was applied to an exploratory sample consisting of (20) male and female teachers and the table. The reliability coefficient reached (0.95), which is a high reliability coefficient, and this indicates the enjoyment of the study tool (questionnaire) with consistency.

STATISTICAL PROCESSING METHODS:

The statistical software (SPSS) version (23) was used to analyze the results of the study and answer its questions, and it used: means, standard deviations, and rank to answer the first question: How prepared are teachers to use technology in education based on tow competence of Technological pedagogical and content knowledge?

A t-test for the variables (gender, specialization) and a one-way analysis of variance for the variables (experience, age, training, stage) to answer the second question: Are there statistically significant differences in teachers' desire to use technology in education due to the competence of Technological pedagogical and content knowledge according to specific standards? For the variable (gender, specialization, stage, experience, age, and training). The following grading was adopted for the degree of fulfillment of the paragraphs and axes of the study tool to determine the degree of approval based on the range equation. Table (3) shows the degree of use according to the means:

Table (3):

The mean of the degree of sustainability and constraints

N	The mean	The degree of approval
1	1 to less than 1.8	Very low
2	1.8 to less than 2.6	Low
3	2.6 to less than 3.4	Medium
4	3.4 to less than 4.2	High
5	4.25 to less than 5	Very high

DATA COLLECTION

Data collection was conducted via questionnaire which distributed to 267 teachers. By the second term of 2022, teachers were asked to participate in the study. The questionnaire has been conducted and analyzed to find out teachers' usage of technology. The time of study has been mentioned within filling a survey at the second semester of academic year 2022.

For teachers, a set of descriptive statistics were computed to compare the mean and standard deviation of respondents' answers to all the questions/statements related to their overall satisfaction with E-learning and their perception of its usefulness. A correlational analysis using Pearson Product-Moment Correlations was conducted to determine the correlation between the faculty members' overall satisfaction and perceived benefit of technology to examine the relationship between these two variables.

RESULTS

The results of the statistical analysis of the field study were presented to identify the degree of willingness to use technology in education based on the competence of technological pedagogical and content knowledge due to the study variables. The following section is a presentation of the results and discussion of the study questions.

RQ1. What is the degree of teachers' willingness to use technology in education based on the competence of Knowledge of technological Educational Content from their Perspectives?

To answer this question, the means, standard deviations and rank were calculated for the responses of the study sample members regarding the extent of teachers' willingness to use technology in education based on the competence of technological pedagogical and content knowledge, and Table (4) shows this:

Table (4):

The means, and standard deviations of the extent of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content.

No. Items	Means	SD	Rank	Degree
1	4.49	.685	3	Very High
2	4.35	.777	12	Very High
3	4.39	.709	8	Very High
4	4.30	.757	14	Very High
5	4.08	.908	32	High
6	4.44	.730	6	Very High
7	4.12	.883	27	High
8	4.09	921	31	High
9	4.10	.960	29	High
10	4.26	.784	16	Very High
11	4.26	.822	17	High
12	4.19	.806	21	High
13	4.19	.829	22	High
14	4.35	.791	11	Very High
15	4.26	.888	18	Very High
16	4.32	.819	13	Very High
17	4.53	.706	1	Very High
18	4.14	.958	25	High
19	4.24	.914	20	Very High
20	4.40	.730	7	Very High
21	4.46	.673	4	Very High
22	4.50	.685	2	Very High
23	4.11	.847	28	High
24	4.45	.704	5	Very High
25	4.24	.843	19	Very High
26	4.36	.793	10	Very High
27	4.29	.834	15	Very High
28	4.38	.803	9	Very High
29	4.01	.977	33	High
30	4.09	.916	30	High
31	4.19	.847	23	High
32	4.13	.912	26	High
33	4.18	8.71	24	High
	4.25	.041	-	Very High

Table (4) shows that the total score for the extent of teachers' willingness to use technology in education based on the competence of technological pedagogical and content knowledge was very high, with mean of (4.25) and a standard deviation of (0.041), and the items means ranged between (4.01 - 4.53). The researcher attributes the reason for this to the great development in the field of digital transformation in the Kingdom of Saudi Arabia in various sectors, the complete transformation to electronic government, and the heavy reliance on technology. The reason for this is also attributed to education departments' awareness of the importance of technology in education, so the preparation and technical qualification of teachers contributed through Training in the use of technology and considering it an essential and necessary component in the field of education. The reason is also attributed to the availability of the material and human capabilities that contributed to the use of technology. The Corona pandemic and the use of distance education also contributed awareness of the use of technology in education.

RQ2. What is the statistical significance of the degree of teachers' Willingness to use technology in education based on the proficiency of knowledge of technological pedagogical content in relation to the gender, specialization, stage, experience, age and training variables?

To answer this question, the means, standard deviations and rank were calculated for the responses of the study sample members regarding the extent of teachers' willingness to use technology in education based on the competence of technological pedagogical and content knowledge, and Table (5) shows this:

First: the gender variable

The t-test was used to show the significance of the differences between the means of the responses of the study sample members regarding the extent of teachers' willingness to use technology in education according to the gender variable, and Table (5) shows this:

Table (5):

T-test to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the gender variable.

	G	N	Mean	Std. Deviation	T	df	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	M	186	4.25	.043	. 00	265	1.00
	F	81	4.25	.037			

Table (5) showed that there were no statistically significant differences at the level (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the gender variable.

Second: the specialization variable

The t-test was used to show the significance of the differences between the means of the responses of the study sample members regarding the extent of teachers' willingness to use technology in education according to the specialization variable, and Table (6) shows this:

Table (6):

T-test to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology according to the specialization variable.

	M	N	Mean	Std. Deviation	T	df	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Special Ed	66	4.25	.044	1.72	265	.087
	Other majors	201	4.24	.040			

Table (6) showed that there were no statistically significant differences at the level (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the specialization variable.

Third: the stage variable

means and standard deviations were extracted for the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the stage variable, and Table (7) shows this:

Table (7):

Means and standard deviations of the responses of study sample members to the extent of teachers' willingness to use technology in education according to the stage variable.

Field	Stage	No	Mean	SD
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	E	85	4.24	.048
	I	71	4.25	.032
	H	111	4.25	.041
	Total	267	4.25	.041

To show the significance of the differences between the means, a one-way analysis of variance was used to demonstrate the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the stage variable, and Table (8) shows this:

Table (8):

One-way analysis of variance to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the stage variable.

Field	Source	Sum of Squares	Df	Mean Square	F	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Between Groups	.000	2	.000	.077	.926
	Within Groups	.455	264	.002		
	Total	.455	266			

Table (8) showed that there were no statistically significant differences at the level of (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the stage variable.

Fourth: The experience variable

means and standard deviations were extracted for the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the experience variable, and Table (9) shows this:

Table (9):

Means and standard deviations of the responses of study sample members to the extent of teachers' willingness to use technology in education according to the experience variable.

Field	Experience	No	Mean	SD
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Less than 5 years	79	4.25	.044
	From 5 years to 10 years	75	4.25	.039
	More than 10 years	113	4.24	.041
	Total	267	4.25	.041

To demonstrate the significance of the differences between the means, a one-way analysis of variance was used to demonstrate the significance of the differences between the averages of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the experience variable. Table (10) shows this:

Table (10):

One-way analysis of variance to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the experience variable.

Field	Source	Sum of Squares	Df	Mean Square	F	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Between Groups	.010	2	.005	2.975	.053
	Within Groups	.445	264	.002		
	Total	.455	266			

Table (10) showed that there were no statistically significant differences at the level (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the experience variable.

Fifth: Age variable

means and standard deviations were extracted for the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the age variable, and Table (11) shows this:

Table (11):

Means and standard deviations of the responses of study sample members to the extent of teachers' willingness to use technology in education according to the age variable.

Field	Age	No	Mean	SD
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Less than 30 years old	86	4.25	.045
	(30-40) year	108	4.25	.037
	More than 40 years	73	4.24	.043
	Total	267	4.25	.041

To show the significance of the differences between the means, a one-way analysis of variance was used to demonstrate the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the age variable. Table (12) shows this:

Table (12):

One-way analysis of variance to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the age variable.

Field	Source	Sum of Squares	Df	Mean Square	F	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Between Groups	.008	2	.004	2.494	.085
	Within Groups	.447	264	.002		
	Total	.455	266			

Table (12) showed that there were no statistically significant differences at the level (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the age variable.

Sixth: The training variable

Means and standard deviations were extracted for the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the training variable, and Table (13) shows this:

Table (13):

Means and standard deviations of the responses of study sample members to the extent of teachers' willingness to use technology in education according to the training variable.

Field	Training	No	Mean	SD
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	No training	69	4.25	.042
	One course	53	4.24	.048
	(2-4) courses	68	4.24	.032
	More than (4) courses	77	4.24	.043
	Total	267	4.25	.041

To show the significance of the differences between the means, a one-way analysis of variance was used to demonstrate the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the training variable. Table (14) shows this:

Table (14):

One-way analysis of variance to show the significance of the differences between the means of the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the training variable.

Field	Source	Sum of Squares	Df	Mean Square	F	Sig.
The total degree of teachers' willingness to use technology in education based on proficiency in knowledge of technological educational content	Between Groups	.008	3	.003	1.552	.201
	Within Groups	.448	263	.002		
	Total	.455	266			

Table (14) showed that there were no statistically significant differences at the level (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the training variable.

It became clear from the results of the study that the degree of teachers' willingness to use technology in education based on the TPACK model from their Perspectives. There were no statistically significant differences at the level of (0.05) in the responses of the study samples to the extent of teachers' willingness to use technology in education according to the variables of gender, specialization, stage, experience, age, and training. The results of the study indicated the teachers' willingness to use technology in education based on the competency of technological pedagogical and content knowledge, which reached a high degree. This result is consistent with many other studies on the subject such as the study of Yulisman, et al. (2019) and Liu (2018), that revealed there were no statistically significant differences at the level of (0.05) in the responses of the study sample members to the degree of teachers' willingness to use technology in education according to the variables of gender, specialization, stage, experience, age, and training. Hence, Agustini, et al. (2019) and Aljawarneh, et al. (2015) stated there were statistically significant differences at the level of (0.05) in the responses of the study sample members to the extent of teachers' willingness to use technology in education according to the variables of gender, specialization, stage, experience, age, and training. Therefore, the study recommends the use of modern technology in education.

IMPLICATIONS AND CONCLUSION

The purpose of this study was to measure the willingness of teachers to use technology in teaching environment, Saudi schools. The study employed a quantitative method to obtain information about teachers' willingness. The findings of this study did contribute to the existing literature regarding the use of technologies. The study has given crucial information to parents, peers, and teachers about technology use in school of Saudi Arabia. To investigate more technologies effects, more research is needed to study willingness of teachers

when using technologies, particularly in the Kingdom of Saudi Arabia. It is recommended that this study be replicated and extended to universities in Saudi Arabia involving all educational levels. It is recommended that this study can be extended to include teachers from other countries so the sample size would be increased, and the survey items could be reexamined. The Ministry of Education in Saudi Arabia should encourage instructors to use technologies. Effective incorporation of technology involves teachers considering and performing differently, comprehending not only what to teach, but also how to teach and apply technology to support learning goals and provide a better learning environment while enhancing both TPACK and existing technology in teaching.

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