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Awareness and extent of using ICT tools among school teachers of Punjab

[1]Mahi Singh, [2]Mandeep Sharma and [3]Ritu Mittal Gupta

[1]MSc Student, Department of Extension Education and Communication Management, Punjab Agricultural University, Ludhiana, Punjab, India

[2]Assistant Professor, Department of Extension Education and Communication Management, Punjab Agricultural University, Ludhiana, Punjab, India

[3]Assistant Professor, Department of Extension Education and Communication Management, Punjab Agricultural University, Ludhiana, Punjab, India

Corresponding Author: Mahi Singh

Abstract

This study investigates the awareness and extent of Information and Communication Technology (ICT) tool utilization among school teachers in the Punjab region. The rapid integration of technology in education necessitates an understanding of teachers' awareness levels and the extent to which they incorporate ICT tools into their teaching practices. By examining these factors, the research aims to provide insights into the current state of ICT adoption in Punjab's educational landscape. In current study, a total of 200 respondents were taken from Punjab to investigate the awareness about ICT tools among the School teachers. A total number of five districts namely Ludhiana, Hoshiarpur, Faridkot, Patiala and Amritsar were selected which are not adjoining with each other. Among all the information availed by the teachers, results showed that maximum respondents showed a medium level of awareness among ICT tools. Around 80 percent teachers showed medium level of awareness followed by 12 percent in a low level of awareness and rest 9 percent teachers had higher level of awareness. Different ICT tools like computer, multimedia projector and software like Punjab Educare app were the most preferred tools with the mean score of 2.98, 2.79 and 2.61 respectively by maximum people in order to seek educational material online. The data revealed that almost all the ICT tools were accessible to all the teachers in the school. Teachers had medium level of extent of using ICT tools. Maximum teachers were using ICT tools for the purpose of contacting and teaching students. Major changes were seen with the implementation of ICT tools in the school further leading the traditional education style into a modern pedagogy.

Keywords: Information, communication, technology, awareness, accessibility, education, teachers, school, modern pedagogy

Introduction

The advent of Information and Communication Technology (ICT) has significantly transformed traditional educational paradigms, offering innovative tools and resources for teaching and learning. This study focuses on the awareness and utilization of ICT tools among school teachers in the Punjab region. As technology becomes increasingly prevalent in education, understanding the readiness and practices of teachers is crucial for effective integration. This research seeks to explore the current scenario, challenges faced, and potential opportunities for enhancing ICT usage in Punjab's government schools, thereby contributing to the ongoing discourse on technology in education.

In an era characterized by rapid technological advancements, the role of Information and Communication Technology (ICT) in education has become paramount. The integration of digital tools in the teaching and learning process has the potential to enhance pedagogical approaches, engage students, and prepare them for a technologically-driven future. This study delves into the specific context of Punjab, aiming to shed light on the awareness levels and the extent of ICT tool utilization among school teachers.

Punjab's educational landscape, with its diverse demographics and varying access to resources, provides a unique setting for examining the dynamics of ICT adoption. As the global educational community acknowledges the transformative power of technology, understanding how teachers in Punjab navigate this digital landscape is crucial for both educational policymakers and practitioners. This research seeks to address key questions: To what extent are teachers in Punjab aware of available ICT tools and how effectively do they incorporate these tools into their teaching methodologies. The constraints existing in the integration of ICT in Punjab's schools. By exploring these questions, this study aims to contribute valuable insights that can inform strategies to enhance ICT adoption in the region's educational institutions. The findings may not only benefit teachers seeking to enrich their teaching practices but also guide policymakers in crafting initiatives that foster a more technologically inclusive and proficient educational environment in Punjab.

The ubiquitous presence of Information and Communication Technology (ICT) has redefined the landscape of education

globally, transcending geographical boundaries and cultural contexts. Within this dynamic paradigm, understanding how educators adapt to and harness ICT tools is critical for the effective evolution of educational systems. This research endeavors to delve into the specific milieu of Punjab, where the intersection of tradition and modernity sets the stage for a nuanced exploration of the awareness and utilization of ICT tools among school teachers. In Punjab, a region celebrated for its rich cultural heritage and educational pursuits, the infusion of technology into classrooms is a multifaceted endeavor. As we witness an accelerated pace of technological change, educators find themselves at the forefront of navigating this transformative journey. The awareness levels of teachers regarding the diverse array of ICT tools available and accessible ranging from interactive whiteboards to online learning platforms, play a pivotal role in shaping the educational experiences of students.

Moreover, the extent to which teachers integrate these tools into their instructional methodologies is a dynamic metric that reflects not only technological literacy but also a commitment to pedagogical innovation. Challenges inherent to infrastructure, training, and cultural considerations add layers of complexity to this integration process. By scrutinizing these factors, this study aspires to offer nuanced insights into the existing landscape of ICT utilization among school teachers in Punjab. As we embark on this exploration, the broader implications of the findings extend beyond the individual classrooms. They resonate with the broader vision of educational advancement and technological empowerment in the region. Ultimately, this research seeks not only to quantify awareness and utilization but also to foster a dialogue that informs actionable strategies for a technologically enriched educational ecosystem in Punjab.

Data Source and Methodology
State of Punjab was selected for the purpose of conducting study. From 23 districts, a total number of 5 districts namely Ludhiana, Hoshiarpur, Faridkot, Patiala and Amritsar were selected which are not adjoining with each other. In the selected districts, 2 schools from each district belonging from different zones and wards were taken randomly. A total of 200 teachers working in selected schools were taken as respondents for the purpose of study. Out of that, 20 teachers were taken from each school that comprises of 40 teachers from each district for the study.
Interview schedule was constructed to conduct the study on specific objective. The Pre-testing was done on one non-sampled Govt. Senior Secondary School of Ludhiana as a pilot study. With the help of Interview Schedule, data was selected. The data was tabulated on the master sheet for further processing and analyzed in frequencies and percentages.

Results and Discussion
Table 1 depicted the overall awareness of ICT tools among teachers of all the schools. It mentioned that the maximum

respondents were fully aware about the hardware tools like computers with the mean score 2.98 followed by smart phones with the mean score of 2.94. Mostly respondents were well aware of most of the ICT tools like scanner and printer with the mean score of 2.86 and 2.83 respectively along with LED and radio with the mean score 2.80 each. They were also well aware about the digital camera with the mean score of 2.03, specifically using to capture the events of the school but had less awareness about digital podium with the mean score of 1.54. As far as some of the hardware ICT tools like hard drive, smart board and multimedia projects, respondents were somewhat aware about these tools, as they required some advanced training for operating these ICT Tools.
The highest awareness was also found in internet browser/LAN/wi-fi with the mean score of 2.68. Respondents were fully aware of video calls with the mean score of 2.87 and e-mail i.e. 2.81. Most ICT tools were used for the purpose of official work. Other than that, respondents were well aware about web- portals (mean score 2.67) and Educational software (mean score 2.61), using it on a regular basis for delivering lectures to the students. Teachers used webcam with the mean score of 2.22 to teach their students, mostly used at the time of Covid-19 when online education was required. Teachers very well aware of teleconferences too, perhaps using it for the purpose of contacting parents of the concerned students. They were well aware about online dictionaries with the mean score of 2.48, and somewhat aware about software like blogs and quora with the mean score of 1.80 and 1.71 respectively. Teachers were mostly aware about Microsoft word document and power point presentation with the mean score of 2.69 and 2.65 respectively. Teachers were also aware about Microsoft excel worksheet with the mean score of 2.65. Most of the teachers were aware of software like zoom meeting and google classroom with the mean score of 2.83 and 2.64 respectively and using it in order to teach students online at the time of covid pandemic. Other than that, teachers were well aware and fond of using facebook, whastApp, instagram and youtube for updating their skills and knowledge with the mean score of 2.72, 2.83, 2.72 and 2.68 respectively.
Table 2 explained about the level of awareness among the respondents on a three point continuum scale of low, medium, high. The maximum number of respondents were having medium level of awareness among all five districts. Nearly 87.00 percent respondents from Hoshiarpur, 83.00 percent from Patiala, 80.00 percent from Amritsar, 75.00 in Ludhiana and rest 70.00 percent in Faridkot were having medium awareness about ICT tools. In total, 79.00 percent respondents were having medium level of awareness, 12.00 percent respondents with low level of awareness and rest 9.00 percent respondents who had higher degree of awareness in which maximum teachers were belonging from Ludhiana with 20.00 percent and the least from Faridkot with only 3.00 percent, who fall in the category of high level of awareness.

Table 1: Overall awareness of ICT tools among respondents

(n=200)

ICT tools	Awareness				
	Not at all aware (f)	Somewhat aware (f)	Fully aware (f)	Mean score	SD
Hardware					
Computer	–	5	195	2.98	0.16
Laptop	5	–	195	2.95	0.31
Multimedia projector	–	43	157	2.79	0.41
Scanner	–	29	171	2.86	0.35
Printer	–	34	166	2.83	0.38
Webcam	14	128	58	2.22	0.56
Hard drive	0	119	81	2.41	0.68
Pendrive	–	24	176	2.88	0.33
Smart phones	–	13	187	2.94	0.25
Tablets	–	26	174	2.87	0.34
Digital camera	40	115	45	2.03	0.65
Smart board	69	59	72	2.02	0.84
Digital podium	112	69	19	1.54	0.66
LED	1	33	166	2.80	0.47
Software					
Audio calling	6	45	149	2.72	0.51
Video calling	4	18	178	2.87	0.39
Wifi/ LAN/ Internet browser	0	50	150	2.68	0.61
Educational software(Educare)	9	61	130	2.61	0.58
Web portals	6	54	140	2.67	0.53
Online dictionaries	–	104	96	2.48	0.50
Email	4	30	166	2.81	0.44
Blogs	62	116	22	1.80	0.62
Quora	90	78	32	1.71	0.73
Microsoft office Powerpoint presentation	22	27	151	2.65	0.67
Microsoft office word document	13	36	151	2.69	0.59
Microsoft office excel worksheet	13	45	142	2.65	0.60
Google classroom	–	73	127	2.64	0.48
Zoom meeting	–	35	165	2.83	0.38
Facebook account	4	49	147	2.72	0.49
Whatsapp group	0	29	171	2.83	0.413
Instagram page	17	22	161	2.72	0.61
Youtube page	13	38	149	2.68	0.59

Table 2: Distribution of respondents according to level of awareness (n=200)

Level of awareness	Score range	Ludhiana (n₁=40)	Hoshiarpur (n₂=40)	Faridkot (n₃=40)	Patiala (n₄=40)	Amritsar (n₅=40)	Overall
		f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
Low	70 – 90	2 (5.00)	3 (7.50)	11 (27.50)	3 (7.50)	5 (12.50)	24 (12.00)
Medium	91 - 110	30 (75.00)	35 (87.50)	28 (70.00)	33 (82.50)	32 (80.00)	158 (79.00)
High	111 - 130	8 (20.00)	2 (5.00)	1 (2.50)	4 (10.00)	3 (7.50)	18 (9.00)

Ranking of purpose-wise extent of using ICT tools in different districts

Table 3 explained the ranks of purpose of extent of using different ICT tools. Maximum teachers were using ICT tools for the purpose of contacting students with the mean score of 2.62 holding the position of rank 1 followed by use of ICT tools for updating knowledge with the mean score of 2.61 with rank 2. Similarly, teachers were mainly using ICT tools for giving advice to the students with the mean score of 2.55 (rank 3) and for the conducting parent teacher's meeting with the mean score of 2.34 (rank 4). Teachers were also using ICT tools for conducting lecture for the students and providing school related information with the mean score of 2.19 and 2.17 with rank of 5 and 6 respectively. For the purpose of solving student's doubt and conducting school level meeting, teachers were using ICT tools with the mean score of 2.02 each with rank 7.5. For sharing notes to the students, teachers used ICT tools with the mean score 2.01 followed by preparing audio- visual aids for the students with mean score of 1.93 and had a rank of 9.

Table 3: Purpose-wise extent of using ICT tools in different districts

(n=200)

Purpose	Mean	Rank
Contacting students	2.62	1
Providing school related information	2.17	6
Conducting lecture for students	2.19	5
Solving student's doubt	2.02	7.5
Giving advice to students	2.55	3
Preparing audio- visual aids for students	1.93	9
Conducting Parent Teacher's Meeting	2.34	4
Conducting school level meeting	2.02	7.5
For updating knowledge	2.61	2
Sharing notes to students	2.01	8
Evaluating assignments	1.61	10

Distribution of respondents according to extent of using ICT Tools

Data in table 4 explained the extent of use of ICT tools by teachers on a three- continuum scale of low, medium and high, data revealed that more than half of the teachers falling in medium extent of using ICT tools having 57.50 percent. A complete 26.00 percent fall under low extent of using and the rest 16.50 percent with higher extent of using ICT tools. As far as the district wise distribution of respondent was concerned, only 5.00 to 10.00 percent of respondents from Hoshiarpur and Faridkot districts were falling in the category of high extent of using ICT tools. Majority of the respondents of each of Hoshiarpur and Faridkot were having medium extent of using ICT tools with 65.00 percentage. About 50.00 to 55.00 percent of respondents from districts Amritsar, Ludhiana and Patiala were again from medium category of extent of using ICT tools.

Table 4: Distribution of respondents according to extent of using ICT Tools

(n=200)

Extent of using	Score range	Ludhiana (n₁=40) f (%)	Hoshiarpur (n₂=40) f (%)	Faridkot (n₃=40) f (%)	Patiala (n₄=40) f (%)	Amritsar (n₅=40) f (%)	Overall f (%)
Low	110 – 135	7 (17.50)	12 (30.00)	10 (25.00)	6 (15.00)	17 (42.50)	52 (26.00)
Medium	136 – 180	21 (52.50)	26 (65.00)	26 (65.00)	22 (55.00)	20 (50.00)	115 (57.50)
High	181 – 196	12 (30.00)	2 (5.00)	4 (10.00)	12 (30.00)	3 (7.50)	33 (16.50)

Conclusion and Policy Implications

In concluding this study on the awareness and extent of ICT tool usage among school teachers in Punjab, it becomes evident that while strides have been made, there exists a spectrum of awareness and utilization levels across the educational landscape. The study examined District-wise awareness and Level (degree) of awareness of school teachers regarding ICT tools. This study illustrated that smart phones, computers and social media are the most popular method among school teachers for disseminating knowledge to the students, sharing notes, conducting classes and updating knowledge for self- upgradation. The diverse cultural, infrastructural, and economic contexts in Punjab contribute to a complex picture, where some teachers embrace technology enthusiastically, while others face challenges in its seamless integration into their pedagogical practices.

Teachers' awareness of available ICT tools varies, with some educators demonstrating a keen understanding of the potential benefits, while others may still be navigating the technological landscape. The extent of integration into teaching methodologies also displays a spectrum, influenced by factors such as access to training, infrastructure, and institutional support. The study also revealed that while technology has radically changed our world, school-level teaching and learning activities have remained largely unaffected by it. In our classroom, the teacher imparts knowledge in an antiquated, teacher-centric manner that is frequently dull and fails to pique the student's attention. However, modern education in the twenty-first century is focused on the student. Implementation of ICT tools had brought a big change in teaching-learning method. In

conclusion, the findings of this study underscore the need for a comprehensive and context-sensitive approach to ICT integration in Punjab's schools. By addressing the identified challenges and implementing targeted policy measures, educational stakeholders can collectively contribute to a more technologically proficient and inclusive learning environment for students across the region.

The recommendations as per the study is that some schemes should be made in collaboration to private schools with government schools in access to ICT. Also, major implementation to be done in order to reform traditional pedagogy into modern pedagogy, newer technologies to be added for further advancement of students. There should be provision of advanced training and workshop on ICT tools so they become well aware about latest ICT tools and can use them easily. Provide schools and teachers with the necessary hardware and software tools that teachers can access to study material and other hassle-free educational activities. In addition to that, providing sufficient grant to the schools for its overall development and availability of specifically important needs. Engaging with local communities to create a supportive environment for ICT integration also facilitating workshops and awareness campaigns for parents, involving them in the learning journey of their children through technology.

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