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THE EFFECT OF TECHNOLOGY-ASSISTED LEARNING ON CHILDREN: A CASE STUDY OF PRIVATE SCHOOLS IN KHYBER PAKHTUNKHWA, PAKISTAN

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ABSTRACT

This paper intends to explore the use of technology in classrooms and its effects on the learning ability and social exposure of children at the private-sector schools in district Mardan and Peshawar, Khyber Pakhtunkhwa, Pakistan. The population of this study involved the students of Kindergarten, Grade I, and II, studying at Beaconhouse School System, The City School, and Roots Millennium, located in these districts. 5o students from the said population were selected through simple random sampling and they participated in this study by filling out a close-ended questionnaire. As theoretical background, this study used Vygotsky's (1978) perspective of technical tools in the digital age, affecting the cognitive development of a child. The data is represented quantitatively in terms of frequency (percentages) through column charts. The findings of this study reveal that these children learn with different forms of technology in their classrooms such as computers, internet, projector, iPad, and tablet. In addition, they memorize things easily with this way of learning. Such learning is not only limited to their classrooms but they have also these various forms of technology at homes. It is also concluded that social exposure of children is not affected if the teachers make careful use of technology in the classrooms. This paper also encourages the

government-sectors schools to install various forms of technology in classrooms for better learning. However, there is a need to explore this study by increasing the number of students and to address the challenges pertinent to government regarding the implementation of technology-assisted learning in schools.

INTRODUCTION

A classroom is a place where experiences are shared between a teacher and students. Song et al. (2017) state that learning is the act of acquiring new, or modifying existing knowledge, skills, values, behavior, and preferences. Classrooms in the digital age install different forms of technology. Learning with technology is different from learning about the technology. In the 21st century, teachers integrate technology in their classrooms. But due to lack of training regarding the use of technology, an extra gap can be seen between a teacher and students. Hence, it is significant that the teachers might be given proper training before modifying their classrooms with technology. Various forms of technology that are used in classrooms include word processing, digital camera, digital media, internet, web page, email, video conferencing, presentation software, computer games, spreadsheet, and database. Ramani and Modi (2010) add that modern classrooms' observation reports different types of classroom technologies such as electronic whiteboards, flipped learning, desktops and laptops, projector, video conferencing, mobile and television learning, computer networking, virtual field trips through Google classroom, word processing applications, and 3D printing. Like other countries, Pakistani classrooms are also equipped with different forms of technology. Besides higher grades classrooms using technology, playgroup and kindergarten are using it too. It is important to bring into focus the effects of these various types of technology on the learning ability and social exposure of a child. These effects can be positive or negative. This study is set to explore how do different forms of technology affect a child's learning ability and social exposure at private sector schools in district Mardan and Peshawar. It could be explored by using Vygotsky's (1978) perspective of technical tools in the digital age affecting the cognitive development of a child. This study addresses the following research questions:

1. What are the different forms of technology used in private-sector schools in district Mardan and Peshawar?
2. How do different forms of technology affect the learning ability and social exposure of children in those schools?

LITERATURE REVIEW

Technology-assisted classrooms are extensively studied in the higher educational context. Students are engaged through certain forms of technology-based learning. It has caught the interest of researchers to study the effects of such classrooms on students' learning ability. In this regard, Aprianto and Purwati (2020) study the use of multimedia-assisted learning in a flipped classroom (a pedagogical innovation in which materials are not given in classrooms but outside of it through educational website or technological platforms) to encourage students to learn independently at EFL (English as a foreign language) University. After collecting the data through questionnaire, observation, and semi-structured interview from 15 students of English

Education department, this research reveals that such way of learning helps the students to explore their creativity as they learn independently which also keep them relax. Similarly, Wulandri (2017) also studies the use of Language Teaching Media (LTM) and Learning Management System (LMS) in a flipped classroom that encourage the students to learn independently. This study also concludes that installation of such technological tools increases learning autonomy in terms of planning, classroom engagement, and self-evaluation.

Besides developing learners' autonomy and increasing creativity in EFL classrooms, technology-assisted classrooms can also enhance students' math skills such as developing fact fluency and self-efficacy. In this regard, Agee (2019) investigates the effect of using Moby Max, the 2018 best math fluency award winning website, and concludes that using such educational website helps a math student to foster his or her fact fluency and self-efficacy.

It is important to know the perception of students towards technology-assisted classrooms. Wondemtegegn (2018) collects data from 298 university students through questionnaire including both boys and girls who came from urban and rural area. The researcher illustrates that these students show positive perception towards learning with technology as it helps them to face different challenges. Shinde (2019) after interviewing 230 university students who have learnt with using technology in their classroom for one semester, concludes that it provides learner-centered activities that allow the learners to express their opinions. Alakrash and Razak (2020) bring into consideration that students who are taught with technology in English language learning session are motivated to associate themselves with new ideas and connect themselves with native or non-native English speakers from around the world.

Not only at the university level, but classrooms at schools are also equipped with certain forms of technology, hence create an impact on academic performance and social exposure of children.

Gottschalk (2019) states that children who learn with the help of technology, helps them to spend time with their caregiver or teacher but at the same time, they keep themselves away from physical activity such as playing different sports. Winther (2017) observes that the mental well-being of children is affected by digital technology. It poses negative influences on children's mental well-being but on the other hand, it benefits their social relationship because it helps them to connect with large number of people. Similarly, McCarrick and Li (2007) report that the extensive use of computer causes health issues such as stress injuries, eyestrain, and obesity, and the reduction of human interaction influences a child's social, emotional, and language development.

Mobile-assisted language learning is employed in the Pakistani context and Ali et al. (2019) notice that this way of learning a language is considered comfortable as learners are motivated to engage themselves in collaborative learning activities. But Hamdani et al. (2021) highlight the importance of a teacher's training who teaches with various forms of technology in classroom as they might face different challenges when they proceed in their technology-

assisted teaching. Akhter and Hisham (2017) add that Pakistani English language learners make pronunciation mistakes despite of learning it for years. Pronunciation problems can be addressed and resolved with the help of installing computer technology in classrooms as it provides different softwares with the help of which learners know how to articulate different sounds. Besides the impact of technology being used by English language learners in Pakistan, Hassan and Aziz (2019) assert that Maddaris teachers (teachers who teach teachings related to Islam in religious educational institutions) in Pakistan are optimistic about using various forms of technology in their classrooms but they face various issues such as shortage of electricity and lack of computer education. Hence, the policy makers and administrative staff should look into these issues so that religious teachers can get advantage of technology-assisted classrooms.

In the light of available literature on technology-assisted learning in Pakistan and other countries, such form of learning is declared as one of the recent trends in the 21st century learning. Learning with technology affects the learning ability and social exposure of leraners either positively or negatively. Adults can adjust themselves when they are exposed to technology in classroom but children are not mature enough to get adjusted. Based on the current studies, researches have been conducted to study the effects of technology-assisted language learning in higher classrooms in Pakistan but not much attention is given to study its effects on children. Therefore, this study aims at studying the various forms of technology that are used at the private schools in Khyber Pakhtunkhwa, Pakistan, and how learning with technology affects a child's learning ability and social exposure in those schools.

RESEARCH METHODOLOGY

Theoretical Background of this Study

Vygotsky (1978) in his socio-cultural theory of cognitive development states that human activities can be understood in cultural settings. He believes that human's cognitive development can be traced through its interaction with others. A child's cognitive process is developed by its interaction with adults, peers, and teachers. He states that cultural and language tools are the key factors in developing a child's cognitive process. Culture tools include technical and psychological tools. Technical tools are equipped with mobile devices, computers, internet, the real translator for mobile devices, digital organizers and calendars, and technology-assisted learning. Psychological tools include sign and symbol system such as number and mathematical system. The number system is a psychological system that enhances a child's cognitive development because it shapes the thinking process. The number system passes from an adult or a teacher to a child or from one child to the other child through formal and informal ways of teaching. About the language, he says that it is critical for cognitive development as our thinking depends on speech and the language is shaped by a child's socio-cultural experiences.

This study uses his perspective of technical tools affecting cognitive development of a child as we are living in the digital age and also children in the 21st century are surrounded by various forms of technology in their classrooms. Hence, it is significant to investigate the effects of various forms of technology on a child's cognitive development and social exposure.

Participants of this Study

Participants of this study are the students of KG, Grade I and II at the Beaconhouse School System, The City School, and Roots Millennium in district Mardan and Peshawar. 50 students from these schools participate in this research. These students were selected through simple random sampling. These students include both boys and girls. These students are maximum 12 and minimum 4 years of age.

Data collection Tool

To collect the data for this study, the questionnaire is used as data collection tool. The questionnaire is divided into two parts: part-1 deals with collecting personal information that includes age, gender, grade level, and name of the school in which a student is studying. Part-II consists of closed-ended questions and these questions are 11 in numbers. These questions are designed in a way that could answer the research questions.

Procedure for Collecting Data through Questionnaire

The researcher first visited some of these schools to test the questionnaire. After testing it in those classes, it was redesigned and some of the questions which found double-barreled were omitted. Researcher then revisited and finally collected the data from the students of the above mentioned grades. The researcher explained each question to the students to have valid results.

DATA ANALYSIS

Data Analysis Procedure

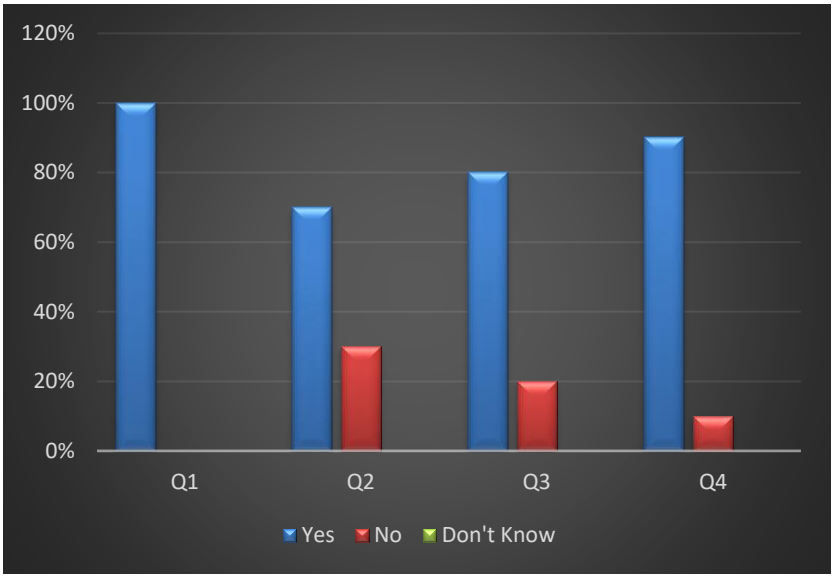
The data collected from the questionnaire is quantitative in nature and it is analyzed through textual analysis. The results are represented in column charts through Microsoft office word document. The researcher uses the descriptive statistics in the form of percentages. The results obtained through questionnaire have been presented in four different sections that are discussed below:

Availability of Technology and its Different Forms in Classroom

Children are asked questions regarding availability of technology and its different forms in their classrooms. These questions are 4 in numbers. The responses of the students to those questions are expressed in terms of frequency (percentage) via column charts that are discussed below:

Column-Chart 1

Frequency (percentage) Distribution of Children's Responses about Availability of Technology and its Different Forms in Classroom



Q1 is coded for the question, "I learn with the use of technology in my classroom."
Q2 is coded for the question, "In my classroom, projector is available."
Q3 is coded for the question, "In my classroom, computer is available."
Q4 is coded for the question, "In my classroom, internet is available."

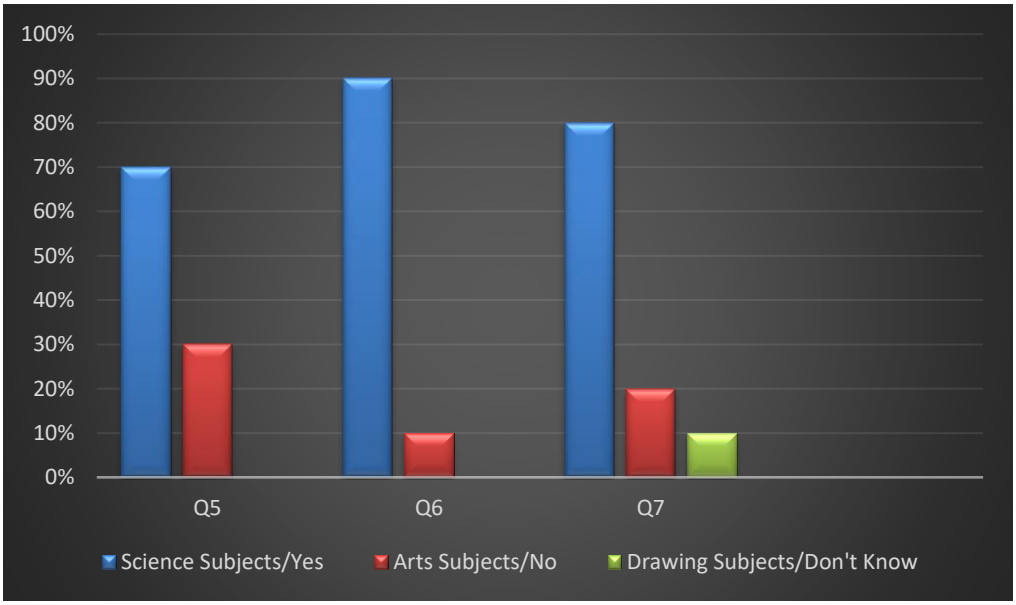
The above column chart clearly shows that these children learn with using technology in their classroom and so the percentage of the option "Yes" is recorded 100. The different forms of technology available to these students include projector, computer, and internet. The column chart demonstrates that majority of those children confirm the availability of these different forms of technology, therefore the percentage of the option "Yes" recorded to the questions 1, 2, and 3 are 70, 80 and 90 respectively. While collecting data, these children also mentioned that they are also having iPad and tablet in their classroom. As most of the students said, "My teacher gives me tablet and iPad."

Purpose of Using Technology

It is important to know the different purposes for which the classrooms are equipped with different forms of technology, hence these children are asked questions regarding the purpose of using these different forms of technology. These questions are 3 in numbers. The responses of those students to these questions are expressed in terms of frequency (percentage) via column charts that is discussed below:

Column-Chart 2

Frequency (percentage) Distribution of Children's Responses about Purpose of Using Technology



Q5 is coded for the question, "In my classroom, technology is used for teaching science, arts, or drawing subject."
Q6 is coded for the question, "I like to learn more with technology than books."
Q7 is coded for the question, "I can memorize things easily with the help of technology."

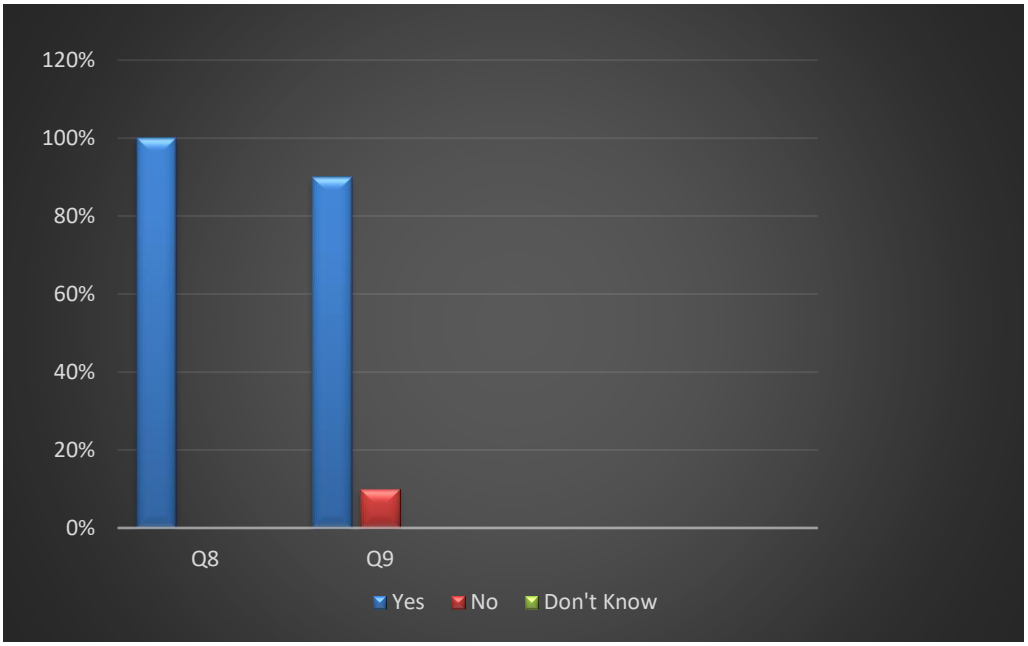
The above column chart illustrates that technology is used in their classroom for learning science subjects and so the percentage is recorded 70. However, children also learn arts subjects with the use of technology and the percentage recorded for this response is 30. Most children (90%) state that they like to learn more by using different forms of technology than books. This clearly asserts that traditional was of leaning is replaced by technology-assisted learning. This way of learning helps the children to memorize things easily as majority of them (80%) favor this view.

Availability of Technology at Home

It has been confirmed that these classrooms are having various forms of technology but it is significant to know about the availability of such technological forms at homes. A child's psychology might affect if it feels the need of those different forms of technology at home as he or she feels in class. Therefore, these children are asked questions regarding the availability of different forms of technology at home. These questions are 2 in numbers. The column chart below demonstrates these children's responses expressed in frequency (percentages) regarding the availability of different forms of technology at home.

Column-Chart 3

Frequency (percentage) Distribution of Children's Responses about Availability of Technology at Home



Q8 is coded for the question, "I want to learn with using technology at home when I do homework."
Q9 is coded for the question, "I have internet and computer at home."

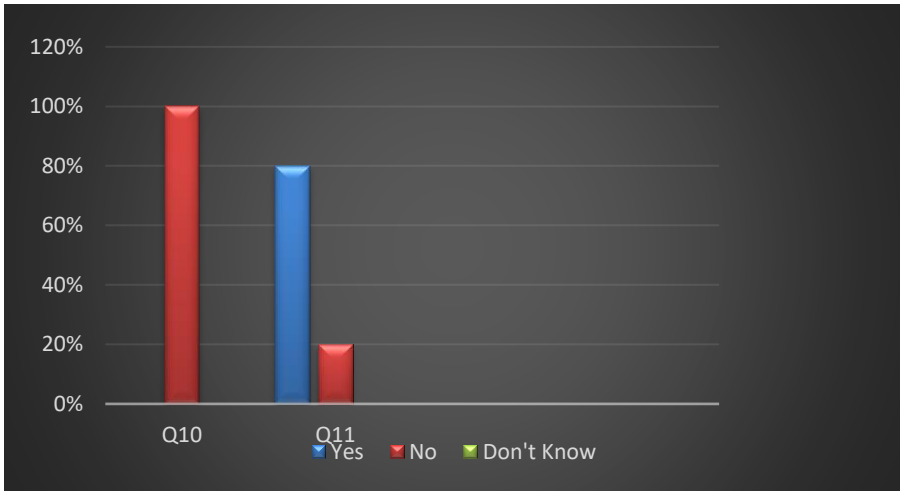
The above column chart demonstrates the perspective of children regarding learning with technology at home the way they learn with it in their classroom. All children (100%) clearly state that they want technology-assisted learning at home. Most children (90%) state that they are not having only internet and computer at home but also laptop and tablet. These responses assert that technology-assisted learning exists at home. Mobile-assisted learning also exists at home as children reported, "My mamma gives me mobile phone and I watch A, B, C and stories on it."

Whether Technology-Assisted Learning Affect Social Exposure of Children or Not

Technology-assisted learning may affect social exposure of children. These children are asked question related to their social exposure when they are exposed to this new way of learning. These questions are 2 in numbers. The responses of those students to these questions are expressed in terms of frequency (percentage) via column charts that is discussed below:

Column-Chart 4

Frequency (percentage) Distribution of Children's Responses about Technology-Assisted Learning Affecting their Social Exposure or Not



Q10 is coded for the question, "I like to watch story on screen more than listening it from my teacher in class."
Q11 is coded for the question, "In recreation time, I like to play with my friends than engaging myself with technology."

The above column chart shows the effect of technology-assisted learning on the social exposure of children. Their perspective shows that all children (100%) like to hear story from their teacher instead of watching it on projector or tablet. Most children (80%) states that they like to play with their friends instead of engaging themselves with technology. Such responses conclude that technology-assisted learning does not influence children's social exposure. They want to listen to stories from their teacher instead of watching it on screens and they want to play with their friends in recreation time in school.

DISCUSSION

Based on the questions asked from the children, it can be stated that children in Pakistan are exposed to technology-assisted learning. Their classrooms are equipped with various forms of technology such as internet, computer, projector, iPad, and tablet. These views are in accordance with Ramani and Modi (2010) and Song et al. (2017) who notice that in the 21st century, teachers integrate various forms of technology in classrooms.

Technology is used in classroom for achieving different purposes. Various scholars (Aprianto and Purwati, 2020; Jeong, 2018;) use multimedia-assisted language learners in their EFL classrooms for enabling the learners to learn independently and for raising their communicative competence and motivation. In this study, these children responded that technology is used in their classrooms for learning arts subjects as they like watching stories related to A, B, C. But their teachers also add that science concepts are also taught through projector. The traditional way of learning is replaced with technology-assisted learning as these children are motivated to learn with technology more than

books. Technology-assisted learning helps these children to memorize things easily which posit that this way of learning creates positive influences regarding a child's learning. This way of learning is not only limited to their classroom but they have various forms of technology at home such as the internet, computer, laptop, and mobile. Mobile-assisted learning helps these children learning things via playing stories on it. This conclusion is in line with the view of various scholars (Saienko and Lavrysh, 2020; Lin et al., 2019) who conclude that mobile-assisted helps the learners to learn more effectively than traditional way of learning.

Children's social exposure is not affected by technology-assisted learning. They want to listen to stories from their teachers instead of watching it on screens. They want to play and interact with their friends in recreation time in school. During discussion with teachers, teachers reported that we engage these children in healthy activities such as sports and we allow them when to use and when not to use technology. These conclusions are in contrast with other researchers (Winther, 2017; Plowman and Mcpake, 2013) who are of the view that technology-assisted learning reduces the child's efforts to achieve different goals and thus it makes them passive. But it is the teachers who make the effective use of technology in classroom, hence the children's social exposure might not be affected then.

CONCLUSION

This study concludes that technology-assisted learning exists in Pakistani classrooms of KG, grade I and II. These classrooms are integrated with various forms of technology such as internet, computer, projector, iPad and tablet. Children are motivated to learn with technology and they easily memorize things with it and this concludes that this way of learning has not only replaced the traditional way but it is also effective as it increases the children's learning ability. This method of learning is not only limited to classroom but it is also available at homes as children learn at their homes with different forms of technology such as the internet, computer, laptop, and mobile phone. The social exposure of children is not affected by exposing themselves to these technological forms as they want to listen to stories from their teachers rather than playing them on screen and they want to play with their friends in recreation time rather than engaging with different technological forms. The role of teachers is important in this regard as they make effective use of technology in classroom and so the learners are kept active.

This research is significant in a sense as it brings into focus the effect of using technology-assisted learning on children's learning ability and social exposure. It could motivate other schools located in other districts of Pakistan to integrate technology-assisted learning in their classrooms. It could encourage the government-sector schools to install various forms of technology in classrooms for better understanding. The government in Pakistan needs to take initiative about this implementation.

This study was limited to Beaconhouse School System, The City School, and Roots Millennium school in district Mardan and Peshawar but ignoring

schools in other districts of Pakistan. This study was based on collecting students from only 50 students but future researchers can further explore this study by increasing the number of students. Future researchers can also explore the challenges and issues pertinent to government regarding the implementation of technology-assisted learning in government-sector schools.

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