

## Teacher Perception of ICT Integration in Teaching and Learning at Elementary Level

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**Abstract:** The rapid spread of information and communication technology (ICT) has transformed learners into digital learners, requires teachers to integrate technology into their educational approaches, and effective integration depends on teacher attitudes, technical knowledge and skills play an important role. In this context, the quantitative survey demonstrates, teachers' perceptions of technology integration in teaching and learning practices at the elementary school level in Tehsil Kamalia District Toba Tek Singh. A random sampling technique was used in this study and data were collected using a self-designed questionnaire. Data from this quantitative study were analyzed using SPSS software for both descriptive and inferential statistics. This result shows that ICT integration is highly effective for both teachers and students. The results show that use of ICT tools is one of the key factors for successful technology-enabled teaching and learning and as a result, teachers are positive about technology integration in their teaching and learning practices. It was shown that they have a strong awareness of technology-integrated in education that can effectively improve teaching practices, make the learning process engaging and interactive, help and keep learners engaged. Slow internet speeds, load shedding, lack of infrastructure, and online teaching experience and training were identified as the main obstacles preventing a teacher from effectively integrating ICT into teaching practice. Future research should consider other aspects of ICT integration, particularly from a management perspective in terms of strategic planning and policy making.

**Keywords:** Teacher Perception, ICT Integration, Teaching, Learning, Elementary Level

### I. Introduction

If the 18th century is the age of reason, the 19th century is the age of industry, and the 20th century is the age of profound technological progress, the 21st century can be called the age of learning. People around the world are becoming more active and continuing to learn new knowledge and skills throughout their lives in nearly every aspect of their daily lives. Educational institutions around the world are encouraged to integrate information and communication technology into their institutions. Teaching, learning, assessment, research, management and professional development. This is especially true for Asia. ICT provides the information, skills and abilities to younger generations that need to live in

increasingly sophisticated technology world. Above all, this stronger emphasis is justified. The use of information and communication technology in education has shifted the focus away from teacher-centered learning environments and created a chasm between teachers and students. However, as the world moves faster and faster towards digital media and information, the role of ICT in education will become more and more important, and this importance will continue to grow and evolve in the 21st century. Over time, various factors put great pressure on the introduction of information and communication technology in education. And current trends suggest big changes are coming soon in fashion, education is planned and implemented based on the possibilities of information and communication technology.

### *1.1 Definition of Teacher Perception*

Perception, according to Eteokleous (2018), is the way something is seen, understood and interpreted. Eteokleous (2018) (p. 309) replaced "belief" with "perception" because it is common for perceptions to "travel in disguise and with aliases". Additionally, the researchers provided an extensive list of terms used in the literature to describe perceptions, including attitudes, values, thoughts, judgments, dispositions, viewpoints, opinions, ideologies, and beliefs (Fives, H.; Buehl, M.M. 2017).. Awareness typically serves as a personal compass that helps people define and understand the world and themselves (Eteokleous, 2018).

Teachers' perceptions of the use of ICT in the classroom fall into two categories: teacher-centered perceptions and student-centered perceptions (Deng, F.; Chai, C.S.; Chin-Chung, 2016). Teacher-centered perceptions often emphasize adherence to moral principles and rules, and this is indeed the case. is related to activism (Deng, F.; Chai, C.S.; Chin-Chung, 2016).

In the learning environment, teachers plan the learning process effectively as experts. For example, teachers who have the needs of their students are more concerned with the needs and well-being of individual students. They often use an inspiring teaching method. The student's approach is often important for the student's participation in the actual lesson using the tools in the lesson world (Mayer, R.E. 2017).

Additionally, researchers (Rodriguez-Segura, L.; Zamora-Antuñano, 2020) provide evidence to support the idea that teachers may have ideas about teaching that are both teacher- and student-centered. Therefore, it is recommended that researchers take a general approach when examining teacher's perception theory (Tondeur, J.; Van Braak, J.; Ertmer, 2017).

### *1.2 Teacher Perceptions of Technology Integration*

Information, communication, and technology (ICT) integration in education refers to the use of computer-based communication embedded in the daily educational process in the classroom. In terms of preparing students for the current digital age, the teacher is seen as playing a key role in utilizing ICT in daily education. This is due to the ability of ICT to provide a dynamic and proactive teaching and learning environment (Arnseth, H.C., & Hatlevik, O.E. (2010). It is right to say that almost all ranges of subjects' start from mathematics, science, languages, arts and other major fields can be learned more effectively through technology-based tools and equipment.

It also helps teachers to design their lesson plans in an effective, creative, and interesting approach that would result in students' active learning. Previous research proved that use of ICT in teaching will enhance the learning process and maximizes the students' abilities in active learning (Finger & Trinidad, 2002; Jorge et al., 2003; Young, 2003; Jamieson-Procter et al., 2013).

In most schools, technical issues became a major problem, a source of student and teacher frustration, and disrupted the teaching and learning process. If technical assistance is lacking and computers are not repaired, teachers may be temporarily unable to use computers (Jamieson-Procter et al., 2013). As a result, teachers are reluctant to use computers for fear of equipment failure and lack support in that regard.

A study by Turrell and Johnson (2012) showed that there are technical problems is a major obstacle for teachers. These issues include poor connections, virus attacks, printer inoperability, and more. The ICT field requires technical support and ongoing professional development from time to time. In short, all parties should: people work together to advance the nation technologically.

**The main purpose** of this study is to analyze the effectiveness of ICT integration in teaching and learning. In particular, this study aims to identify (I) the effectiveness of ICT integration in terms of teaching and learning, and (II) the effective elements of ICT integration in public school instruction at elementary level in Tehsil Kamalia District Toba Tek Singh.

## **2.Literature review**

ICT has also transformed the education sector, making classroom practice more interactive and productive (Lin et al., 2017). Technology-integrated classroom practices not only improve the quality of instruction (Akram et al., 2021a), but also enable students to develop skills, increase motivation, and expand knowledge and information efficiently (Chen et al., 2018). As an integral part of our time, information, and communication technology (ICT) is having a profound impact on all areas of human life (Gnamb, 2021). ICT played a supportive role in sustaining teaching-learning activities (Thaheem et al., 2021). On the other hand, ICT-integrated teaching and learning offered a flexible approach and provided better access to learning opportunities instead of face-to-face education (Akram et al., 2021b).

### ***2.1 Effectiveness of ICT in Teaching and Learning***

Furthermore, it was considered important to utilize ICT in education to improve the effectiveness of educational practice worldwide in the last few decades (U.S. Department of Education, 2017). Several studies have integrated ICT in meeting the educational needs of learners by enhancing student thoughtfulness and maintaining student motivation, which is considered an important predictor of student educational development. It also emphasizes the importance of a disciplined teaching approach (Xu et al., 2021). Liu et al. (2022) also identified technology-integrated learning improves students' cognitive comprehension and learning ability. In addition, ICT-integrated teaching and learning practices enable learners to connect with teachers and other students (via various social media platforms) also help

students overcome academic challenges, encourage and actively participate in learning activities (Liu Z. et al., 2021). In addition to the content related to technology use, teachers' personal views and beliefs also play an important role in technology integration. Their beliefs define the disciplinary decisions of the twentieth century regarding the use of technology in culture that supports teaching and learning (Tondeur et al., 2017). Previous research has also shown that teachers' practices are often influenced by their teaching beliefs (Tai Malu et al. Chapter Luke, 2019). Teachers prefer technology-based textbooks that are compatible with their current beliefs about teaching strategies and practice.

In other words, the use of technology is strongly tied to teachers' perspectives on how they teach and learn in the classroom. Against this background, innovative educational strategies suggest that the integration of technology can only be fully understood. Considering the teachers perspective on the use of technology (Watson and Rockinson-Szapkiw, 2021). In this regard, this study aimed to investigate teachers, recognition of benefits, willingness to accept attitudes, challenges faced in integrating ICT into teaching and learning practices.

The use of ICT systems in schools should improve teaching and learning processes. The importance of ICT in education, especially its immense potential, is to transform the way classrooms are taught and improve collaborative learning skills.

## *2.2 The challenges teachers face in integrating ICT into the teaching*

Pakistan also recognizes the importance of ICT in education, and the National Education Policy states that the government attaches particular importance to integrating ICT into teaching practices to meet its needs (Ministry of Education, Pakistan, 2018). However, developing countries have many factors, including: Lack of ICT infrastructure (Akram et al., 2021a), Electricity and Internet (Akram et al., 2021b), knowledge and skills (Asad et al., 2020), and the lack of teacher training in schools (Abbasi et al., 2021) have a significant impact on the use of ICT in the class.

## **3. Methodology**

### *3.1 Research Design*

Research design allows researchers to obtain information and data relevant to their research topic. This study is based on a quantitative description. In this study, descriptive research provides sample information about scenarios and the current situation at a particular point in time.

### *3.2 Instrument*

A questionnaire set based on a 4-point Likert scale is created, 4-Likert scale ranged from 4= Strongly Disagree, 3= Disagree, 2= Agree and 1= Strongly Agree.

The Likert scale approach is a concept that uses subjective and objective criteria to assess and measure respondent feedback. Used to determine the strength of an individual's facial expressions. Agree or disagree with certain statements. This is a scaling method in which questionnaires develop and use a negative-positive scale, giving respondents the opportunity and space to demonstrate most of the criteria

similar to their own. The study was quantitative methods. This method is widely used in various research fields and is based on information collected in relation to behavior.

### *3.3 Population and Sampling*

There are total 51 public elementary schools in Tehsil Kamalia District Toba Tek Singh. For quantitative data collection, a random sampling technique was adopted to select a representative sample of elementary schools from Tehsil Kamalia, thirty-five elementary schools were randomly selected from the public-sector schools in Tehsil Kamalia District Toba Tek Singh to participate in the study. From each of the thirty-five schools, two teachers were randomly chosen to be part of the data collection process. The number of respondents to this survey was 70 public elementary school teachers. The questionnaire was randomly distributed to the respondents. Since the subjects of this research were people with educational backgrounds, we tried to attract public elementary school teachers.

### *3.4 Data Analysis*

Quantitative data obtained from responses to Likert scales were analyzed descriptively (Likert, 1932). *Descriptive statistics* were used to summarize and present data in a meaningful and understandable way (Field, 2013). Teacher responses to effectiveness of ICT integration in teaching and learning were calculated and analyzed using measures of frequency, percentage, and central tendency, such as mean and measures of variation, such as standard deviation. A measure of central tendency, such as the median, provides a mean representative of all responses (Field, 2013).

Measures of distribution, such as standard deviation, provide information about the distribution or variability of responses (Field, 2013). A higher standard deviation indicates more variability in response, while a lower standard deviation indicates more consistent response. Using these statistical data, the researchers were able to understand teachers' views on ICT integration in teaching and learning.

*Inferential statistics* are used to determine the relationship between two variables using Pearson's correlation.

### *3.5 Limitations*

Like other studies, this study also had certain limitations. A limitation is the focus on public elementary schools in Tehsil Kamalia District Toba Tek Singh, which may limit the transfer of results to private schools and other schools in districts. Additionally, the use of Likert scales can introduce potential response biases, and the sample size can affect the generalizability of the results. However, despite these limitations, this study provides valuable insight into teachers' perceptions of ICT integration in teaching and learning.

4. Results

Table I. Use of ICT

Comfortably use of ICT by teachers

Comfortably use of ICT device by teachers	Frequency	Percentage (%)
Very comfortable	30	42.8
Fairly comfortable	25	35.7
uncomfortable	15	21.4
<b>Total</b>	70	100

Most teachers know about ICT, and 78.5% of teachers know how to use ICT devices, as shown in Table I.

Table 2. Teacher perceptions of technology-based teaching and learning

Item	Strongly agree	Agree	Disagree	Strongly disagree	Mean	S. D
	Frequency and Percentage (%)					
Use of ICT makes teaching easier	44 62.8	26 37.1	0	0	3.6	0.48
I think that classes using ICT enhance the learning effective	39 55.7	31 44.2	0	0	3.5	0.50
The use of ICT enables teachers to use more up-to-date teaching materials to improve teaching	35 50	35 50	0	0	3.5	0.50
I believe that the use of ICT improve the quality of education.	40 57.1	26 37.1	4 5.7	0	3.5	0.55

on the data on teachers' ICT knowledge in teaching in 2, most teachers aware of the benefits of ICT teaching. Most teachers know the use of ICT teachers improve teaching through new knowledge with minimum score It cannot be that teaching materials and information available online updated, and

are teachers can refer to them to create engaging and engaging classrooms for students. In addition, most

that for that ICT more overall 3.5. This situation suggests that the teacher sees that use of ICT in the teaching and learning process as positive, as ICT is a necessary tool for the teacher to ensure the effectiveness of both teaching and learning processes.

The use of ICT enables the student's to be more active and engaging in the lesson	27 38.5	42 60	1 1.4	0	3.3	0.51
ICT enables students to become more creative and imaginative	33 47.1	33 47.1	3 4.2	1 1.4	3.4	0.64

teachers agreed the use of ICT certainly provides more opportunities effective teaching and teaching with makes learning effective, with an score of mean

**Table 3: Teacher perception about ICT facilities in public school**

From the data obtained in table 3, it is clear that 74.2 % teachers agreed that, there is not enough classroom time for teachers to use ICT for teaching and learning purposes. This means that the teacher is not provided enough time to use ICT tools for effective teaching and learning processes, it is desirable that the teacher is given more time in class for ICT integration in the classroom. Most teachers agreed that all ICT tools provided to schools are wasted because teachers lack the knowledge and skills to use them, with an average score of 2.7. Even with adequate ICT facilities available, poor access to ICT may prevent a teacher from using her ICT in the classroom.

Some the urge use ICT but lack from hinders them to tools in almost teachers demotivated without support from school administrators utilizing ICT. Administrators must encourage

Item	Strongly agree	Agree	Disagree	Strongly disagree	Mean	S.D
	Frequency and Percentage (%)					
Insufficient class time to conduct classes using ICT learning objectives.	11 15.7	41 58.5	15 21.4	3 4.2	2.8	0.72
All ICT tools in my school go to waste and less used by teachers	13 18.5	28 40	28 40	1 1.4	2.7	0.76

teachers feel and motivation to in their classrooms, of support school administrators and discourages use of ICT classrooms, 85.7% feeling

teachers tools in and that both learning should freedom own make but	Due to limited access to ICT, it cannot be used in the classroom.	16 22.8	40 57.1	13 18.5	1 1.4	3.0	0.69	to use ICT the classroom convince them ICT benefits teaching and processes. Teachers have the to design their teaching and full use of ICT should always follow the curriculum developed by Ministry of Education (MOE). relationship between two variables is determined by inferential statistics. Pearson correlation is used determine the strength of relationship by interpreting coefficient values.
	Feeling demotivated without support from school administrators utilizing ICT.	14 20	46 65.7	10 14.4	0	3.0	0.58	
the		<b>Teachers ICT integration in teaching and learning</b>		<b>ICT integration in students teaching and learning</b>				
The	Teachers' ICT integration in teaching and learning			I		0.82		
using	Students' interest in Learning			0.82		I		

The coefficient values are shown in the table below.

**Table 4: Pearson correlation coefficient**

*Correlation is significant 0.01 level (2-tailed)*

The relationship between Teachers' ICT integration in teaching and learning with students' ICT integration in teaching and learning. Teachers' ICT integration in teaching and learning is positively correlated with students learning. It has strong relationship by obtaining the value of r0.82. The more teacher integrates ICT in teaching and learning results in more student's interest in learning.

### Discussions and Recommendations

This study shows that ICT can help students progress in learning throughout the educational process. The data show that students' academic achievement levels can be effectively improved, and this requires appropriate use of ICT. 21st century education focuses on three main components: technical knowledge, educational knowledge and content curriculum knowledge and assessment. Teaching and learning in the 21st century will have different characteristics than in the past. The purpose of learning in the 21st



century is to develop highly productive students who are well versed in information and communication technology (ICT) and have advanced communication and thinking skills.

These findings further the debate about that teachers are part of educational transformation. This result is consistent Macho (2005) study which demonstrated that use of ICT in teaching improved student learning. However, most teachers in this study agree that ICT can help improve classroom management by making students better behaved and more focused. In addition, the study showed that the use of ICT makes lessons more engaging and interesting, thus helping students to learn more effectively. ICTs, when used appropriately, can help expand access to education by making information more quickly and available anywhere, anytime (Aktaruzzaman et al., 2011). Future professional development activities on use of ICT in education are recommended to focus on the long-term involvement of teachers at the grassroots level and the benefits of ICT use.

In addition, a comparative study of ICT integration in teaching and learning, both in public and private schools is recommended. This is because most private schools allow students to bring electronic devices to school and the teaching process is done with the use of ICT. It will be interesting to see the findings on the effectiveness of ICT integration in public and private schools.

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