

IMPACT OF INNOVATIVE TECHNOLOGIES ON QUALITY EDUCATION: EXPLORING THE UNIVERSITY TEACHERS' PERSPECTIVESAysha Saleem^{*1}, Dr. Asma Azeem², Mamoon Asghar³**Original Article**

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Abstract

This research study was conducted to explore the university teachers' perspectives regarding the impact of innovative technologies on quality education. It was a qualitative study conducted with the phenomenology design. It was a follow up study of a quantitative study. So the sample for the study comprised of 6 teachers selected purposively from the university teachers who were sampled for the quantitative study. The sample was the representative of the teachers from the public sector universities based in Lahore. The data was collected with the help of a semi-structured interview protocol comprising eight questions. The data was collected by the inquirer(s) while visiting the participants personally. Thematic Analysis was used to analyze the data. It has been concluded based on the results that the teachers find the innovative technology helpful in planning the lessons and teaching the students. However, the lack of facilities along-with training to use the innovative technology while teaching has been reported by the teachers. Furthermore, it is revealed that the innovative technology has a positive impact on the quality of the education.

Keywords: Innovative Technology; Quality Education, University Teachers

Introduction

This research study 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 (Gregory & Lodge, 2015). 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. Innovation is the technological advancement and change to introduce new tools and gadgets to transform learning and teaching for improvement (Tokareva et al., 2019). 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 (Caliskan & Zhu, 2020).

Innovative technologies introduced by institutes enhance creativity and learning opportunities for students. 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 (Ishaq, et al., 2020). 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, 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 (Gilbert et al., 2021) are also regarded as quality indicators in higher education. 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).

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. Use of innovative technology increases the effectiveness of learning and teaching as compared to traditional learning environment 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
- 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 to highlight and examine the impact of modern technologies on education process and the appropriate use of technology for creating a positive learning environment in South Africa (Ismagilova, & Sukhova, 2016). 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 (Bond et al., 2018). 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 (Caliskan & Zhu, 2020). 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 equipment such as projectors and computers, lecturers hesitation, resistance and reluctance to use technology, lack of time and skill to use innovative technologies (Kavilova 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. A study was conducted 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 (Ishaq, et al., 2020).

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.

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.

Technology of Interactive Methods: interactive methods enhance free discussion and open environment where students can learn in subgroups.

Technology of Didactic Games: innovative technologies help the teacher to use various didactic games during lesson to revive the classroom environment. It helps to create a positive and motivated learning environment (Gilbert et al., 2021).

Test Lessons: various technological tools are used to test the comprehension of students regarding the lesson rather than just testing through checklists.

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 (Barnett, 1992).

Increasing student satisfaction and involvement in educational process is considered to be quality education. Educational institute that meets the needs of students is loved by the learners and thus it means the enhancement of quality education. Recently, almost all institutes are considering the importance of quality education by taking into consideration, the satisfaction of the learners (Razinkina et al., 2018). A study was conducted with the purpose of which was to find out the major elements that highlight quality education. The study focused students' satisfaction as an element of quality education. Successful learners are those who are fully satisfied with their learning environment and pedagogical practices. It was a survey study where the responses of the participants were recorded for collecting data. The total 4040 students participated in the survey. The results of the study highlighted certain elements that play a role for increasing student satisfaction such as opportunities for creativity and self-fulfillment, wide information support, supportive environment, sufficient facilities, comfortable environment and extra-curricular activities. The results indicated that quality education in higher education can be assessed only with the fact that students are satisfied or not. It highlights the importance of several elements that act as an indicator of students' satisfaction (Tokareva et al., 2019).

The implementation of innovative technologies that increase the performance of students is not an easy job. Innovative technologies need a careful assessment for the implementation of the technologies to use at university level (Gregory & Lodge, 2015). A study was conducted to solve the problem of quality indicator innovative technologies that reduce the economic problem. The study results highlighted 4 quality indicators of using innovative technologies. The factors included efficiency, effectiveness, adaptability, and free of technological risks. The quality assessment of the innovative technology included assessment of novelty, assessment of feasibility, assessment of demand, and significant effect. Moreover, assessment of efficiency, effectiveness, adaptability, and technological risks was also done by the researcher (Ismagilova, & Sukhova, 2016).

Methodology

This research study was conducted to explore the university teachers' perspectives regarding the impact of innovative technologies on quality education. It was a qualitative study conducted with the phenomenology design. It was a follow up study of a quantitative study. So the sample for the study comprised of 6 teachers selected purposively from the university teachers who were sampled for the quantitative study. The sample was the representative of the teachers from the public sector universities based in Lahore. The data was collected with the help of a semi-structured interview protocol comprising eight questions. The data was collected by the inquirer(s) while visiting the participants personally. Thematic Analysis was used to analyze the data.

Results

The researcher collected qualitative data through interviews. Interviews of six teachers were conducted to explore in-depth views of the participants regarding innovative technology and quality education. Qualitative sample was collected through purposive sampling. Qualitative data was analyzed by thematic analysis. The inquirer (s) asked 8 questions from a sample of 6 teachers to get their views regarding the phenomena. The inquirer(s) asked the question that "What is your opinion about incorporating new technologies in class room? How they are helping you?" and the teachers answered the question with a quite positive perception. Teachers felt that incorporating innovative technology into classroom is very beneficial for engaging students and students pay more attention with the help of innovative technologies.

Incorporation of Technology into Education

When the teachers were asked that how do they feel regarding the incorporation of the technology into the education, majority of them responded positively that they found the technology helpful regarding the lesson planning and delivery as well. The respondents gave their views that:

Yes! These are very helpful in lesson planning as well as delivering lecturer. (R-1)

Yes. It's a good experience. Using gadget makes my lecturer more engaging. (R-4)

It's good to use gadgets in the classroom activities; students pay more attention to these gadgets. It keeps them motivated. (R-3)

However, the haphazardness was also felt by a teacher while using the technology during the Covid-19 as there wasn't any proper training given to teachers for embedding the technology into their teaching. A respondent was of the view that use of technology in the wake of COVID-19 was very haphazard as they lacked proper training, experience and management of resources but later on they found it very convenient and had a good experience using technology.

The way we started it all during COVID-19, it was very hap hazard. But now things are settled down and we have become comfortable with these technologies. It's a good experience.

Satisfaction regarding the Facilities

The inquirer asked second question from the respondents that "Are you satisfied with the facilities provided by your institute?" and the respondents' views were quite unsatisfactory. Majority of the respondents were of the view that the institutes do not provide adequate facilities but there is room for more.

Not much. It will take time to cope with these things in our education system. Government should take some healthy measure for this.

No. not at all. We need government support in this regard. Facilities are there but they are not sufficient.

Yes they are sufficient. But of course there is room for more.

However, some respondents were of the view that they were quite satisfied with the facilities provided by the institute.

Yes we are getting good facilities here.

Yes, to some extent I'm satisfied.

Need of Training for Innovative Technology.

The researcher asked third question from the respondents "How much these technologies helped you in your professional development so far?" and the views were quite different. Many respondents were of the view that innovative technologies could help them a lot if they had a proper training for using them. Teachers lack experience and training for using technological devices that is a big hurdle in their way of attaining perfection.

Actually it could help a lot in our professional development if we could have proper training for this.

Yes I learned a lot during these 2-3 years. buti must say that we lack training.

Experimenting from past few years, I really don't much in favor of experimenting on our own without training. It wastes a lot of time when we are not familiar with some new software or technology.

However, some respondents were of the view that the use of innovative technology has increased their exposure, confidence and skill. They were quite satisfied.

It's much like experimenting on our own. but still it enhances my exposure.

It's a good experience. I have learned a lot and love to engage with new technologies.

I feel equipped.

Of course it enhances my exposure it felt empowered.

The researchers 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.

We need to incorporate proper training in study schemes for students as well as teachers if we want to move with the world outside, hoping for technologically equipped class rooms in future that's the need of the hour.'

I hope things go in right direction. HEC is taking good initiatives in promoting technologically equipped courses for students as well as teachers. So I'm hopeful

Long way to gait is time taking process especially in the education system we are running on conventional patterns for so long.

Difference b/w Online and Physical Learning

The researcher asked fifth question from the respondents “How different is your present teachings style, if you compare it with 3 years back scenario?” and the respondents said that although the style is not different and there is no great difference in teaching mode yet they had a good experience of using technology.

3 years back we were delivering lecturers on multimedia, and during COVID-19 it shifts to zoom. So style is not much different.

I can say that gadgets are replaced. But teaching style is not much changed.

Yes it's different. Handling online class is quite difficult as compare to delivering face to face lecturer.

Style is same but pattern is different. But I prefer conversational pattern. That was I have my comfort level with that.

Ensuring the Quality of Education

The researcher asked sixth question from the respondents “Is it adding (using technology) value to quality education?” and the views were very positive as they feel that use of innovative technology adds more value to learning and quality education.

Yes it letting us to have access to unlimited resources. We are getting familiar to ways the world is practicing.

Yes it is adding value when it comes to new trends, but here in Pakistan we are unable to implement things in proper way to take ultimate benefits.

If we say education that makes you earn. Then yes technology is the key source and need of the hour.

To ensure quality of Education we need to improve our assessment system. Technology is empowering you with skills.

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.

Yes definitely. Institutions should provide training on this.

Definitely, who don't need to improve?

Yes... It has become mandatory.

Future of Technology in Education

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.

This is uncertain era and we need to have grip on technology. It is necessary for economic growth of Pakistan. I hope government will take some big measure in this regard.

If we have a stable government and a stable educational policy, then definitely we can have bright future, other otherwise things are going to remain lingering between present and future.

If we want to cope with the world outside we have to have technologically equipped teachers, students and institutions.

Yes I can see a bright future Pakistan in this regard but it is time taking.

Thus, the data shows that teachers in Pakistan need proper training and skill to learn innovative technology as they are willing to get professional training and improve the system of education. Empowering teachers with innovative technology is the main point in getting quality education as technology can have a strong impact on quality of education.

Conclusion

It has been concluded based on the results that the teachers find the innovative technology helpful in planning the lessons and teaching the students. However, the lack of the facilities along with the training to use the innovative technology while teaching have been reported by the teachers. Furthermore, it is revealed that the innovative technology has a positive impact on the quality of the education.

Discussion

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 et al., (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 highlighted that the use of modern technology has a strong impact on the quality education. The findings of another study conducted by Bozalek et al., (2013) are parallel to the findings of this present research. 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, and semantic applications.

Recommendations

Based on the results, it has been recommended that the universities should ensure the availability of the resources for embedding the innovative technology into teaching. The teachers' training regarding the use of innovative technology is most important and should be ensured.

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