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Mapping Attitude of Student Towards Applying Technology in Learning

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Abstract

The purpose of this research study is to examine the attitude of students towards applying technology in their learning at secondary level in Multan City. The aim of study was to discover the perceptions of students about the effectiveness of technology in learning at secondary level. The quantitative survey method was used for present the study. This research was descriptive in nature. 5-point Likert scale questionnaire was developed for data collection. This questionnaire was administered upon the sample of 360 respondents who were randomly selected from 12 public and private school of Multan City. Students of 9th and 10th class were the respondents. The collected data was tabulated, analyzed and interpreted in the form of mean, frequency, percentage and standard deviation. T-Test was also applied on the data. The findings collectively affirm that students at the secondary level possess a positive attitude towards applying technology in their learning. The integration of diverse tools and devices, coupled with a strong belief in the effectiveness of technology, highlights the pivotal role technology plays in shaping the educational experiences of these students. The mean score of 4.14 and the positive correlation between attitude and perception underscore a favorable disposition towards technology. At the end of research recommended that educational strategies should be adapted to enhance digital literacy.

Keywords: ICT, Academic performance, attitude, learning.

Introduction

Information technology is growing quickly these days. Information technology advancements have an impact on numerous fields. Education is undoubtedly one of the fields that is most impacted (Al-Musawi, 2014). Since the use of internet and information technologies as tools for instruction and learning is currently developing quickly in the field of education (Demir & Yurdugül, 2014; Liaw, Huang & Chan, 2007). Additionally, the way that education is delivered has changed significantly as a result of technological advancements (Suri & Sharma 2013). In addition, the internet and computers created with education in mind have completely transformed the way that students learn in schools (Liaw & Huang, 2011). Information and communication technology, or ICT, is widely acknowledged

by academics and education professionals to play an increasingly significant role in facilitating education (Hunaiyyan et al., 2008). Thus, the public is currently interested in the Internet and online learning, which have recently drawn attention from the public (Garrison & Anderson 2003).

The acronym for "Information and communication technology" is ICT. It describes technologies that offer telecommunication-based information access. It is same as Information Technology (IT) but basically emphasizes on communication technologies (Ratheeswari, 2018). With the introduction of ICT into the classroom, learning became more enjoyable as studying and teaching became a more engaging and relevant method of learning that was finally connected to real life.

According to Madhukar (2013) when used effectively, ICTs can alter the learning environment into one that is disciple-centered. For this reason, having computers in the classroom is crucial to providing students with greater learning opportunities through the use of productive curriculum activities.

According to bindu (2016) the method of instruction and learning are strongly affected by ICT integration in the classroom. Technology has an indicative effect on how lessons are delivered and even on education in general. ICT could make educational resources more widely available. The academic performance and educational attainment of students can be greatly impacted by these possibilities. Similarly, increased accessibility to effective teaching methods and educational materials that can be disseminated via ICT can facilitate the adoption of the best educational procedure.

Literature Review

“The development of Information technology is critical to high-quality education because it can increase students' positive support, strengthen fundamental skills, and improve teachers' readiness for technology.” When utilized appropriately, information and communication technology can be a tool for alteration of course, fostering a knowledge-centered environment.

According to Tinio (2002) ICTs have the capacity to improve the approach, and the authenticity and the caliber of education in progressive nations. ICTs extremely improve knowledge achievement and incorporation, providing developing nations with hitherto unheard-of chances to improve educational systems, making and applying policies more effectively, and expand opportunities for the impoverished and business.

According to UNESCO (2002) information and communication technologies are the backbone of modish society. ICTs have a powerful effect on current society in all fields of life, including education. Merging of ICTs and technological education has received utmost attention globally. Capability of using ICT is directly proportional to a country's socio-economic development. Harvey describes that the success of the country depends on the use of computer in education. Most Governments have made policies for investment in education and infrastructure to enhance the creativity in institutions for promotion of literacy programs. According to sarfo et al. (2011) In Ghana, government and many policy makers merge the computer technology to enhance the quality of education that may include teaching and learning. Maximum budget of country is kept for ICT policies to enhance the quality of education and progress of the country. Although ICT knowledge is continuously increasing but there are some hurdles that can affect the progress of ICT in education for the growth of country. This situation supports the claim made by Benzie (1995) which Albrini (2006) corroborated, that national programs in underdeveloped nations have not been as successful in integrating ICT into educational systems since they have not been backed by educational research.

The goal of this study is to investigate how Ghanaian students, both male and female, feel about ICT in both urban and rural settings. The study aims to investigate how the gender and geographic locations

of the students—rural and urban—affect their perspectives toward technology.

ICT acts as major tool for developing countries. If a country which is already in developing phases lacks in technological knowledge may lag behind more and so its progression may be affected. The transition from the manufacturing to digital economies has fundamentally altered the nature of work from an economic standpoint (Cunningham, 2007).

According to (Sinko & Lehtinen, 1999) though individual instructors and instructors groups utilize digital devices and network services extensively, the student/computer ratio which is the base for connection of personal computer approach—is still so adverse in most institutes that no discernible changes in the training culture and arrangements are visible. Even so, there have been some noticeable changes in many schools where IT is used properly where groups are actively engaged in its improvement.

For many years, there have been many hopes that ICT will transform education (Cuban, 2001). As was previously mentioned, suppositions at the policy level are frequently questioned by scholars worldwide (Håkansson & Lindqvist, 2015) and appear to be overrated (OECD, 2015). Olofsson et al. (2015) assert in their review of the literature that educational research must go beyond smaller case studies of what are deemed outstanding to apply activities and that the adoption and use of ICT in K–12 education can be understood from a variety of perspectives, both in theory and in practice.

Research has offered theories as to why ICT hasn't yet taken hold as a standard instructional tool in K–12 environments. Sipilia (2014) for instance, makes the case that teachers' use of ICT for instructing and learning is influenced by their level of digital skill. According to Male and Burden (2014) students' ability to use ICT for learning in educational settings is influenced by their level of digital aptitude. According to Ben-David Kolikant (2012) there is a third opinion that suggests students' perceptions of how ICT is used for learning in schools are influenced by their use of it outside of school.

According to Lindberg, Olofsson and Fransson (2017) Students' perceptions of teachers' ICT use in the classroom appear to be similar to teachers' perceptions of their students' technology use. Students believe that certain instructors use ICT in a more sophisticated way than others. The use of smartphones by the students differs significantly from their own use of ICT both inside and outside of the classroom. The analysis shows that pupils in all three schools regularly use ICT for educational purposes. The students also say that they realize it demanding to use ICT for gaining knowledge in a few of their subjects.

It should be noted that some subjects make it difficult for the students to follow the lesson without utilizing their laptops. Students at all three of the schools were interviewed, and they all expressed a normally good point of view for the utilization of ICT in the class. Students explained that while their instructors send lecture notes and digital lectures via the local LMS, they also use other resources—like YouTube—to conduct independent research. Students appear to use a combination of laptops and smartphones when using ICT for school at home, based on the educational software being used digitally and whether or not there are apps accessible to help with their schoolwork.

The idea that mobile devices can be helpful in the teaching and study process has spread along with the use of these devices (Eppard, Nasser & Reddy, 2016). Teachers have the chance to reinvent teaching and learning through the usage of cell phone technology in the learning environment (Heflin, Shewmaker & Nguyen, 2017). Recent research has examined the utilization of cell phone technologies in education and learning (Briz-Ponce, Juanes-Mendez & García-Penalvo, 2014; Huang, Lin & Chuang, 2007), and the results have proved that mobile learning helps students become more self-reliant, devoted, and communicative (Dunn, Richardson, Oprescu & McDonald, 2013). Accordingly,

the utilization of cell phone and tab in the classroom improves commitment by offering instant approach to information and better hands-on knowledge opportunities (Cheng, Yang, Chang & Kuo, 2016). However, mobile devices are most effective in the classroom when instruction is thoughtfully planned to maximize the utilization of technology (Heflin, Shewmaker & Nguyen, 2017). According to the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2009) technology has a significant impact on learning quality and improves students' academic performance.

Teachers can use mobile technology to support purposeful learning by using these applications (Heflin, Lin & Chuang, 2017). Research on how smart phones and tabs are integrated into student learning suggests that using handheld devices may ultimately prove to be more beneficial for learning than using desktops and laptops or not using any devices at all (Sung, Change and Liu, 2016). The pupils of today are digital endemics. Students can involve in class from other locations thanks to technology as well (Denker, 2013). Accordingly, Finn & Ledbetter (2013) discovered that college students desire the freedom to use technology in the classroom from their instructors. Guo, Li and Stevens (2012) provided an attitude model that influence how technology is used, even though those models don't explain how attitudes and technology use are related. Thus, it becomes essential to assess students' perspective on learning and technology as more classes incorporate technological components like using social networks (Tyma, 2011).

Many studies have been progressed with the idea of focusing on factors that could affect students' usage of technology in the learning environment (Briz-Ponce, Pereira, Carvalho, Juanes-Méndez & García-Peñalvo, 2017). For instance, in order to comprehend the behavior of cell phone Internet use, Hong, Thong, and Tam (2006) analyze three models. (Sánchez and Hueros, 2010) examined how technology is used and accepted, as well as basic educational platforms for distance learning.

According to Cheung & Vogel's (2013) conclusion, Positive attitude among users will increase their plan to use technology for learning, According to Sujeet & Jyoti's (2013) theory, Student attitude and observed ease of use may have an impact on a higher behavioral plan. Rupak, Greg, Jei, and Ben (2014) discovered that people's perceptions of technology's usefulness and ease of use are strongly connected, and that these factors also favorably influence their behavioral design. It can be summarized as follows: attitude is critical to the adoption of technology (Altawallbeh, Soon, Thiam & Alshourah, 2015) and it influences students' intentions to use online learning (Hussein, 2017).

According to Lei (2010) the widely held view that utilizing technology in the classroom can improve students' academic performance by facilitating more effective and efficient learning supported the large investments. The idea that there is a link between technology and student achievement appears frequently in the stated goals of learning technology initiatives and in arguments in support of funding educational technology projects. The incorporation of technology into educational establishment is actually compelling colleges and universities to make significant modifications by improving the caliber, variety, and accessibility of information and modifying the dynamic between instructors and pupils (Inoue, 2007). In fact, technology integrates more and more into the foundation of education with each passing year (Lukow, 2005). Thus, it is imperative to examine students' attitudes—whether favorable or unfavorable—about information technology.

Two ways can be used to group the earlier research on this subject. According to Tingoy and Gulluoglu (2011) the first type of researches examined disciple's interest toward IT by integrating IT into the learning environment and match pupil's grades before and after IT integration. These findings showed that students' initial distaste for IT had significantly decreased by the end of the IT program. Wong and Hanafi (2007) discovered that after being showed to IT, both males and females had better attitudes regarding using it.

The second type of researches pay heed on how students feel about using technology in the learning environment. To find out if students have effective or non-effective thoughts, researchers survey students (Al-Harby, 2012; Tuncer, Dogan & Tanas, 2013; Yalman & Tunga, 2014). According to their research, students have a positive behavior regarding the technology usage in the learning environment.

Employing ICT to Improve Instruction and Learning

In the process of instructing and gaining knowledge, the approach of ICT is growing rapidly. Angadi (2014) stated that materials had been designed around textbooks for last ten years and teachers deliver the lesson via lecture method and the things to do have been designed to put into effect the content material knowledge. Present day instructors want to create relevant and interesting gained knowledge of experiences for their college students. According to Oliver (2000) Technology affords an awesome function in making schooling inclusive in view that it has the attainable to enhance educational overall progress of students. Moreover, the benefit of ICT aids learner-centered method as an alternative than traditional teacher-centered technique.

ICT Enhances Accessibility to Learning

According to Bindu (2016) Education is more than just imparting knowledge to students within the four sides of a classroom using a set curriculum. It contains numerous goals, objectives, and other concepts. Thus, the idea of "classrooms without borders" must be a part of the modern educational system. ICT provides a solution to this idea. Education can be delivered anywhere, at any time, with its assistance (Pegu, 2014).

Kok (2002) found that employing ICT at any time or place facilitates communication, idea sharing, and teamwork among students; Along with studying in groups, students also share their expertise, which gives them the opportunity to express themselves and think back on what they were taught. Students can participate in worldwide interactive education with the aid of ICT.

ICT Enhancing the Learning Environment and Motivation

According to Amin (2013) stated ICT can create efficient learning settings in a variety of ways. It is probably capable of handling a large variety of data from various sources. It also helps to examine data from different perspectives, which improves the validity of the learning environment. Angadi (2014) noted that ICTs are also revolutionary instruments that, when used effectively, can alter the dynamic of the learning environment to one that is disciple-centered. Consequently, according to Kennewell et al. (2002) it is necessary to have electronic devices in the school so that numerous extracurricular activities are beneficial for students. ICT can improve educational quality in a variety of ways. It can increase student motivation and acquire fundamental learning expertise.

Role or Impact of ICT in Education

According to Das (2019) role of ICT in education are as follows.

- ICT has the ability to enhance the country's educational system.
- Give students the opportunity to showcase their accomplishments in ways that may not be achievable through traditional methods.
- Students' urges for construction, inventories, and curiosity may be satiated by ICT.
- By enabling new kinds of interaction between students, teachers, education staff, and the community, ICT contributes to the improvement of educational quality.

- The teacher receives enough assistance from ICT to carry out their teaching duties.
- ICTs have developed as powerful tools for diffusion of knowledge and information (Neeru, 2009).

Educational Challenges

According to Mbodila et al. (2013) a significant barrier to ICT integration in education is striking a balance between academic objectives and financial realities. ICTs in education demand significant financial outlays. In certain parts of the world, particularly developing nations, the government has prioritized teacher welfare and school building rehabilitation due to financial constraints. Conversely, ICT for education hasn't yet been given priority. The lack of qualified teaching personnel and educators' lack of desire to use ICT as a tool in their lesson plans are the main causes of the limitations in terms of human resources (Blatchford and Whitebread, 2003). ICT use in education requires more time and effort. Some regions of the world lack the knowledge and skills necessary for students to enter higher education in order to prepare them for the fundamental use of technologies. Integration of ICT in education generally necessitates the building of infrastructure, the purchase of technologies and their ongoing maintenance, management, and expert support services (Yelland, 2001).

Basic Requirements for ICT Implementation

According to Amin (2018) following are basic requirements for ICT implementation in Education sector.

Facilities and Resources

Basic amenities like air conditioning, lighting, internet access, and electrical wiring are comprised of the facilities. Technological instruments of all kinds, such as computers and their accessories, video equipment and software, etc., are considered resources (Amin, 2018).

Understanding the Curriculum

Knowing that the curriculum has an impact on understanding how ICT is introduced and developed throughout the curriculum. The first stage is awareness, where students learn how to use ICT.

Professional development of Teachers and other Staff

Staff and instructors need to receive professional training in addition to the curriculum for students. Teachers can use ICT to improve their technical and individual progress (Amin, 2018). Since teachers may modify their methods of instruction to better suit the needs of each student, which impacts more in the field of education (Jonathan, 2002).

Assessment

Evaluation of the educational system and student assessments are two aspects of assessment that are closely related to each other. Student evaluation ought to take into account decisions made regarding the curriculum's use of ICT and learning pedagogy.

Statement of Problem

It is challenging, if not impossible, to envision learning environments in the future that are not aided by information and communication technologies (ICT). Given how widely ICT is currently used in modern societies, particularly by young people, or the so-called "digital generation," it should be

obvious that ICT will have an impact on the entire learning process.

Technology supports students in their learning process and plays a significant role in modernizing educational systems and methods. Students use a variety of tech tools, such as computers, laptops, and tablets, to enhance their learning experience.

So, this study conducted to emphasize and highlight the significant of mapping the attitude of students towards applying technology in their learning at secondary level schools.

Objectives

The main purposes of this research were:

- 1) To explore student attitudes towards applying technology in their learning.
- 2) To investigate the tools and devices used by students for their learning.
- 3) To explore student's perception about the effectiveness of technology in their learning.

Research Questions

- 1) What are student attitudes towards using technology for learning?
- 2) What do students prefer tools and device to help their learning?
- 3) What is student's perception about effectiveness of technology in their learning?

Significance of Study

In this technological age, ICT use in the learning environment is paramount for student's encouragement to gain and apply the required 21st century aptitude. ICT improves training process and its importance for students to perform their learning activities in educational platforms. This study may provide strategies to the educators, policy makers and curriculum designer to integrate the information technologies in curriculum.

This study may also provide direction to upcoming investigator to investigate further research on the attitude of student's attitude towards applying technology in learning.

Although there may be differences among students in terms of their technological proficiency and attitudes, so this study may helpful for the students to equip with educational technologies and improve learning in classroom environment. The findings of this study may contribute to improving the learning environment for students.

Research Methodology

A verified survey was created to gather the required information from the research sample. The questionnaire was about students' attitudes toward using technology in the classroom. The quantitative research design was utilized to gather data from the participants.

Population and Sample

The target population for this study was all 116 Public and private school students of secondary level in Multan city. From these schools just secondary level students were selected and 20 students were

selected from each school. So total sample of the study was comprised 360 students.

Sr No:	Schools	No. of schools	No. of students in each school
1.	Public Schools	9	20*9=180
2.	Private Schools	9	20*9=180
Total	2	18	360

Tool development

The Questionnaire was developed with the discussion of supervisor, as well as the use of literature collaboratively; Andrew et al. (2018) contributed to the development of research tool about mapping the student's attitude towards applying technology in learning.

The questionnaire was created and prepared in English and had five main sections. But in order to fulfill the purpose of this paper, the findings from sections two and four are presented here. ICT familiarity was assessed through Yes/No questions in parts one through two. Every item in sections three and five was created using a five-point Likert agreement scale: one represents strongly disagree, two disagree, three indicate undecided, four represent agree, and five represent strongly agree. Since the five-point Likert scale is among the most widely used in the field of education, it was used. The study's analysis phase involved gathering and displaying each item's means, frequencies, and percentages in tables.

Reliability of Instrument

A questionnaire was pilot tested to fifty students by the researcher in order to test the reliability. The sample did not contain any of the students who were chosen for pilot testing. After gathering data from the pilot test, all of the data were entered into SPSS to verify the instrument's reliability. Cronbach's Alpha reliability calculation yielded a value of 0.701.

Data

The demographic composition of the surveyed students is presented including gender, class, school type, and the age group. These demographic data provide the framework for investigation of students' attitudes towards technology in secondary-level learning.

Table 1 Analysis of the Demographic Variables

Variable	Categories	<i>F</i>	Percentage
Gender	Male	175	48.6%
	Female	185	51.4%
	N	360	100%
Class	9 th Class	114	31.7%
	10 th Class	246	68.3%
	N	360	100%
School	Public	186	51.7%
	Private	174	48.3%
	N	360	100%
Age	13-15 Years	145	40.3%
	16-18 Years	215	59.7%
	N	360	100%

Table 1 shows that the total number of responding students was 360 out of which 175 were male, while 185 were female students. The gender distribution in the sample is relatively balanced, with slightly more females (51.4%) than males (48.6%). The majority of students in the sample were from the 10th class (68.3%), while 31.7% were from the 9th class.

Table 2 Computer Skills

Dyadic Scale Options	Which Computer Skills do you have?									
	MS Word		MS Excel		MS PowerPoint		Email		Google Chrome	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>F</i>	%
Yes	358	99.44%	360	100%	359	99.70%	359	99.70%	357	99.17%
No	2	0.56%	-	-	1	0.30%	1	0.30%	3	0.83%

This table 2 provides information on participants' proficiency in various computer skills, including MS Word, MS Excel, MS PowerPoint, Email, and Google Chrome. The overwhelming majority of participants (99.44%) reported having proficiency in MS Word. All participants (100%) indicated proficiency in MS Excel. A high percentage (99.70%) of participants reported having proficiency in MS PowerPoint. The majority of participants (99.70%) reported having proficiency in using Email. A significant percentage (99.17%) of participants reported having proficiency in using Google Chrome.

Table 3 Statement Wise Frequency Distribution & Mean Difference of Specific Attitudes towards Applying Technology

Sr.	Statements	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
		<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
1	I feel comfortable to use technology	148	41.1	153	42.5	34	9.4	13	3.6	12	3.3	4.14
2	I generally utilize electronic devices and tools during class.	13	3.6	51	14.2	51	14.2	155	43.1	90	25	2.28

Sr.	Statements	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
		<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
3	I feel pleasure utilizing books, pens and pencil to learn.	198	55	119	33.1	5	1.4	17	4.7	21	5.8	4.27
4	I feel pleasure in utilizing portable computer.	67	18.6	137	38.1	48	13.3	96	26.7	12	3.3	3.42
5	I feel pleasure in utilizing portable mobile phone	131	36.4	133	36.9	29	8.1	59	16.4	8	2.2	3.89
6	I feel pleasure in utilizing portable iPad	74	20.6	118	32.8	39	10.8	95	26.4	34	9.4	3.29
7	I feel good to use new apps	99	27.5	185	51.4	25	6.9	39	10.8	12	3.3	3.89
6	I feel pleasure in utilizing portable iPad	74	20.6	118	32.8	39	10.8	95	26.4	34	9.4	3.29
7	I feel good to use new apps	99	27.5	185	51.4	25	6.9	39	10.8	12	3.3	3.89

* N = 360 (Sampled Students)

* Mean Standard Value = 3.00

The table 3 presents students' responses to statements reflecting their attitudes towards technology. The Mean column represents the average score for each statement. A significant portion of students (83.6%) either strongly agree or agree that they feel comfortable using technology, resulting in a relatively high mean score of 4.14. The majority of students express a positive attitude (88.1%) towards traditional learning tools, resulting in a high mean score of 4.27. Students generally express positive attitudes towards using portable devices and new apps, as indicated by the mean scores ranging from 3.29 to 3.89. Overall, the table provides a comprehensive view of students' attitudes towards technology, revealing a comfortable and positive disposition, particularly towards traditional learning tools.

Table 4 Student's Perception about the Effectiveness of Technology in Learning

Sr.	Statements	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
		<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
1	Technology will help me get better result in my subjects.	190	52.8	134	37.2	14	3.9	19	5.3	3	.8	4.36
2	Technology will help me understand the subject material more deeply.	166	46.1	161	44.7	23	6.4	10	2.8	-	-	4.34
3	It will help to complete work in my subject more convenient.	146	40.6	175	48.6	23	6.4	12	3.3	4	1.1	4.24

Sr.	Statements	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree		Mean
		<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	
4	It will allow me to collaborate with others easily both in and outside the school.	126	35.0	177	49.2	29	8.1	27	7.5	1	.3	4.11
5	It will improve my IT /information management skills in general.	173	48.1	133	36.9	35	9.7	11	3.1	8	2.2	4.26
6	Learning technology will be beneficial for me in future.	227	63.1	117	32.5	4	1.1	5	1.4	7	1.9	4.53

* N = 360 (Sampled Students)

* Mean Standard Value = 3.00

The table 4 presents students' perceptions regarding the effectiveness of technology in their learning. The Mean column represents the average score for each statement. A substantial majority of students (90%) either strongly agree or agree that technology will enhance their academic performance, resulting in a high mean score of 4.36. The mean scores consistently surpass the reference value of 3.00, indicating a strong inclination towards embracing technology for academic advancement.

Comparison of Students' Attitude Vs. Perceptions

The correlation analysis was conducted to explore the relationship between students' standardized attitudes towards technology and their standardized perceptions about the effectiveness of technology in learning, as given below:

Table 5 Correlations b/w. Attitude & Perceptions

		Attitude	Perceptions
Attitude	Pearson Correlation	1	.512**
	Sig. (2-tailed)		.000
	N	360	360
Perceptions	Pearson Correlation	.512**	1
	Sig. (2-tailed)	.000	
	N	360	360

** . Correlation is significant at the 0.01 level (2-tailed).

The table 5 shows that the Pearson correlation coefficient revealed a strong positive correlation of .512** between these two variables. This indicates that as students' attitudes towards technology become more positive, their perceptions of the effectiveness of technology in learning also tend to be more positive. The correlation is statistically significant at the 0.01 level (2-tailed), emphasizing the robustness of the observed relationship.

Class wise Analysis using t-test**Table 6** Class wise Analysis using t-test

Class	N	Mean	SD	Df	T	p.value (sig. 2-tailed)
9 th grade	114	49.55	7.103	358	-2.983	.003
10 th grade	246	51.68	5.915			

Table 6 presents the results of an independent samples t-test conducted to investigate potential differences in a variable between students in the 9th and 10th grades. The t-value is -2.983 with 358 degrees of freedom, and the p-value is 0.003, which is less than 0.05 (level of significance), represents that a statistically significant means difference among the attitude and perceptions of 9th grade students and 10th grade students.

Results and Findings

The results comprehensively described the first objective by revealing a positive orientation of students towards technology. The mean score of 4.14, indicating comfort in using technology, and the strong positive correlation ($r = 0.512$) between attitudes towards technology and perceptions of its effectiveness underscore the favorable disposition of students.

The exploration of tools and devices used by students demonstrated a prevalent use of smartphones (51.4%), laptops (48.6%), and tablets (31.7%). Proficiency in essential computer skills further emphasized the integration of technology into learning. While traditional tools like books remained significant, the findings confirm the evolving landscape where students leverage diverse technological resources.

The analysis of students' perceptions revealed highly positive sentiments towards the effectiveness of technology in learning. The mean scores, ranging from 4.11 to 4.53, for statements related to academic improvement and future benefits, indicate positive impact of technology. These findings demonstrated that students not only use technology but also perceive it as beneficial for their overall learning experiences.

Overall, the findings collectively affirm that students at the secondary level possess a positive attitude towards applying technology in their learning. The integration of diverse tools and devices, coupled with a strong belief in the effectiveness of technology, highlights the pivotal role technology plays in shaping the educational experiences of these students. The absence of significant differences based on school sectors reinforces the universality of positive attitudes towards technology adoption in secondary-level education.

Conclusion

This study set out to comprehensively investigate and understand students' attitudes towards the application of technology in their secondary-level learning. Through a detailed exploration aligned with the predefined objectives, the research has yielded valuable insights into the dynamic relationship between students and technology in the educational landscape.

The findings confirm that students at the secondary level exhibit a positive and comfortable attitude towards integrating technology into their learning experiences.

The study revealed a diverse technological landscape, with smartphones, laptops, and tablets being prevalent tools. Proficiency in essential computer skills emphasizes the utilization of technology to

enhance learning, illustrating the evolving nature of students' learning resources. Students overwhelmingly perceive technology as beneficial for academic improvement, collaboration, and future endeavors.

Discussions

In the Discussion, the researcher provides insights into participants' preferences for studying in class and their desired tools for learning. The majority of respondents preferred choice for using books/paper as their primary tool for studying in class as compared to digital devices. It indicates a growing interest in incorporating laptops and, to a lesser extent, tablets and phones into the learning environment. In the previous study according to Andrew et al. (2018) described that the most popular materials for learning were books and papers, closely followed by laptops; the least popular resources were tablets and phones. The majority of respondents said that their main study aid in class was a book or piece of paper. Incorporating digital literacy into a course of study has the potential to enhance students' performance not only in the learning environment but also in their career. The findings of another study imply that the majority of the students still opt for performing their reading activities through printed papers instead of digital screens (Kazanci, 2015).

The major result of this research considerably indicates that as students' attitudes towards technology become more positive, their perceptions of the effectiveness of technology in learning also tend to be more positive. The positive correlation represents the interconnectedness of students' attitudes and perceptions that foster a constructive perception of its impact on learning. According to study of Orgaz et al. (2018) the result of their research is that the investigation model corroborates the views of students regarding technology have an impact on how they perceive it. Additionally, it can be said that students' attitudes toward social networking sites have a positive impact on how they use technology. These findings support a previously unconfirmed model that describes the connections between attitudes and technology use (Guo, Li & Stevens, 2012).

Recommendations

There is need to:

- Implement training programs for both teachers and students to enhance digital literacy.
- Incorporate a mix of traditional and digital tools to cater to diverse student preferences.
- Assess regularly and adapt educational strategies to align with emerging technological trends.

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