Application of Educational Technology in Higher Educational Institutions

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Abstract

With the emerging demand and importance of science and technology, it has become mandatory for all the individuals, especially for those who are university students to be familiar with digitalization. The current study highlights and investigates the utilization of digital technology application in universities of Islamabad and Rawalpindi. The population of the current study is male and female students selected from the institutes of higher education of Islamabad and Rawalpindi. A sample of 80 students from public sector universities and 80 students from private universities have been selected through stratified sampling technique. The data has been collected by 5-point Likert Scale questionnaire. The results of the study indicate that most of the universities are using ICT tools in their teaching and learning system and these tools are proving very useful for the teachers and students. However, some of the adverse effects are also reported in the study like excessive use of internet inhibit the study habits.

Keywords: Audio Visual Aids, Pakistan, Students, Technology, Universities

Introduction

The importance of computer technology in teaching-learning process is critical today, as the world has become a global village. Students are not prepared for a specific region to live in; rather they are supposed to keep themselves abreast with the modern demands of the global market. Hence, the deep comprehension of the prevailing norms of the modern world around us and skills required to cope up with challenges are of prime significance (Cagiltay et al., 2019). The fast-paced human society is rapidly shifting toward digitization. Therefore, the digital literacy is considered as mandatory in modern pedagogy. In this regard, educational

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technologies are the most important and demanding aspect. Different subjects are now only relying on the different technologies. There are still many areas of subject which demands the technology and by using those technologies the performance of the student may enhance. Educational technology definitely enhances the student's performance. The study going to conduct is based on the assumption that by using the educational technology the performance of the learners improved (Solano et al., 2017).

E-technology, E-books and the internet are considered as critical sources of information collection. The undergraduate utilizes these sources to the fullest of their requirement and desire (Karaseva et al., 2018). The effective technology is only using in some particular institutes, this relationship analysis would explore the fact that which type of institute is providing the educational technological opportunities for students and which are not and what is the difference of the performance of the students of respective institutes (Sweller, 2020). The fundamental problem of this study was to comprehend the utilization of modern technologies in universities and its effects on the undergraduate students' academic performance.

New Demands of Learning

Now, the important of technology is undeniable for us, as science and science and technology plays an important role in our lives. Everything has almost changed under the influence of science. Although, science and technology has greatly influenced the routine lives of modern man, but its impacts on education are of high value and significance. It affects the learning as well as teaching today. Today, teachers need to be competent enough to use and know how to use modern techniques and methods in education. The classroom has to be changed in different shape with the demands of time. It is to be just like a laboratory where in different hardware such as projector, tape recorder different record player, overhead projectors, and computer etc are lying. Resources available in classroom are considered as very significant as the learning process is dependent on the use of these teaching tools in classroom context. In 21st century classroom has to be changed from every aspect (Rather, 2004). Educational technologies and audio-visual aids are not different things and play equal role in learning process.

Keeping in view the importance of ICT in educational programs, the advent of the term 'instructional technology' is given place in teaching education programs. This new term is evidence of the expending scope of the technology and its importance. According to Dash, (2011) these technologies are used to improve the learning process in the classroom context. With the help of these equipment the learning has become easier and amazing which was a bothering process once. These devices have made learning more convenient as well. The AV aid and technological aids like multimedia, sound device like speakers, online videos, and documentaries are considered as more helpful which heir a teacher in a good communication, classroom interaction and effective realization of the teaching object may be called instrumental aids in the field of teaching learning. Duret has rightly said, it is easier to believe what you see than what you hear; but if a person both see and hear, than he can understand more easily and it will be left more lastingly.

Enhancement in Learning

The children can learn more and more if they are taught interestingly. The children need experience, through experience of life they learn better. According to Jean Piaget If the child has seen more and heard, the more he wants to see and hear. In past Greek and Roman's, they used more word, symbols and different pictures to convey their thoughts. Rousseau discourages the use of more words in education. Forebel also believe that child learn more from his natural surroundings and visit to a place or its sight through pictures and chart scan teach the child more than filling his mind with words delivered by the teachers in the form of lectures (Rather, 2004). Educational technology is largely a classroom supplement. Teachers can now easily access to film, projector, tape recorder, computers etc. Teaching machines are more effective in learning then text and printed material. They offer greater control over the changes involve in learning. The teacher normally supplements his verbal output with such materials. Educators believe that if technology is used properly and wisely, it could help to meet most of the educational needs. Similarly, issues related to learning context are resolved completely through enhanced experiences of the use of the media today. The teacher should take full advantage of the existing educational technology for quality education (Dash, 2011).

Awasthi, (2014) in her research paper concluded that the proper utilization of the Audio-Visual aids is facilitating equally to child as well as teacher. Teacher training program must be designed in a way to promote the use of aids in classroom. Use of these tools at broader level is possible if all the stakeholders of education make endeavors to inculcate these in educational programs. In this regards, management and governing bodies can also play a vital role in utilization of these tools. It is responsibility of Government and management that they should provide enough funds to buy teaching aids.

Aims of Teaching with Technology

The pathway of teaching and learning has become clearer through technology and equipment which are helpful in instructions. The validity and reliability of the tools is also decided in a unique manner. These aids demand digital skills for the utilization. Many hard concepts are cleared through the smart use of these helping AV aids. In views of Gandhi, the real essence of the education is hidden in appropriate training and use of bodily organs for the reception of information (Rather, 2004). We can get information at any time from any place with the help of technologies. Our education system is not improving because we are using the same model of education. The logical and rational cognitive capability is required for the purpose of utilization of this equipment. The technology in education programs is possible at different stages of learning process. Educators can use these technologies for demonstrations, presentations, and communication, and cooperation purpose in educational context. Computer related technologies were familiarized by us almost three decades ago. The conceptions about time and space are challenged and changed. In American, almost sixty percent undergraduate programs are ensuring online education to the students. Many institutes are now moving toward the multimedia technology. Modern educational technology with multimedia systems creates the preconditions for engaging all the senses in the process of acquiring new knowledge develop students' creativity and provide more active students in teaching and learning. Because the computer science and information technology relevant content of education at all levels of education, from preschool to university (Bogdanovic, 2014).

Mangal, (2012) summarized some areas of operation of technology in term of topics and content taught during pedagogical practice and planning that are

development of curriculum, development of teaching learning material, teacher preparation or teacher training and use of the technology. Singh, (2018) described that usage of technology is facilitating in accomplishing rational set targets. This can also play great role in filling the gaps of instructors in an institute and meet the needs of all types of individual difference. Chandra, (2004) states that the University of Columbia used 100% allocated budget for the purpose to digitize the University. This investment was utilized for the fiber optics, networking, cameras, and conference facilitation and also for technological applications.

Similarly, the department of science and technology and center for higher educational policy in Netherland, conducted a study at 20 universities regarding technological model. This model of technology was launched at higher education level in 2001. The major countries where this study was conducted were: United State of America, Finland, UK, Germany, Australia, Norway, and Netherland itself. It was investigated in the study that the revolution of the utilization of information and communication technology, at larger level is not expected at higher educational programs in these countries. The process is very slow in acceptance. However, the changes occurring are due to the understanding of the utilization of these technologies. Those institutes who are accepting changes comprehend the standing and positions the keep and are more inclined to use the information and communication technology. The technology is utilized in many ways like in designing presentations, sending emails and utilizing available resources on websites. This has not replaced the methodology of teaching at large. Traditional method of teaching like lecturing is still being used in these universities.

Technology Introduced in Pakistan

It was 1990 when Pakistan accessed the internet for the first time. Allama Iqbal Open University, Islamabad launched online learning/ virtual program. The electronic courseware production center was prime project of e-learning. The Department of Computer Science developed this in two thousand one. Sangi & Ahmed, (2007) stated that the course packages and Learning Management Sources were designed and developed and made deliverable. Immediate after the commencement of the e-learning programs, AIOU was sponsored by Higher Education Commission in purchasing of JICA and other services. The University also purchased the service of fiber network. To enhance the virtual delivery of the

content, the university launched it FM radio for public. For the remotest and hilly areas, television programs were broadcasted. The online tutorship and conferences were also developed by Higher Education Commission-Pakistan. Pakistan Educational Research Network was established to enhance virtual teaching and learning and to connect with universities abroad. PERN added great to the online learning programs. Baggaley & Belawati, (2010) are of the view that the establishment of online digital library enabled students to get access to the data available on internet and increased the e-learning qualitatively. Similarly, during the wake of COVID-19, HEC instructed universities to prepare online course packages and generate Google Classrooms. Communication applications like Google Meet, Hangouts, Zoom and WhatsApp were utilized for real time interactions with undergraduate students. The instructors were guided to prepare online assessments. The quiz, assignments, projects and presentations were posted, received and checked by instructors online. Because of the nature of the Corona Virus, it was important to maintain social distance. The digital literacy played an important role during the process of learning and a sustainable environment was ensured.

Use of Internet and Student's Performance

It is demonstrated in the study by Peng et al., (2006) that the undergraduate mostly utilize surfing on internet through searching for content related to their assignments and home tasks like projects and quiz. They mostly search data from search engines like Google compared to e-libraries. The study was conducted on self-efficacy in term of using internet. The students perceive search engines as more effective. In a comparative study by Brophy & Bawden, (2005) the Google search engine was compared with libraries. It was a matter of surprise that Google is more helpful in facilitating for accessing the content, while the e-libraries are good in collecting qualitative content. The knowledge gained is almost equally qualitative. The researchers recommended both the sources of information as useful.

Effectiveness of Audio-Visual Aid

The Islamia University of Bahawalpur designed a study to gauge the effective use of AV aids. To collect the data relevant to the purpose of the study, one hundred and fifty students and fifty teachers were given questionnaires to fill in from

faculty of Arts and Science. During the analysis phase, it was observed that the role of Audio-Visual aids is very significant in pedagogical context. According to Rasul et al., (2011) the effectiveness of quality is enhanced with the use of AV aids. The utilization of AV aids ensures motivating environment for both the stakeholders of the educational institute. The learning and teaching shift to the next level of innovation, interest and effectiveness if the use of internet is ensured. The instructors are supposed to check the instructional material before utilization in classroom context. ICT is considered equally good for teachers to use for instructional purposes in classroom context (Dutta et al., 2020). The barriers in learning process were observed if the institute has not sufficient computers to help the students. Similarly, the effectiveness and utilization of the AV aids especially in English as Foreign Language learning was studied at university level at Al Jouf University, Saudi Arabia. The utilization of the AV aids was found as improving and working method for EFL classrooms. Mathew & Alidmat, (2013) found that the learners find it very useful when it comes to their content needed to be covered during their studies. This is found that the Information and Communication Technology effects curricula and its development. This century is of science and technology. If we desire to update the educational environment, we need to inculcate the ICT in classrooms for digital literacy. Using of computer technology at education programs help teachers and students perform very well. It equips them with required skills. In the same way, Nisar et al., (2011) conducted their research on usage and impacts of utilization of information and communication technology in Pakistan. They selected population of their study form Rawalpindi. It was found that information and communication technology used for teaching and learning purpose pays off in many ways. It improves skills of the students as well as of teachers. The policy makers also consider it as helpful technology for planning purpose.

Changes in Traditional Methodologies

The traditional methodology of teaching that is lectures to a wider audience is now becoming old-fashioned in today's world. Listeners only used to listen to the knowledge or information presented by the lecturer. Only black board and chalks were the tools used for teaching. But today the world is changing and more advance technology are preferred to be used in the institutions as an aid with the lectures (Bogdanovic, 2014).

Methodology

The population of the current study included male and female students selected from the institutes of higher education of Rawalpindi and Islamabad. The sample of 80 students from universities situated in Rawalpindi and 80 students from universities situated in Islamabad was selected from the population through stratified random sampling technique. Four universities namely International Islamic University Islamabad, National University of Modern Languages, Shaheed Zulfikar Ali Bhutto Institute of Science and Technology and Preston University.

The questionnaire was designed by the researchers. Data were collected from the respondents through the questionnaire developed for the students. The questionnaire contained seventeen items. It was close ended. It was divided into broad categories of use of educational technology affect studies, it facilitates students, student's achievement can be enhanced, it is just the waste of time and it limited the teacher's role. The researchers visited the universities and distributed the questionnaire to collect the data. For the analysis of data percentages were calculated.

Results

The main endeavor made in this study was to analyze and understand the importance of the utilization of computer technology at educational context at universities of Islamabad. This is the data analysis of the questionnaire filled by the students of the Private and Government universities.

Table1: Technologies Used in Universities

Technologies	%age
Projector	85%
Internet	88%
Films	17%
Computer	95%
Radio	25%
Models	40%

The table 1 shows that 85% projector, 88% internet, and 95% computers, 25% radio, 17% film and 40% models are the technologies are used in universities.

Table 2: Percentages of Respondents about Technology Use in Universities

Statement	Agreed (%)	Agree to some extent (%)	Disagree (%)
Educational technology is being used in university	68.75%	10%	21.25%
Use of technology affects studies	75%	16.25%	8.75%
You understand the lecture more easily with technology	51.25%	15%	33.75%
Educational technology helps you to get information easily	67.5%	10%	22.5
Language skills can be improved by using internet	37.5%	22.5%	40%
Use of internet overcomes the reading habit	65%	20%	15%
Using technology in class take too much time	55%	10%	35%
Education information available on internet is always authentic	56.25%	15%	28.75%
Use of internet in university is just waste of time	18.75%	6.25%	75%
Teacher cannot manage their time while using educational technology	68.75%	21.25%	10%
Educational technology facilitates students in your university	76.25%	16.25%	7.5%
Teachers in your university know better how to use educational technologies	56.25%	13.75%	30%
Parent's reactions are positive towards educational technologies	55%	18.75%	26.25%
Student's achievement can be enhanced by using different educational technologies	88.75%	00	11.25%
Excess use of educational technology can be destructive	31.25%	18.75%	50%
Educational technology has limited the role of teachers	36.25%	22.5%	41.25%
There is no need to use technology in educational institution	6.25%	7.5%	86.25%

Table 2 depicts that 68.75% students of universities agreed and 21.25% students of universities disagreed that educational technologies are being used in their university. 75% students of universities agreed and 8.75% students of universities

disagreed that use of technologies affect their studies. 51.25% students of universities agree and 33.75% students of universities disagreed that they understand lecture more easily with technology. 67.5% students of universities agreed and 22.5% students of universities disagreed that educational technologies help them to get information easily. 37.5% students of universities agree and 40% students disagreed that language skills can be improved by using internet. 65% students of universities are agreed and 15% students of universities disagreed that use of internet overcomes the reading habit. 55% students of universities agreed and 35% students of universities disagree that using technology in class takes too much time. 56.25% students agreed and 28.75% students of universities disagreed that information available on internet is always authentic. 18.75% students of universities agreed and 75% students of universities disagreed that use of internet is waste of time. 68.75% students of universities agreed and 10% disagree that while using educational technology teacher cannot manage their time. 76.25% students of universities agreed and 7.5% students of universities disagreed that educational technology facilitates students in university. 56.25% students of universities agreed and 30% students of universities disagreed that teachers in their universities know better how to use educational technology. 55% universities students agreed and 26.25% universities students disagreed that parent's reaction are positive toward educational technologies. 88.75% university students agreed and 11.25% Universities students disagreed that student's achievement can be enhanced by using educational technology. 31.25% students agreed and 50% students disagreed in universities that excess use of educational technology can be destructive. 36.25% students agreed and 41.25% students of universities disagreed that educational technology has limited the role of teacher. 6.25% students agreed and 86.25% students disagreed that there is no need to use technology in educational institute.

Discussion

Teaching-learning process is a backbone of any country and plays a vital role for the progress of a state. The integration of information and communication technological tools (ICT) has altered the mode of teaching and learning (Saira et al., 2020). The entry of ICT in teaching-learning process has increased the efficacy of teachers and learners. In present century, ICT is an imperative part of every educational and economic organizations (Copriady, 2014). Nikolić et al., (2019)

stated in a study that the latest information and communication technological tools have the abilities to improve teaching-learning process. The acceptance and implementation of ICT in teaching-learning has changed the requirements of curriculum development and instructional design (Hafeez et al., 2021).

The 21st century is called a digital century. The ways for application of information and communication technological tools in teaching and learning process have been changed. Various information and communication technological tools are available for improving the teaching and learning process (Dhital, 2018; Razak et al., 2019; Kibuku et al., 2020). The integration of ICT tools in teaching-learning process has improved the educational systems. The online learning system has also improved due to the application of modern information and communication technological tools. Now internet, multimedia, skype, zoom meeting tools are available to make the teaching and learning process valuable and useful (Muslem et al., 2018; Vershitskaya et al., 2020).

This research study focused on the use of educational technologies in universities of Islamabad and Rawalpindi. By taking two cities as a population or sample this research study is different when compared with the previously done researches. There is change in higher education, use of internet and students' performance, usefulness and effectiveness of audio-visual aid (Rasul et al., 2011), and utilization of the information and communication technology for educational purposes. This research study helped us to find out that both Islamabad and Rawalpindi universities are using educational technologies in their institute. In future it will help to study the degree of using these technologies in both institutions.

Conclusion

Considering the findings of the study it can be concluded that projector, computer, and internet are the main things which are used in universities. Students agreed that use of technology affect their studies and they understand lecture more easily with the use of educational technology. It was agreed by large number of university students that ICT/ computer technology like internet help them to get information easily and overcomes the reading habit. Students disagreed that their language skills can be improved by using internet and it does not take much time. Moreover, the students disagreed that using internet is just

waste of time. Students agreed that teachers in their universities know better how to use educational technology and their parents have positive reaction toward educational technologies. Students' achievement can be enhanced by educational technologies but using these excessively can be destructive. It can be said that use of educational technologies facilitates students in university.

Recommendations

- Different types of educational technologies may be used in a proper way in higher education institutes.
- Lectures may be given by using different technologies so that student will understand easily and quickly.
- The technologies like internet, computer may be used so that students will get information easily.
- There may be proper training system for teachers so they will be able to use these technologies.
- Different types of new technologies may be provided to higher educational institutes.
- Allocation of budget for educational technologies may be increased.

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