



RESEARCH PAPER

Exploring the Teachers' and Students' Perceptions Regarding the Impact of Innovative Technologies on Quality Education

¹Dr. Muhammad Ashfaq ²Aysha Saleem ³Dr. Seyda Naureen Mumtaz

1. Assistant Professor, Department of Special Education, University of Education, Lahore (Lower Mall Campus), Punjab, Pakistan
2. MPhil Scholar, Department of Education, University of Education, Lahore, Punjab, Pakistan
3. Assistant Professor, Department of Education, University of Education, Lahore (Bank Road Campus), Punjab, Pakistan

***Corresponding Author:** ayesha.arshad0333@gmail.com

ABSTRACT

This study has been conducted under the Interpretivist paradigm as the inquirer's intent was to explore the phenomenon in depth. The university teachers (six) and the undergraduate students (Twelve) have been selected purposively for the study. The students were enrolled in the BS Education (Semester-VII) whereas the teachers were those who were teaching to the aforementioned classes. A Semi-Structured interview protocol has been developed and used by the inquirer for the purpose of the data collection. The instrument has been validated through the experts' opinion before its actual administration to the participants. The collected data has been analyzed with the help of Thematic analysis. On the basis of the results, it is concluded that the teachers feel that incorporating innovative technology into classroom is very beneficial for engaging students and students pay more attention with the help of innovative technologies. Similarly, the students expressed that incorporating innovative technology into classroom is very beneficial for making lectures interesting and engaging.

KEYWORDS Innovative Technologies, Quality Education, University Students

Introduction

This research study entitled "Impact of Innovative Technologies on Quality Education: Perceptions of students and Teachers at Higher Education Level" aimed at highlighting the technological advancements and digital innovations introduced at higher education level. The purpose of the research was to highlight the pedagogical innovations and their impact on quality of education (Ali, 2022). Moreover, the researcher aimed at identifying the factors that ensure quality education at university level. The era of new dimensions has opened new ways of learning and teaching (Gregory & Lodge, 2015).

Innovation is the technological advancement and change to introduce new tools and gadgets to transform learning and teaching for improvement. Institutes of higher education aim to promote learning environment and a climate that encourage the improvement of learning and teaching, pedagogical practices and old practices are adapted to according to the requirements (Hannan, 2005). Introduction of technological innovations demand teachers' willingness and engagement. The teachers who are reflective, prepared for change, accept change, put ideas into practice, and identify student needs regard traditional approaches to be old and always adapt to the changing situations (Gregory & Lodge, 2015).

Innovative technologies introduced by institutes enhance creativity and learning opportunities for students (Siddiqui et al., 2023). These innovations include Learning Management System (LMS), wiki, lecture recordings, e-Portfolios, seminar blogs, meetings, e-Assessment, virtual webinars, search engines, computers/laptops, e-mail, social networks, presentation software, blogs, cloud computing, reference management software, Statistical Software (SPSS), multimedia, online exams, presentation sharing, zoom, Google

meet and Skype etc. (Bond et al., 2018). Moreover, student competency in using digital devices, awareness of educational trends, free access to educational material and confidence also indicate quality education at higher education level (Tokareva et al., 2019).

The concept of quality education is seen in many terms. However, there are some performance indicators highlighted by some researchers that act as quality education. These indicators include students' experience, transferable skills, critical thinking, competence, reflection, quality of lecture delivery and feedback by the teacher, encouragement, flexibility, facilitator and creative lecturer delivery (Barnett, 1992). Moreover, certain elements also indicate quality education when students' satisfaction increases. Those elements provide learners more opportunities for creativity and self-fulfillment, wide information support, supportive environment, sufficient facilities, comfortable environment and extra-curricular activities (Razinkina et al., 2018).

Quality education in higher education can be assessed only with the fact that students are satisfied or not. However, course content, facilities, assessment, instructional practices, counseling services for students, social activities, social environment etc. are also regarded as quality indicators in higher education (Kwan & Ng, 1999). Although quality education is provided by many institutes yet certain factors also hinder the technological innovations to be introduced in education system. These factors include workload, lack of autonomy and communication, lack of financial resources and institutional support (Caliskan & Zhu, 2020), time commitment, technical problems, adjusting with the environment, interpersonal relations and interactions with students, dealing with academic dishonesty and professional stigma (Simon, 2012).

Literature Review

A study was conducted by Gilbert, Tait-McCutcheon and Knewstubb (2021) in New Zealand to find out the characteristics of innovative pedagogical practices and what factors support or constrain those practical approaches. Moreover, the aim of the research was to find out that which characteristics of teachers enable them to adopt innovative teaching approaches (Gilbert, Tait-McCutcheon & Knewstubb, 2021). It was a qualitative enquiry and researchers conducted interviews of the participants. Teaching staff and faculty members of universities were selected as sample of the study. Many teachers were approached but only 13 teachers gave their consent to participate in the study. Teachers were asked questions about teaching strategies to engage students and which factors act as a barrier to innovations. The results highlighted many factors that affect pedagogical innovations such as physical environment, colleagues support and engagement, students' demographics and innovation type (Ali et al., 2022). Results also concluded that innovations rely on teachers' understanding of the need to innovate. The results revealed several characteristics of teachers who are willing to innovative practices such as reflective, use evidence to inform practice, prepared for change, put ideas into practice and identify students' needs (Gilbert, Tait-McCutcheon & Knewstubb, 2021).

Educational institutes need pedagogical innovations and regard traditional approaches as less likely to suit the learners' needs. It was a Qualitative research study in which researcher aimed to identify and highlight the technological innovations and their impact on quality education while taking the university teachers' and students' perceptions. For conducting the research, researcher used quantitative survey and follow-up interviews to highlight more factors and themes (Hassan et al., 2022).

Technological advancements in the field of education are very important but there are certain barriers as well in the way of implementation of innovative practices. A study was conducted by Gregory and Lodge (2015) to highlight certain silent barriers that hinder the implementation of learning strategies in higher education. The results of the study highlighted certain challenges such as more time consuming, workload and university

financial support. It was also highlighted by the research that certain barriers also cause risk to staff members and students to utilize teaching technologies (Gregory & Lodge, 2015).

Use of innovative technology increases the effectiveness of learning and teaching as compared to traditional learning environment such as (Ishaq et al., 2020):

- Use of modern digital devices
- Use of Internet for virtual conferences
- Use of Multimedia in place of white/black board
- Use of online lectures, books, e-libraries, and assignments in place of library books
- Use of WIFI for digital connectivity
- Use of video lectures in place of classroom traditional lectures
- Use of online assessment in place of physical exams (Ishaq, et al., 2020).

Innovative technologies help educators, students and teachers to transform pedagogical practices and improve learning process (Bozalek, Ng'ambi, & Gachago, 2013). South Africa is a region with a diverse population of students with a variety of multilingualism and large classes. A study was conducted by Bozalek et al. (2013) in South Africa to highlight and examine the impact of modern technologies on education process and the appropriate use of technology for creating a positive learning environment. It was a descriptive research study that aimed to highlight the institutional opinion of educators and leaders who help to enable the institutions with the use of modern technologies to foster a diffusion of modern technology in education. Teachers are change agents and they need to engage with teaching and learning process by using innovative modern technologies (cloud computing, tablet computing, mobiles, electronic books, collaborative environments, social networking, game-based learning, virtual worlds, semantic applications) to create a positive and engaging learning environment for students. The findings of the study highlighted various technologies used by the institutes such as;

- Cloud Computing
- Tablet Computing
- Mobiles
- Electronic Books
- Collaborative Environments
- Social Networking
- Game-Based Learning
- Virtual Worlds
- Semantic Applications

Moreover, various characteristics of modern technologies have been highlighted by the researchers that are generally utilized in various educational institutes such as;

- Simple to use and easy to understand
- Change rapidly according to the need and demand
- They are according to the expectations
- In a state of continuous research and understanding
- Have a potential effect of transforming educational practices (Bozalek et al., 2013).

The findings of the study revealed the respondents' views regarding their use of innovative technologies were quite positive. Findings regarding the motivation to use technologies revealed the passion and personal interest of lecturers towards technology, availability of technological devices, institutional planning for technological innovations and to increase the motivation, interest and classroom participation of students. Results regarding the impact of innovative technologies showed that the use of technologies was

quite satisfactory and positive however, various constraints were also highlighted by the researchers such as infrastructural planning, lack of internet access, a lack of proper equipments such as projectors and computers, lecturers hesitation, resistance and reluctance to use technology, lack of time and skill to use innovative technologies (Ishaq et al, 2020).

Modern technologies help to improve the educational process by increasing the interest of students and help to get up-to-date with the emerging trends in pedagogical practices (Djumaevich et al, 2019). A study was conducted by Djumaevich et al. (2019). To highlight the significance of modern instructional technologies, goals, effectiveness, results and other related mechanism effects. The transformation of educational institutes requires specific skills, training, pedagogical skills, economic management, proper planning, new principles, new ideology, teaching methods and continuous system of assessment.

There are various innovative teaching methods that require the proper use of technology such as;

Modular Learning Technology: modular learning technology helps students work with text-books and literature and develop creative and critical thinking. It helps students to work creatively and independently (Djumaevich et al., 2019).

Collaborative Learning Technology: the technology not only helps students to work independently but also allows them to work collaboratively to enhance their understanding regarding various concepts and think in a pair-share way (Djumaevich et al., 2019).

Technology of Interactive Methods: interactive methods enhance free discussion and open environment where students can learn in subgroups (Djumaevich et al., 2019).

Technology of Didactic Games: innovative technologies help the teacher to use various didactic games during lesson to revitalize the classroom environment. It helps to create a positive and motivated learning environment (Djumaevich et al., 2019).

Test Lessons: various technological tools are used to test the comprehension of students regarding the lesson rather than just testing through checklists (Djumaevich et al., 2019).

University students need collaborative and interdisciplinary approaches to learn and grow. Importance of ICT tools and technological advancements is growing rapidly. Educational technology and use of digital media in higher education is increasing to meet the needs of learners (Bond et al., 2018). Innovations in teaching and pedagogical practices require academic, organizational, curricular and structural innovations. Use of innovative technologies and educational media improves the quality of learning and teaching. It is an alternative way of creating a physical environment into virtual learning environment. However, the process of digital innovations and technological integration is complex and requires strategic planning and advancements at the institute level (Bond et al., 2018).

A study was conducted by Bond et al. (2018) at the Oldenburg University that supports faculty members and offer courses for professional development. However, there was a need to enhance the implementation digital media. The study was conducted to find out the usefulness of innovative technologies and digital media used by teachers and students. The study was basically descriptive and survey was conducted by the researcher. Data was collected from teachers and students both. A sample of 381 teachers including male and female were selected for data collection. A sample of 1327 students including male and females were selected for data collection. The results of the study concluded that most teachers did not use technological tools in their courses. However, their perceptions of using digital technology were optimistic somehow. It was also found that teachers did not

consider lecture recordings useful but the students consider it very positive and useful. The results also highlighted various learning tools used by teachers and students to enhance learning opportunities such as Learning Management System (LMS), wiki, lecture recordings, e-Portfolios, seminar blogs, meetings, e-Assessment, virtual webinars, search engines, computers/laptops, e-mail, social networks, presentation software, blogs, cloud computing, reference management software, Statistical Software (SPSS), multimedia, online exams, presentation sharing, zoom, Google meet and Skype etc. (Bond et al., 2018).

Innovation and use of technology in higher education has become a concern for most of the researchers. However, its use and implementation has been analyzed by many researchers to highlight its effectiveness in education system (Tokareva et al., 2019). A study was conducted by Tokareva et al. (2019) to determine the implementation and quality and usefulness of digital and technological innovations from university students' perspectives. It was a survey research that focused the perspective of students in terms of innovativeness, technological support and teachers' introduction of ICT in education. The study was empirical in nature and 705 four year students of universities of Moscow State were selected as sample of the study. The sample consisted of male and female students. The results of the study highlighted many factors that are helpful in introducing Innovative technologies in Higher education such as technological literacy of teachers, technical support and programs of education. The study results concluded that students like more computerized education to be introduced and the current system is not satisfactory for students. The students like to use e-libraries and Microsoft programs to facilitate their learning process. Results also highlighted that computer and technologically equipped classrooms are there that is a positive indicator of technological innovations. Results also highlighted student competency in using digital devices, awareness of educational trends, free access to educational material and confidence to use however, it was also concluded that many universities lack sufficient funds and resources to introduce innovations in education (Tokareva et al., 2019).

Digital innovations and use of media in educational institutes can enhance the quality of learning and engagement of students. Technological innovations can contribute a lot to the academic achievement of students. However, Innovations in teaching and pedagogical practices require academic, organizational, curricular and structural innovations (Gregory & Lodge, 2015).

The purpose of this research was to get the perceptions of students and teachers regarding the technological innovations introduced at their institutes and the tools that contribute to their quality education and learning process. The research study is aimed to study the factors that are more contributing to students' learning. The factors that are more determiners of quality education will be highlighted. Moreover, the impact of technological innovations will also be highlighted by the researcher.

This research study is significant in providing a way forward for school and university administrators to open new dimensions for learning in the field of technology. University administrators need to facilitate learning by introducing and merging innovative technologies into classroom to enhance learning experiences of students. This study aims at highlighting the results that may lead to the improvement of education system with the use of technological innovations.

Material and Methods

This study has been conducted under the Interpretivist paradigm as the inquirer's intent was to explore the phenomenon in depth. The Phenomenology has been used for the conduction of the study as the inquirer intended to explore the participants' views related to the phenomenon under study. The study has been conducted on the participants selected from a Public university based in Lahore. The university teachers and the undergraduate

students have been selected purposively for the study. The students were enrolled in the BS Education (Semester-VII) whereas the teachers were those who were teaching to the aforementioned classes. There were six teachers and 12 students who participated in this study. A Semi-Structured interview protocol has been developed and used by the inquirer for the purpose of the data collection. The instrument has been validated through the experts' opinion before its actual administration to the participants. The collected data has been analyzed with the help of Thematic analysis.

Results and Discussion

The results have been stated as under:

Students' Perceptions

The researcher asked eight questions from the 5 students to get their perceptions regarding the phenomena. The students were asked questions regarding the impact of innovative technology on quality education. The researcher asked the question that "What is your opinion about incorporating new technologies in class room? How they are helping you?" and the students answered the question with a quite positive perception. Students feel that incorporating innovative technology into classroom is very beneficial for making lectures interesting, engaging and gives exposure to the use of new technology.

It's good. It helps in understanding lectures in better way.

It makes lecturer interesting and engaging. Only listening to the lecture is quite boring.

Useful. I didn't know much about it few years back but now I feel equipped.

Very good. In fact it gives me a good exposure to new technologies.

The researcher asked second question from the respondents that "Are you satisfied with the facilities provided by your institute?" and the respondents' views were quite satisfactory.

Yes. I'm quite satisfied

Somehow, actually the time slot is limited, and we are not free to use resources anytime.

However, some respondents were of the view that they were quite unsatisfied with the facilities provided by the institute. A student was of the view that the institutes do not provide adequate facilities as computers are not sufficient to use.

Not much. Internet is not available in every class room. We can only use it in admin block. Computers are not sufficient in number. Also we get limited time slot to use computer lab.

Not at all. Students don't have proper access to facilities offered by institution.

The researcher asked third question from the respondents "How much these technologies helped you in your daily life or outside institute?" and the views were quite positive. Many respondents were of the view that innovative technologies help them a lot in their practical life. Students feel equipped and confident when they use technology learnt in the classroom in their daily life.

Very helpful. I feel very confident and equipped whenever I learn to use some new technology.

It is useful but courses offered by our institute are optional and expensive that's why all students are not able to access them.

It is useful, there is a lot of course available on optional basis they should be a compulsory part of our study schemes so all students could benefit from it.

The researcher asked fourth question from the respondents, "How you see your classroom next five years?" and the responses of the participants were quite optimistic about the future of their classrooms.

Technologically advanced

More equipped with new technologies

Hoping to have better classroom. With better facilities and more able teachers.

Definitely better and more advanced in study schemes and technologies.

The researcher asked fifth question from the respondents "which class is better; Online, Physical or blended?" and the respondents said that they prefer online classes as compared to physical mode of education as it is convenient for students.

Online. It was blessing for students like me who came from remote areas on public transport.

I loved having classes at home learned better in online classes because I felt relaxed.

I enjoyed online classes at home missed physical classes while taking physical classes i miss online classes both are good.so i suggest that there should be blended classes so we can enjoy both.

However, a respondent was of the view that there should a blend of both physical mode and online mode and prefer blended system of education.

Both there should be blended system throughout the year.

The researcher asked sixth question from the respondents "Is it adding (using technology) value to quality education?" and the views were somehow positive as they feel that technology facilitates learning and teaching and adds value to quality education.

Yes. It is. We can't go without technology even to complete a simple assignment.

Yes. It is making us more empowered and skilled.

However, 1 respondent was of the view that technology is just facilitating learning and adds no value to quality education.

No not much, we are getting dependent on readymade things. Instead of brainstorming, and self-study from a book, we hardly opened a book during this technological shift.

The researcher asked seventh question from the respondents "Do you want to learn new technologies?" and the responses of the participants showed were positive. They were eagerly ready to learn new technology as it is mandatory and no one can go with it anymore.

Definitely. We must learn whatever your institute offers.

Definitely, if teacher have full command on course content

Yes, of course. If we are offered free compulsory courses.

The researcher asked eighth question from the respondents “Where you see the future of Education system in Pakistan (regarding technology)?” and the respondents were of the view that they need technologically equipped classrooms, teachers and institutes to cope with the world. Government needs to take measures in favor of technologically equipped classrooms. However, they see a bright future in this regard.

Bright. If more youth empowering initiatives are taken.

Definitely technologically advance with better facilities and better management

Hopeful for bright future! Government is taking good initiatives to empower youth.

Thus, the data shows that students in Pakistan are eagerly willing to learn innovative technology as they are willing to get quality education that is possible through a technologically advanced classroom. Teaching students with innovative technology is the main point in getting quality education as technology can have a strong impact on quality of education.

Conclusion

On the basis of the results, it is concluded that the teachers feel that incorporating innovative technology into classroom is very beneficial for engaging students and students pay more attention with the help of innovative technologies. Similarly, the students expressed that incorporating innovative technology into classroom is very beneficial for making lectures interesting and engaging. However, the majority of the respondents were of the view that the institutes did not provide adequate facilities.

The study findings highlighted the need for educational institutes for pedagogical innovations and regard traditional approaches as less likely to suit the learners’ needs. The similar findings were highlighted by Gilbert, Tait-McCutcheon & Knewstubb (2021) whose findings concluded that pedagogical innovations are necessary along with technological devices.

The study findings highlighted that the use of innovative technology increases the effectiveness of teaching and learning and enhance quality education. The similar findings were highlighted by the study of Ishaq, et al., (2020) who concluded that the use of innovative technology increases the effectiveness of learning and teaching as compared to traditional learning environment. The study highlighted various aspects of innovative technology such as use of modern digital devices, use of internet for virtual conferences, use of Multimedia in place of white/black board, use of online lectures, books, e-libraries, and assignments in place of library books, use of WIFI for digital connectivity, use of video lectures in place of classroom traditional lectures and use of online assessment in place of physical exams.

The findings of the study related to first research question revealed the respondents’ views regarding their use of innovative technologies as positive. Students and teachers enjoy and appreciate the use of innovative technology for learning and teaching. The similar findings were highlighted by the study of Bozalek, Ng’ambi, & Gachago (2013) who concluded that the motivation to use technologies needs passion and personal interest of lecturers towards technology, availability of technological devices, institutional planning for technological innovations and to increase the motivation, interest and classroom participation of students. Findings regarding the impact of innovative technologies showed

that the use of technologies was quite satisfactory and positive however, various constraints were also highlighted by the researchers such as infrastructural planning, lack of internet access, a lack of proper equipment such as projectors and computers, lecturers hesitation, resistance and reluctance to use technology, lack of time and skill to use innovative technologies.

Recommendations

Based on the results, it is recommended that the universities should provide the proper facilities to the teachers for embedding the innovation to their teaching so that the effectiveness of the teaching may be enhanced.

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