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RESEARCH PAPER

Relationship between Teachers' Attitude towards Technology and Digital Communication Skills at Primary Level

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ABSTRACT

The main purpose of current study was to investigate the relationship between teachers' attitude towards technology and digital communication skills at primary level. Present study was correlational in nature. Population of present study was comprised of all the teachers who were working in primary schools in city Sheikhupura. The sample size was comprised of 390 male and 324 female primary school teachers. Two survey questionnaires were adapted as instruments to collect data. The reliability of the instruments was .722 and .885 respectively. Data were analysed using inferential statistics. Research findings revealed a significant positive strong relationship between the teachers' attitude towards technology and digital communication skills. There was no significant difference between primary school teachers' attitude towards technology and digital communication skills at primary school level based on their gender and locality. Findings of the study recommended the vital role technology plays in fostering effective communication within the educational environment.

KEYWORDS Attitude, Digital Communication Skill, Technology, Primary Level

Introduction

It's fascinating that the integration of modern technologies has indeed revolutionized the educational landscape (Collins & Halverson, 2018). The shift from traditional face-to-face teaching to blended learning, incorporating various devices and software, has significantly transformed the teaching-learning process (Kumar et al., 2021).

Haleem et al. (2022) asserted in their study that conventional classroom teaching methods lack the ability to offer an instant learning atmosphere, swift assessments, and heightened engagement. On the flip side, digital learning tools and technology bridge this gap. Tools such as computers, electronic tablets, and interactive web boards have become ubiquitous in today's classrooms. The efficiencies offered by such technologies often surpass those of traditional learning methods. Given the growing popularity of smartphones and other wireless devices among the general public, it is only logical for schools and educational institutions to harness their efficiency by integrating technology into the classroom.

There's a growing realization among educators about the immense potential technology holds in enriching educational experiences (Collins & Halverson, 2018). In today's digital age, where students are immersed in technology-driven environments, educators have a unique opportunity to leverage these tools to bolster comprehension and engagement (Ali, 2023).

The reliance on technology and digitalization is progressively shaping both professional work and everyday routines (Szalavetz, 2023). The education reform has emphasized the necessity of enhancing the utilization of digital technologies for both learning and assessing these skills (Timotheou et al., 2023). This encompasses not just the technical proficiency of teachers in utilizing digital technologies but also their capacity to use and apply these technologies effectively in their own teaching practices. However, various studies have uncovered a deficiency in the proficiency of teachers in utilizing digital technologies, highlighting a demand for pedagogical support in their integration of ICT (Information and Communication Technology) into their work (Pongsakdi et al., 2021). Information and Communication Technology (ICT) not only fosters independence but also equips both educators and students with the necessary skills for teaching and learning, enabling a smooth transition between learning environments (Adam & Tatnall, 2017).

Interestingly, research has highlighted that a teachers' attitude towards technology can be a stronger indicator of their willingness to use it compared to their beliefs about technology (Brown, 2017). Indeed, computers offer advantages beyond merely presenting instructional content; they facilitate student interaction with the computer, enhancing the learning experience (Shamir-Inbal & Blau, 2021).

The study aims at exploring the teachers' attitude towards technology and digital communication skills at primary level. Understanding how teachers perceive and utilize technology at the primary level is essential, especially considering the growing emphasis on digital literacy in today's society (Heaney, 2022). Investigating teachers' attitudes towards technology in education can shed light on its potential impact on the learning process (Webb & Doman, 2020).

Integrating technology at the primary level can significantly influence both teaching and learning methods. While technology has proven effective in secondary and higher secondary education, its potential at the primary level remains relatively unexplored. By delving into teachers' attitudes towards technology, your study can uncover whether their inclinations affect the learning process positively. This exploration can contribute valuable insights into the impact of technology on primary education and the role of teachers in facilitating its integration for enhanced learning experiences.

Literature Review

Ali (2023) investigates a study that delves into the role of technology in promoting equitable access to high-quality education and narrowing educational gaps is the focal point. The primary aim is to provide a comprehensive overview of how educational technology contributes to creating inclusive and effective learning environments, along with the challenges it encounters. The essay is divided into several sections that delve into different aspects of integrating technology in education. The initial section underscores the significance of technology as a catalyst for equitable educational opportunities, focusing on the concept of addressing educational disparities. It underscores the imperative of employing technology-driven solutions to tackle disparities in access, resources, and educational outcomes. Subsequent sections delve into diverse aspects of technology integration, including personalized learning, global connectivity of students through virtual platforms, overcoming resource constraints, providing instructors with technological tools, assessing the effectiveness of technological interferences, and investigating future perspectives in educational technology. Each section, supported by relevant research, case studies and examples provides a comprehensive examination of the topic. This paper delves into how

technology-facilitated personalized learning approaches can cater to diverse learning needs and enhance educational experiences for every student. It underscores the potential of virtual learning environments to connect students globally, fostering collaboration and intercultural understanding. Additionally, the report explores how technology can aid in digital assessment and feedback, enhance access to educational resources, and provide cost-effective solutions to address resource limitations. Additionally, the paper examines how the integration of technology enhances teachers' pedagogical approaches, facilitates professional development, and simplifies administrative tasks. It underscores the importance of evaluating how technology can be utilized to close gaps in educational attainment. The conversation centers around a range of topics, including accessibility, equity, addressing the achievement gap, professional development for teachers, and ensuring long-term sustainability. The article scrutinizes promising advancements in educational technology, including gamification, data analytics, social and emotional learning, artificial intelligence, virtual and augmented reality, mobile learning, and blockchain technology. It discusses their potential influence on the future of education, the creation of inclusive classrooms, and the preparation of students for success in the digital era. In summary, the essay conducts a comprehensive analysis of how technology can contribute to narrowing gaps in educational attainment. It highlights the transformative role of technology in promoting equitable access, enhancing learning opportunities, and empowering both students and educators. Policymakers, educators, and stakeholders can work together to create a more inclusive and equitable educational environment by harnessing the opportunities provided by technology.

Janes and Klančar (2022) formulated a study to explore the understanding competencies utilization of digital technology, and attitudes towards technology in an educational context among pre-service teachers. Hence, the objective of the survey was to pinpoint the key factors that significantly impact the prospective utilization of digital tools in the pedagogical endeavors of pre-service teachers. The sample comprised 85 responses out of the 150 surveys distributed, and these responses were subjected to descriptive analysis using statistical methods. The analysis findings highlighted variables related to computer use and the application of tools as influential factors in the prospective utilization of digital tools. In this context, the predominant factors with notable influence appear to be the knowledge and skills related to digital tools, as well as the attitude towards these tools. The primary findings indicate that the sample of pre-service teachers constitutes a relatively youthful generation that frequently engages with computers and digital tools. Moreover, it suggests that they are inclined to incorporate digital tools in their interactions with primary education pupils. The key contribution of the paper lies in identifying influential factors that underscore the importance of integrating digital tools into pedagogical practices. Future research should involve additional measurements and comparisons across different years of study, as well as measurements and comparisons between various study programs.

Stringer et al. (2022) conducted a study in numerous countries globally have incorporated digital technology concepts and pedagogical practices into their primary school curricula. This integration aims to ensure that students acquire the understanding, competencies, and values necessary for their meaningful participation in and contribution to the future labor market and society. An examination of twenty-three studies from eleven different countries unveiled a lack of agreement on the appropriate age and approach for introducing concepts related to Digital Technology in primary schools. Teachers' digital technology self-efficacy, digital technology self-esteem, or digital technology confidence emerged as significant factors influencing their implementation efforts. The study highlighted various challenges associated with

implementation, and professional learning and development were identified as a potential solution to enhance confidence of teachers and overcome common barriers to implementation.

According to Mailizar et al. (2021), the aim of this research was to investigate the determinants affecting the inclination of seasoned educators to incorporate E-learning in their instruction. Information was gathered through a questionnaire distributed to 161 high school teachers who underwent a six-month in-service online training program facilitated by the Indonesian Ministry of Education. The framework for this study incorporated the Technology Acceptance Model (TAM), with the addition of E-learning experience as an extra construct. In this research, an expanded TAM model was introduced and examined, comprising five constructs: intention to use, perceived usefulness, perceived ease of use, attitude toward using, and experience. The results indicated that the most influential factors in predicting E-learning use were attitude toward E-learning use and E-learning experience. In contrast to prior research, perceived ease of use and perceived usefulness were found to be non-significant in predicting behavioral intention. The implications for future research and practical applications are deliberated upon.

Pongsakdi et al. (2021) formulated a study of Open Digi, the study aims to explore the influence of digital pedagogy training on the attitudes of in-service teachers towards digital technologies. Self-report questionnaires were gathered from ninety-eight in-service teachers in elementary and lower secondary schools in southern Finland. A total of twenty-two in-service teachers participated in both pre and post-tests. The findings indicated that the effectiveness of digital pedagogy training varied based on the teachers' level of confidence in using information and communication technology (ICT). Teachers with low confidence in ICT use exhibited a notable increase in their ICT confidence levels after the program, whereas teachers who already possessed a high level of confidence in ICT use showed no significant alterations in their confidence levels. These findings imply that the training effectively addressed needs of teachers for ICT support, particularly among those in the high-confidence group. The challenges that teachers face when expanding the integration of digital technologies into their practices and their commitment to embracing a digital culture are also addressed.

Quaicoe et al. (2020) conducted a survey-based investigation that delves into the Digital Divide in primary and junior high schools of Ghana. The study focuses on Teachers' Digital Literacy (TDL) and how they employ digital technologies within the school setting. The assessment of perceived Teacher Digital Literacy in this study utilized the ICT-enhanced Teacher Standards for Africa (ICTeTSA) Framework, which encompasses digital attitude, knowledge, skills, and application components. This research encompassed six districts in Ghana, involving a sample of 233 teachers selected from forty-five schools. The analysis of perceptions regarding TDL revealed the existence of two significantly distinct Digital Divide clusters within schools. These clusters diverged based on the teachers' digital application component of TDL. Although the majority of teachers in most schools reported possessing an above average level of TDL, an intriguing observation emerged: over 50% of the schools demonstrated digital proactivity. The study suggests that there is a need for the adaptation of school-based management (SBM) governance to address these issues effectively.

Teachers' attitudes toward technology are pivotal in determining its effective integration into the classroom. Integrating technology into the classroom has been highlighted as a catalyst for enhancing student engagement, fostering deeper learning, piquing curiosity, and increasing students' willingness to participate actively in their

education (Alrasheed, 2021). Factors such as stress, decreased motivation, and limited learning hours decrease teachers' performance. Students from lower-income families face particular challenges due to potential lack of access to necessary technology, which Ertmer (1999) referred to as 'first-order obstacles. Additionally, the absence of a suitable study environment at home might impact some students' ability to engage effectively in remote learning. The present study aimed to investigate relationship between teachers' attitude towards technology and digital communication skills at primary level.

Hypotheses

H_{o1}: There is no significant relationship between teachers' attitude towards technology and digital communication skills at primary level.

H_{o2}: There is no significant effect of teachers' attitude towards technology on digital communication skills at primary level.

H_{o3}: There is no significant difference of teachers' attitude towards technology and digital communication skills at primary level based on their demographic information (gender, locality).

Material and Methods

Correlation research design was use to investigate relationship between teachers' attitude towards technology and digital communication skills. Population of current study was comprised of all the teachers who are working in public primary schools of city Sheikhupura. Stratified sampling technique was used to draw sample of the study. As there were two strata in the population (male and female) teachers therefore, stratified random sampling technique was used so that proportionately total 390 male and 324 female teachers which were 40% of the total population. The researcher used two instruments to collect data about teachers' attitude towards technology and digital communication skills. The researcher have used an instrument about teachers' attitude towards technology that adapted by Gerald Knezek & Rhonda Christensen (2009) with some modification and second instrument about digital communication skills adapted by vINCI with a minor modification (2017). The reliability values were found to be .722 and .885 respectively. Researcher personally collected the data. Data were analysed by using descriptive and inferential statistics.

Results and Discussion

Table 1
Demographic Information of the Respondents

Sr. No.	Demographics	*F*	*%age*
1.	**Gender**		
	Male	390	54.6
	Female	324	45.4
2.	**Locality**		
	Rural	241	33.8
	Urban	473	66.2

Table 1 shows the demographic information of the study participants. Out of the total 714 teachers in the sample, 390 (54.6%) were male, and 324 (45.4%) were female. The sample was divided into two localities, with 241 participants from rural areas (33.8%) and 473 from urban areas (66.2%)

Table 2
Correlation between Primary School Teachers' Attitude towards Technology and their Digital Communication Skills

Variables		Computer Usage	Perceived Ease of use	Perceived usefulness	Teaching tools	Information	Communication	Content creation	Safety	Problem solving
Computer Usage	Pearson Correlation	1	.186**	.025	.033	-.070	.002	.010	.030	.054
	Sig. (2-tailed)		.000	.510	.377	.063	.958	.784	.419	.146
	N		714	714	714	714	714	714	714	714
Perceived Ease of use	Pearson Correlation		1	-.021	-.050	-.019	-.013	-.065	-.027	-.051
	Sig. (2-tailed)			.579	.179	.609	.728	.082	.475	.175
	N			714	714	714	714	714	714	714
Perceived usefulness	Pearson Correlation			1	.648**	.553**	.642**	.691**	.911**	.669**
	Sig. (2-tailed)				.000	.000	.000	.000	.000	.000
	N				714	714	714	714	714	714
Teaching tools	Pearson Correlation				1	.520**	.695**	.732**	.638**	.835**
	Sig. (2-tailed)					.000	.000	.000	.000	.000
	N					714	714	714	714	714
Information	Pearson Correlation					1	.650**	.451**	.558**	.541**
							.000	.000	.000	.000
							714	714	714	714
Communication	Pearson Correlation						1	.564**	.631**	.602**
	Sig. (2-tailed)							.000	.000	.000
	N							714	714	714
Content creation	Pearson Correlation							1	.552**	.528**
	Sig. (2-tailed)								.000	.000
	N								714	714
Safety	Pearson Correlation								1	.667**
	Sig. (2-tailed)									.000
	N									714
Problem solving	Pearson Correlation									1
	Sig. (2-tailed)									
	N									

Table 2 shows the relationship between teachers' attitude towards technology digital communication skills. The table shows strong positive significant relationship between primary school teachers' attitude towards technology and their digital communication skills. As the above table it shows that very weak positive relationship between computer usage with perceived ease of use (.186**), perceived usefulness (.025), teaching tools (.033), communication (.002), content creation (.010), safety (.030) and problem solving (.054) were found, however negative weak correlation found between computer usage with information (-.070). Moreover, weak negative relationship between perceived ease of use with perceived usefulness (-.021), teaching tools (-.050), information (-.070), communication (-.013), content creation (-.065), safety (-.027) and problem solving (-.050) were found. Further it concluded that perceived usefulness has positive strong relationship with teaching tools (.648**), communication (.642**), content creation (.691**)

and problem solving (.669**) while it has positive very strong relationship with safety (.911**) and moderate relationship with information (.553**). However strong correlation was found between teaching tools with communication (.695**), content creation (.732**), safety (.638**) and problem solving (.835**) but moderate correlation was found between teaching tools with information (.520**). Here strong correlation was found between information with communication (.650**) but moderate correlation was found between information with content creation (.451**), safety (.558**) and problem solving (.541**). Furthermore, strong positive correlation was found between communication with safety (.631**) and problem solving (.602**) and moderate correlation were found between communication with content creation (.564**). A moderate positive relationship was existed between content creation with safety (.552**) and problem solving (.528**). Safety has a strong positive correlation with problem solving (.667**).

Table 3
Correlation between Primary School Teachers' Attitude towards Technology and Digital Communication Skills

Variables	N	M	r- value	Sig.
Attitude towards Technology	714	82.03	.773**	.000
Digital Communication Skills	714	70.93		

Table 3 shows the correlation between teachers' attitude towards technology and digital communication skills calculated by using Pearson r. Findings of this study revealed that there was a significant strong positive relationship (r=.773**, p=.000) existed between primary school teachers' attitude towards technology and their digital communication skills at p≤.05 level of significance.

Table 4
Effect of Teachers' Attitude towards Technology and Digital Communication Skills

	Unstandardized Co-efficient	Standardized Co-efficient						
Model	**B**	**Std. Error B**	**β**	**T**	**P**	**df**	**F**	**R^2**
Constant	-16.231	2.698						
Attitude towards Technology	1.063	.033	.77	32.52	.000	712	1058.16	.597

Dependent Variable: Digital Communication Skills

A linear regression analysis was conducted in order to find the significance effect of attitude towards technology. "As table 8 shows that attitude towards technology was found to be significant with (R^2 = .597) at p≤0.05 level of significance". "The findings of the effect of attitude towards technology on digital communication technology was significantly predict the dependent variable with" (β = .77, F=1058.16, p=.000).

Table 5
Difference between Male and Female Teachers' Attitude towards Technology

Variables	Gender	N	M	SD	df	t-value	Sig.
Computer Usage	Male	390	19.90	3.68	640.77	1.789	.015
	Female	324	19.35	4.29			
Perceived Ease of Use	Male	390	15.25	2.95	712	-.673	.347
	Female	324	15.39	2.71			
Perceived Usefulness	Male	390	25.96	4.97	712	-1.349	.338
	Female	324	26.45	4.64			
Teaching Tools	Male	390	20.84	4.19	712	-206	.984
	Female	324	20.90	4.03			

The independent samples t-test was conducted to determine the differences in the attitudes toward technology between male and female primary school teachers. The study findings indicates that there was no significant difference between male and female

teachers' attitudes toward technology regarding (perceived ease of use, perceived usefulness, and teaching tools at the school level) with a significance level of p≤.05. However, a significant difference was found in computer usage between male and female teachers' attitudes toward technology at the school level.

Table 6
Difference between Male and Female Teachers' Attitude towards Digital Communication Skills

Variables	Gender	N	M	SD	df	t-value	Sig.
Information	Male	390	10.62	2.70	712	-.183	.883
	Female	324	10.66	2.74			
Communication	Male	390	17.29	4.16	712	-.939	.406
	Female	324	17.58	3.90			
Content creation	Male	390	14.08	2.89	712	-.422	.513
	Female	324	14.17	2.67			
Safety	Male	390	14.41	3.58	712	-1.626	.270
	Female	324	14.84	3.33			
Problem solving	Male	390	14.07	3.41	712	-.423	.599
	Female	324	14.18	3.17			

Difference between male and female teachers' attitude towards digital communication skills at primary schools was calculated by using independent samples t-test. Findings of the study revealed no significant difference between female and male teachers' attitude towards digital communication skills at primary schools (information, communication, content creation, safety, problem solving) p≤.05 level of significance.

Table 7
Difference between Rural and Urban Teachers' Attitude towards Technology

Variables	Locality	N	M	SD	df	t-value	Sig.
Computer usage	Rural	241	19.30	4.39	420.85	-1.581	.001
	Urban	473	19.83	3.74			
Perceived Ease of Use	Rural	241	15.61	2.90	2.005	712	.467
	Urban	473	15.16	2.81			
Perceived Usefulness	Rural	241	26.17	4.58	-.047	712	.391
	Urban	473	26.19	4.95			
Teaching Tools	Rural	241	21.07	4.13	.935	712	.777
	Urban	473	20.76	4.11			

Difference between rural and urban teachers' attitude towards technology at primary schools was analyzed by using independent samples t-test. Findings of the study revealed that there is no significant difference between rural and urban teachers' attitude towards technology at school level (perceived ease of use, perceived usefulness and teaching tools) p≤.05 level of significance. On the other hand, significant difference existed between female and male teachers' attitude towards technology at school level in computer usage.

Table 8
Difference between Rural and Urban Teachers' Attitude towards Digital Communication Skills

Variables	Locality	N	M	SD	df	t-value	Sig.
Information	Rural	241	10.80	2.62	712	1.157	.303
	Urban	473	10.55	2.76			
Communication	Rural	241	17.21	3.91	712	-.976	.461
	Urban	473	17.53	4.11			
Content creation	Rural	241	14.19	2.80	712	.461	.745
	Urban	473	14.09	2.79			
Safety	Rural	241	14.73	3.27	712	.679	.133
	Urban	473	14.54	3.57			
Problem solving	Rural	241	14.28	3.22	712	.908	.892
	Urban	473	14.04	3.35			

The study findings indicate that there isn't a significant difference in the attitudes toward digital communication skills among rural and urban primary school teachers across various aspects such as information, communication, content creation, safety, and problem-solving, maintaining a $p \leq .05$ level of significance.

Discussion

Numerous studies have firmly established the efficacy of information and communication technology (ICT) as a tool for education in teacher education. The study aimed to explore the relationship between teachers' attitude towards technology and digital communication skills in Sheikhupura city. The findings strongly supported a significant positive relationship between the teachers' attitude towards technology and digital communication skills. This conclusion aligns with the study by Mailizar et al. (2021), which revealed that the foremost predictors of E-learning use are attitude toward E-learning use and E-learning experience. In contrast to earlier research, perceived ease of use and perceived usefulness were found to be insignificant in predicting behavioral intention. The discussion delves into implications for future research and practical applications. The findings of another study by Qazi et al. (2022) align with the results of the current study, which demonstrated a positive correlation between teachers' attitudes towards ICT in education and their perceptions of computer attributes. These results are in line with Rogers' Innovation Attributes sub-theory. The informants in the study exhibited positive perceptions across the four computer attributes under examination, with the highest positivity observed in the aspect of observability of computers. This outcome suggests that EFL teachers in Algeria have a very high awareness of the observable advantages of adopting ICT. The majority of informants reported having witnessed computers in action and observed Algerian teachers using computers for educational purposes. The study findings indicated that there wasn't a substantial difference in teachers' attitude towards technology between male and female teachers at the primary school level. Interestingly, Fatima's (2019) research also echoed similar sentiments, highlighting no gender-specific differences in attitude towards information technology across various factors like training, school location, medium of instruction, and marital status. Consequently, it's reasonable to conclude that effective technology integration in classrooms should be anticipated from all teachers regardless of their gender. This outcome is also consistent with findings from comparable studies in the literature. Consequently, this research concludes that the attitudes of Turkish EFL teachers towards technology do not exhibit significant differences based on gender. However, male teachers demonstrate a higher level of Technological Pedagogical Content Knowledge (TPACK) skills compared to their female counterparts (Kozikoglu & Banacan, 2019). Findings of the study revealed no significant difference between female and male teachers' attitude towards digital communication skills at primary schools. This discovery corroborates the findings of other studies (Qazi et al., 2022), indicating that the attitudes of all participating teachers in the study were positive towards the use of ICT. Findings of the study revealed that there is no significant difference between rural and urban teachers' attitude towards technology and digital communication skills at school level. Supporting this research, Beri and Sharma (2019) asserted that Teacher-educators from urban backgrounds exhibit higher competencies in Technological Pedagogical and Content Knowledge (TPACK) compared to their counterparts from rural backgrounds.

Conclusion

This study aimed to explore the correlation between teachers' attitudes toward technology and digital communication skills at primary level in Sheikhupura city. The

findings demonstrated a significant strong positive relationship between teachers' attitude towards technology and digital communication skill. A significant effect of teachers' attitudes toward technology on digital communication skills at primary level was revealed. Moreover, the study revealed no significant differences between male and female teachers' attitudes toward technology and digital communication skills at the primary school level in Sheikhupura. Findings further revealed that there was no significant mean difference found between rural and urban school teachers' attitudes toward technology and digital communication skills in Sheikhupura.

Recommendations

Following were the recommendations of the study.

- Findings of the study revealed that there was significant positive strong relationship existed between primary school teachers' attitude towards technology and their digital communication skills. Therefore, it is recommended to provide technology in primary schools to enhance teachers' performance.
- It is recommended to establish computer labs equipped with latest technology to improve teacher-student performance.
- Developing comprehensive models or frameworks for effective technology integration in teaching and learning, irrespective of gender, would be a valuable direction for future research. This could contribute significantly to optimizing instructional and assessment technologies in educational settings.

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