

Technological Interventions and their Impact on Students' Usage of Technology in Higher Education in Pakistan

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Abstract

This study was focusing on the present state of technology used by the students at the university level. The prime objectives of this research were to access the current status of technological use by students for devices used mostly, software used frequently, and reason to use technology. The participants of the study were 211 students of B. Ed. (Hons)-Elementary 4-year program randomly selected from Teacher Education departments of four public sector universities. The study was quantitative and a close-ended questionnaire was used for data collection. The questionnaire was self-developed with the help of literature. The reliability of the questionnaire was determined through the Cronbach Alpha technique and that was 0.8. The data was analyzed through frequencies and percentages. The main findings of the study were; students rated themselves that they had fair computer knowledge and access to the internet; most of them were using smartphones and laptops, they were frequently using software such as Google, MS. Word, and MS. PowerPoint and the least used software were such as MS. Excel and LMS. They utilized technology for the learning process, entertainment, and communication, but the use of technology for discussion groups like WhatsApp, Facebook, etc was not found. The study recommended that students should be provided with facilities to use technology efficiently. And rewards and incentives for the successful use of technology for learning purposes can motivate them to use technology effectively.

Keywords: *Technology, Tech-devices, Knowledge, Teacher Education, Higher Education*

I. Introduction

Technology has revolutionized every sphere of life so its use in education is vital. It can be providing the best opportunities to the all-stake-holders in the education system, to reap the fruit of technology integration, as, in developed countries, the quality of education is increasing because of the widespread application of technology in the system. However, in developing countries, the

trend of implementing technology in education is growing, but the pace is slow. This is because developing countries have to face many obstacles in implementing technology in our system. Such as; socioeconomic conditions, in-appropriate resources to use technology, lack of policy-planning and less investment in Research and Development R&D in the IT sector. However, in the context of Pakistan, the government of Pakistan has taken many initiatives for up-rising the status of education at all levels, with special emphasis on Higher education and teacher education. Because, in a whole modern education system teacher plays a very important role, therefore there is need of adoptability on teachers' side, they have to realize the modern era and need and demand of this digital generation. As they have inborn capacities to use technology (Prensky, 2012)., therefore, all teacher education institutions over the globe and in Pakistan also, are in transition face, and many old teacher education programs are excluded (such as; CT, PTC, B.Ed., and M.Ed. (1-year) by including new programs (B.Ed.(1.5), B.Ed.(2.5) Secondary, Associate .Degree .Education (A.D.E) B.Ed. (Hons) Elementary and Secondary) (N.E.P, 2009; Minshi,2013).

Koc & Bakir, (2010) discussed that for effective use of technology; planning, goals, needs, and economic conditions are essential. Mou (2016) viewed that in developing countries, teachers and students have to face different obstacles in the utilization of appropriate technology for teaching and learning.

In the present time, the new generation is very frequently using modern technology devices such as; Pc-tablet, smart-phone, video games, computers, iPhone, laptop, and social media. Many research studies are carried out around the globe on the use of technological devices, such as in Saudi Arabia. They found 50% students were using laptops, 42% were using Smart-phones whereas only 7% were using desktop computers and 0.5% were using Personal Computers. Most of the students use the internet for; using social media, doing homework, playing games, and downloading movies and songs. Another study was carried out by Aldahdouh et al.(2020). They investigated the use of technology in higher education at Tampere University, Finland. They explored technological devices, mostly used Social Networking Sites & MS Office 365, and purpose to use these technological gadgets and software. They found that majority of teachers have adopted technology positively they used social media, devices, and cloud services moderately satisfactorily it was also found that males staff were early adopters of devices, while academics were early adopters of commercial services and academic social networking sites. However, the

staff was not using Office 365 and blaming the administration to not provide facilities to use Office 365.

The use of technology by the students in the classroom makes the learning environment more interactive and helps them to clear their concepts about difficult topics. According to Yusuf (2010), “the adoption of technology can improve quality and efficiency in the educational process, it provides opportunities to students: to get an education anywhere anytime, increase motivation for learning, classroom environment become interesting, create a problem-solving skill among the students, and enhances critical thinking and opportunities for collaborative learning among the students.

Technology helps students to get meaningful learning activities, involving them in critical thinking and promoting higher-order thinking with the faculty of problem-solving, besides helping them to involve in collaborative learning. Nowadays, teachers are using smart technologies for making education effective and innovative such as flip-classrooms, blended learning mode, interactive white-boards, block-chain technology, what’s app, zoom, Google meet, Google classroom. The use of smart technologies in education improved the learning of students and made education more fun and interesting. With the help of technology, students get access to online books, contact groups of foreign students, and engage in discussion with the ideas of others. The Internet is a handy tool for searching reading material and it offers students to have more intense and independent learning. One of the great benefits of the internet is sharing, searching, and accessing new information.

The majority of studies that were found in the literature were based on teachers' perceptions, teachers' usage, teachers' motivation, there was a dearth of studies especially in the context of Pakistan, that was based on student's perceptions, and student's usage and adaptability of these devices and software. Therefore, this study was carried out.

1.1 Rationale of the study

The use of emerging technologies in education has drastically changed the performance of students and teachers in educational institutions. Nowadays technologies have become a vital portion of the teaching-learning process and today's classroom settings are not complete and effective without the use of technology. And many research studies show that the use of technology enhances

students learning. Previous research has shown that the use of Technology in the teaching and learning process can increase the potential of students to effectively learn and enhance their academic achievements (Jamieson-Proctor, et. al, 2014; Irum, 2015). However, in Pakistan, students are still facing many problems in the use of technology like lack of; skills to use technology, time, English language understanding, infrastructure, and frequent power failures. (Khurshid, Shah & Reid, 2016; Arshad & Hina, 2017). Hence, this study was carried out to explore the current status use of technology and students' awareness about the software, and purpose to use technology.

1.2 Research Objectives

- To assess the present status of technology, use by students in universities of Sindh in terms of:
 - Frequently used devices.
 - Frequently used software
 - Purpose to use technology
- To suggest measures for the effective use of technology by the students in universities of Sindh.

1.3 Delimitation of the Study

The study was delimited to students of B.Ed. (Hons) Elementary Program offered by general public sector universities of Sindh.

4. Methodology

This study was descriptive research. A quantitative method was adopted to investigate the problem. the data was collected from teacher education institutions in the four general public sector universities of Sindh (Pakistan). Students enrolled in of B.Ed. (Hons)–Elementary (4-years) program in all semesters was selected as the population of the study. Total (462) students were enrolled in the year (2015) in those four universities; the sample was selected with the help of Yamane's (1967) formula. The formula of the sample size for a finite population is;

$$n = \frac{N}{1 + N(e)^2}$$

Where

n=sample size needed

N=Overall Population for the study

e= level of precision e.g. (0.05) which is the margin of error for this study .by applying Yamane's formula the calculated sample comes to be 214. The random sampling method was adopted to select the sample of the study. A total of 214 students who are indifferent semesters was selected randomly from each university. The questionnaire was developed with the help of literature. Statistical Package for Social Science (SPSS) software (version 22), was used for quantitative analysis. The Alpha Cronbach method was used to calculate the reliability of the questionnaire and it was come to be (0.81) and the panel of experts used to evaluate the validity of the questionnaire. After ensuring, validity & reliability the modified questionnaire was ready for data collection. First of all, the consent form was getting filled, then the questionnaire was administered personally. Total 211 questionnaires were filled in; however, only 4 were incomplete which were not included in the data analysis. But 211 students successfully filled the questionnaire.

The questionnaire consisted of different items and each item has a different mode of answering. The first item asked about the computer knowledge of students, a five-point Likert scale was used in this item; very good, good, fair, poor, and very poor. The second item was about the frequently used devices by students and students have to select options from Laptop, PC-Tablet, Smartphone, and Personal Computer. (They can select more than one option). The third item was about the frequently used software's and options are Google, MS. Word, and Email, MS. Excel, and MS. FrontPage .fourth item was about the purpose to use technology; students have to select options from the given list. (Entertainment, Teaching- Learning Processes, Social Media, Facebook. Communication, and research) the last item of the questionnaire was about the accessibility of the Internet and it has on a 3-point Likert scale (yes, somehow, no). This data was collected for my Ph.D. research in 2016 and part of my thesis.

5. Data Analysis

5.1. Computer Knowledge of Students

Students were asked about their prior computer knowledge. Data revealed that the majority 32% of students opined that they had fair computer knowledge. 26% viewed that they had good computer knowledge about 16% viewed that they had poor computer knowledge and 16% viewed that they had very good computer knowledge. Only 10% viewed that they had very poor computer knowledge. It is concluded that the majority of students had good computer knowledge. The following figure shows the computer knowledge of students.

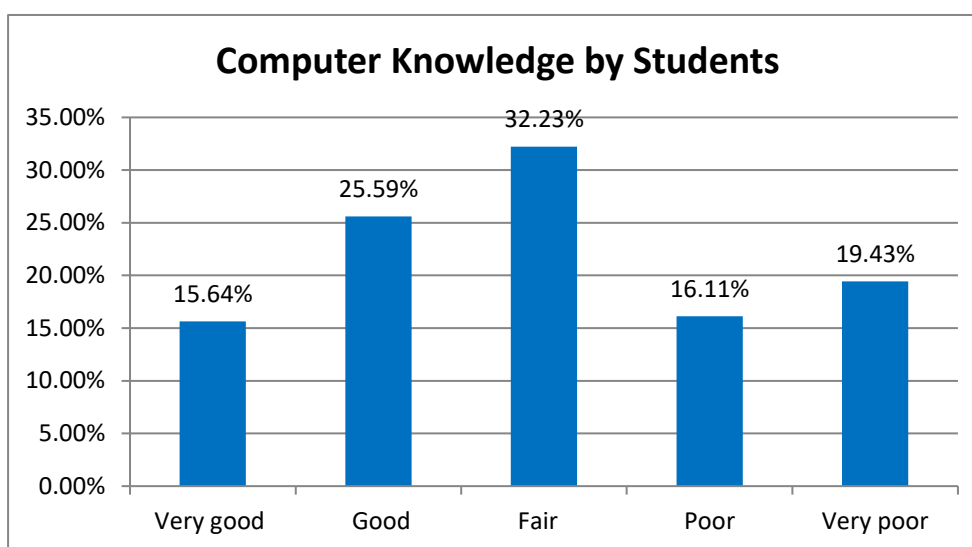


Figure 1: Computer Knowledge of Students

5.2. Frequently used Devices by Students

Students were asked about the technological devices which they use frequently. Data shows that 75% of the students were using Smart Phones, 66% were using Laptops and 63% were using Personal Computers (PCs), whereas only 30% of students were using PC-Tablets. Thus, most frequently used device was Smart Phones and the least used device was PC-Tablets. The following figure shows the frequency and percentage of frequently used devices.

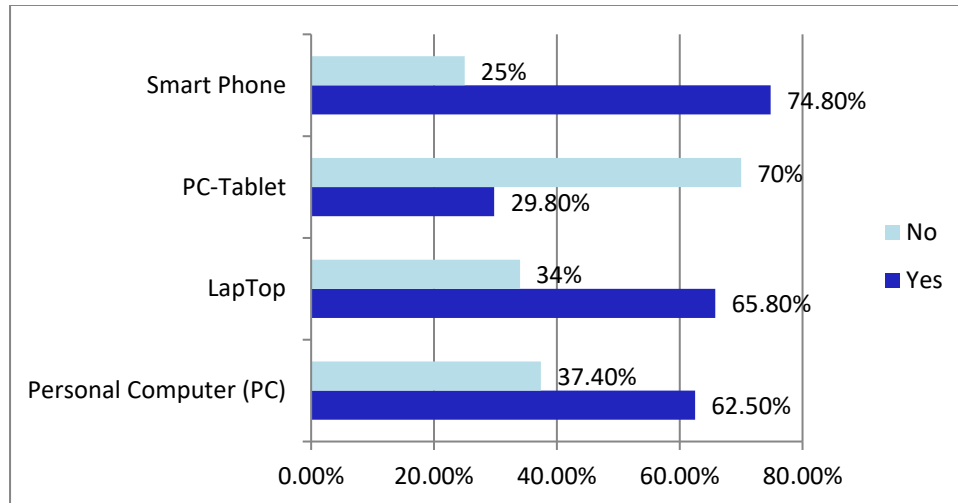


Figure 2: Frequently used devices by Students

5.3. Frequently Used Software by Students

Students had to select software that they used frequently. Data showed that the most popularly used software was Google 95%, MS. Word 88%, and Email 78%. The least used software was MS. Excel 38% and MS. FrontPage 12%. Although MS. Excel, an important software, its use was not observed. The following figure shows the percentage of frequently used software.

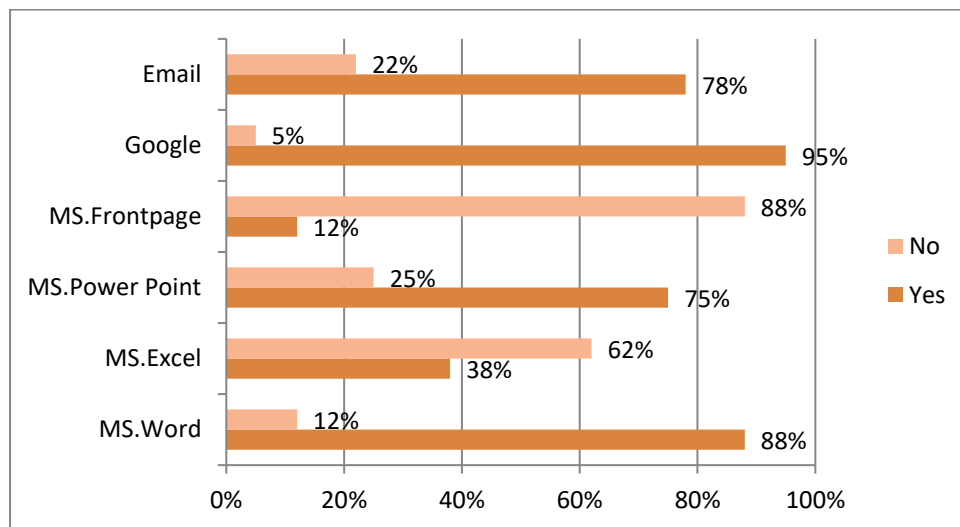


Figure 3: Frequently used Software by Students.

5.4. Purpose of Use Technology by Students

Students had to select the purposes of used technology frequently. Data showed that the majority of Students 81% were using technologies for Entertainment, Next, the highest proportion

of technology used was 74% for Teaching- Learning Processes, and 71% were used technology for Social Media such as Facebook. 69% were used technology for Communication, and 63% were used for research, However, 26% were using technologies for a discussion group and only 7% were used LMS. The following figure shows the frequency and percentage of purposes to use technology mostly by Students.

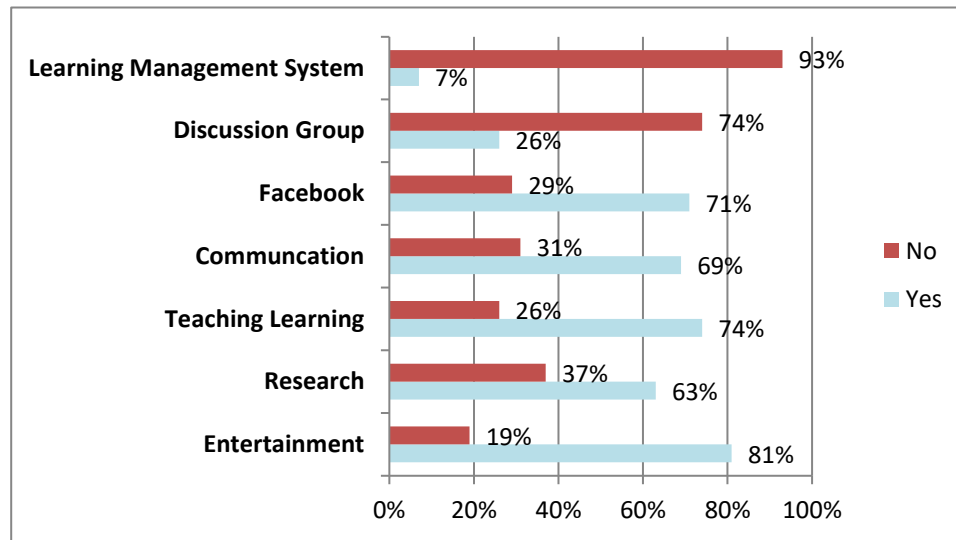


Figure 4: Purpose to Use Technology by Students.

5.5. Internet Access by Students

Students were asked about the accessibility of the Internet. Data demonstrate that 70% of Students had availability of internet, whereas 19% had access to the Internet sometimes and only 10% respondents had no internet access. The following figure shows the access to the internet for Students.

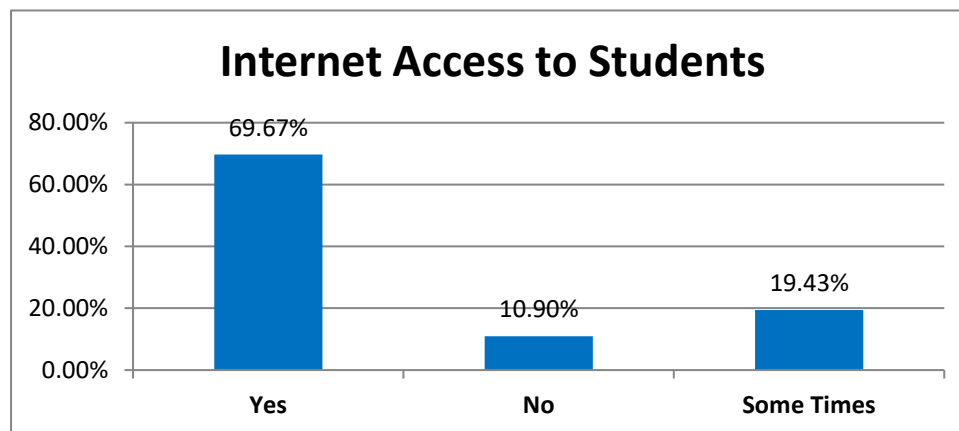


Figure 5: Internet Access to Students

6. Discussions

The adoption of technology in education is heavily based on the adaptability and availability of hardware and software. The finding showed that the majority of students had assessed themselves that they had fair computer knowledge & they have internet access. Findings showed that high numbers of students were found using smart-phones than laptops and other devices. Students were using smart-phones because nowadays the use of smartphones in Pakistan is accelerating at an unprecedented rate. The mobile subscribers in Pakistan are estimated at 125 million in 2015, and Pakistan has become a more mobile-savvy country. The younger generation in Pakistan is a more profound user of these devices. It's all due to affordability; mobiles are available at very cheap prices. So student community can easily afford mobile phones than costlier laptops. However, the other factor behind the more use of a smart-phone is its multiple uses like; taking pictures of notes and books instead of getting photocopy, taking a photo of the whiteboard, sheets, and slides. Many research studies were conducted on the use of devices by students over the globe. And results showed that the majority of students were using different devices. As, Al-Hariri (2017) studied and found that in Saudi Arabia mostly used devices were laptops (50%), smart-phones (42%), tablets (7%), and desktop computers (0.5%).

The most frequently used software by students was Google, MS.Word, MS. PowerPoint, and Email. The MS. Excel and other office tools were used rarely; few Students used MS. Excel, although this is very important and helpful software especially for teachers because they can easily manage students' progress through MS. Excel, and calculate marks and percentage easily. Therefore, Teachers are required to plan some strategies for the effective use of this software. Such as giving assignments with the use of MS. Excel only. Various studies were conducted to explore the use of different software in education, Irum (2015) found that "Teachers and Students admitted that they had good knowledge of MS-Word and MS-PowerPoint, but they didn't use MS-Excel and MS-Access frequently. So MS-Access and MS-Excel were found most negligible software, and no one uses them". It was also found that the internet was being used regularly by students mostly. According to Acikalin (2104) "Google has been recognized as the most frequent research tool used by Turkish students to collect data from the internet.". They were using the internet for assignments, gaming, downloading music, movies, and for the use of social media networks.

The findings of the study showed that students were using technology for different purposes such as research, teaching-learning, communication, Facebook, and entertainment. However, it was also found that students were not using any discussion group (Irum, 2018; Powell, et. al, (2017) found that discussion group provides opportunities for students and teachers to share notes solve difficult topics, teachers post quiz or test for students to solve. Online discussions allow students for collaborative and active learning, they can express their ideas and respond to others through discussion. It was also found that students were using Facebook for different purposes because they had joined different groups on Facebook, such as research group, health group, entertainment, IQ, cooking, fashion, and beauty group, etc. The use of Facebook was found popular as it was providing entertainment as well as communication. Only (7%) Students were found using the Learning Management System (LMS) and that trend of use of LMS was not satisfactory because LMS is the most frequently used tool for the teaching-learning process and it is beneficial for teachers. Alharbi & Drew (2014) stated that the “use of LMS has become an integral part of higher education globally. LMS provides a platform for teachers that they can share assignments, discuss topics, notes, important announcements, and results, and through LMS administrators may check the progress of all teachers. On the other hand, students can share their difficulties, suggestions, and their progress easily. LMS provides the secure and best platform for overall discussion and sharing for all stakeholders. Nagy (2016) found that (89.3%) higher education institutions were adopting LMS for blogs, news, forums, video calls, audio calls, e-mail, and chat. Therefore, awareness and training programs should be organized to highlight the importance and advantages of the use of LMS in education. And provides training for teachers and students to use LMS.

7. Conclusion

Today's students live in a technological environment. The majority of students used a variety of technology such as social networking, texting, and web browsing daily. These kinds of technologies are seen by students as useful and enjoyable. If our educational system and teachers provide an environment for learning, then they ultimately take interest in education and the result will be their high academic performance. The findings from this paper indicate that technology has a positive impact on the perceptions and performance of students. Data also suggests that the convergence of technology is becoming more widespread among university students Technology

integration is increasing students; motivation, engagement, collaboration, hands-on learning opportunities, allows for learning at all levels, increasing confidence in students, and increasing technological skills. The study revealed that high numbers of students were using smart-phones, laptops, and other devices. The most frequently used software by students was Google, MS. Word, MS. PowerPoint, and Email. The students were using the internet for assignments, gaming, downloading music, movies, and the use of social media networks. Students were using technology for different purposes such as research, teaching-learning, communication, and entertainment. However, students were using Facebook for different purposes because they had joined different groups on Facebook, such as research groups, health groups, entertainment, IQ, cooking, fashion, and beauty group, etc. The use of Facebook was popular as it was providing entertainment as well as communication. Very few students were using the Learning Management System (LMS). It is concluded that the use of technology in education has improved the learning of students and made education more interesting.

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