US-China Education Review A, Nov.-Dec. 2022, Vol. 12, No. 6, 248-254
doi: 10.17265/2161-623X/2022.06.006

Pedagogical Innovations During a Pandemic at University Level in Pakistan

Momna Azmat, Ayesha Ahmad
Sir Syed College of Education & Professional Training Campus X, Wah Cantt, Pakistan

Pedagogical innovations abound at the university level during a pandemic. The study aimed to investigate the pedagogical innovations during a pandemic at the university level in Pakistan. The study also aimed to find out problems teachers faced while adapting pedagogical innovations. The study will be helpful for all educationists and practitioners. The mixed study attracted the participation of faculty from 10 public sector universities of Punjab (Pakistan). The population of the study were 700 teachers. 248 teachers were selected randomly as a sample by L. R. Gay Table. The questionnaires were distributed online. Quantitative data were analyzed through percentage and qualitative data were analyzed through thematic analysis. The findings of the study revealed that teachers used videos, and shared the screen with students to clear their concepts. There are a lot of pedagogical innovations which teachers adopted during a pandemic. It includes flipped classrooms, audiobooks, social media for collaborative learning, and simulation games. The results suggest that teachers faced problems with innovations at the beginning of the pandemic because they were not prepared for the situation and they faced problems in using and implementing educational technology. It is recommended that there may be some software and strategies for teaching in a crisis because these uncertainties can happen again.

Keywords: COVID-19, pedagogy, innovations, teachers, uncertainity, university level

Introduction

COVID-19 has caused schools all across the world to close. Due to lockdown, all education systems shifted towards remote classes. So, there was a lot of innovations in the education system (Brooks, 2020). Pedagogical innovations are a method of reinventing teaching methods in order to better promote student learning (Perez Canado, 2018). Innovation is fundamental, therefore, and it must reach right into the pedagogies practiced in schools and classrooms around the world. Pedagogical expertise is at the core of teacher professionalism, and so promotion of such expertise is fundamental. There are a lot of pedagogical innovations both for theory and practice during a pandemic that include flipped classrooms, audio books, pdfs, social media for collaboration, and simulation games, etc. (Ferguson, 2019). Teachers faced many problems in the beginning to adapt these changes (Deng & Carless, 2010). There were lot of studies on the pedagogical innovations during pandemic but to check the pedagogical innovations in theory and practice is not sufficiently covered. The objectives of the study were to:

- investigate the pedagogical innovations during a pandemic;

Momna Azmat, Sir Syed College of Education & Professional Training Campus X, Wah Cantt, Pakistan.
Ayesha Ahmad, Lecturer, Department of Education, Sir Syed College of Education & Professional Training Campus X, Wah Cantt, Pakistan.

- find out problems teachers faced while adapting pedagogical innovations.

Literature

Expectations regarding new information and communication technologies' (ICT) potential for and contribution to the advancement of education are raised by their swift and widespread adoption in the educational system (Goodyear, 2015). Online learning appears to be the most effective approach and a promising alternative to ensuring the sustainability of teaching-learning activity in the midst of the COVID-19 outbreak. Nowadays, we have to be aware of the significant impact of COVID-19 outbreak on education system, in which online learning through digital platforms is becoming a new habit and style of learning, even in the post COVID-19 era. In this context, students' perspectives toward learning and motivation are highly influenced by their interactions during the academic activities (Azmat, 2022). We are still at the beginning of a lengthy process, despite the rapid deployment speed of ICT infrastructure in the educational system, including connectivity to the Internet (Venezky, 2001).

A complex system of dynamic processes called "educational reform" includes improving student performance, adapting to environmental changes, changing instructors' behavioral patterns, and changing the school's identity (Fullan, 2001). Numerous studies focus on the elements that promote or prevent educational transformation in general, and especially in connection to ICT (Nachmias, 2004). Some place more emphasis on organizational factors and the methods used by the organization, in this example the school, to be ready to adopt changes to its operations. Others place more emphasis on the role of teachers and the ways in which they respond to the need for change. Others investigate how factors outside the school affect the adoption of ICT-based innovations (Azmat, 2022).

Since many nations have already started implementing education reforms intended to alter both the objectives and methods of education, the study of educational innovations has gained growing attention in academic circles all around the world (Javaid, 2021). There is also a general expectation that the use of ICT in the teaching and learning process will enable or assist such advances (Law, 2005).

Additionally, pedagogical innovation must really lead to transformation, i.e., a real change that has beneficial repercussions, rather than merely remaining a concept or a desire to change (Walder, 2017). Innovation can improve a situation, but it should not be used to solve problems because it presupposes creativity and uniqueness. Innovation aims to bring about a favourable change through deliberate and accurate acts of creation (Shuhratovich, 2020).

Research Methodology

A study using a mixed-method approach yields a better and broader understanding of the phenomenon than a study using either qualitative or quantitative methods. This integration also increases readers' trust in the findings and conclusions reached by researchers in the study (Hurmerinta-Peltomäki & Nummela, 2006). The population of the study was comprised of all the faculty of public sector universities of Punjab (Pakistan). The population was 700. The sample was randomly selected. The sample size was 248 by using L. R. Gay Table (Gay, 2000). The sampling process was carried out using a simple random sampling technique to guarantee that each sample had an equal probability of being chosen for the study. The researcher used questionnaires for collecting the data of the study. The researcher filled out the questionnaires through online means. The process of data analysis began after receiving all filled questionnaires from the respondents through the Statistical Package of Social Sciences (SPSS) software, Version 26. Quantitative data were analyzed by percentage while qualitative

data were analyzed by thematic analysis.

Conceptual Framework

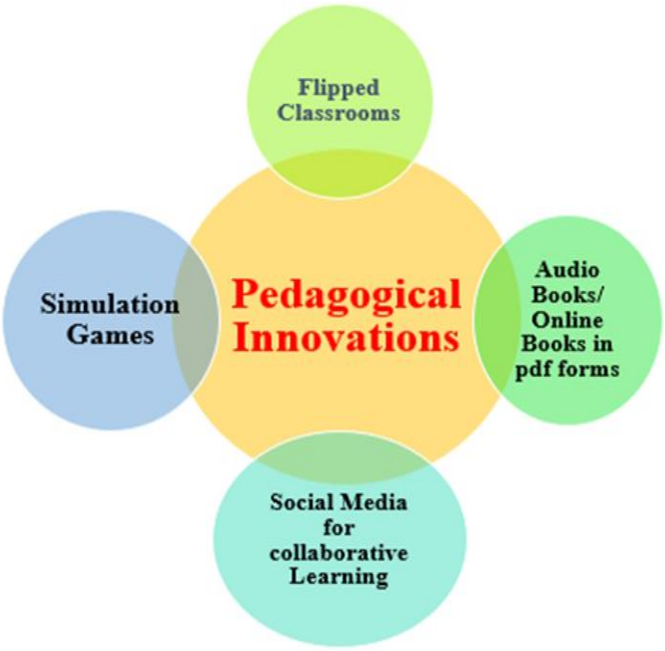

Figure 1. Pedagogical innovations.
Source: Self-developed conceptual framework of pedagogical innovations.

Validity and Reliability of the Instrument

Experts opinion was used to assess the instrument's validity. The expert's suggestions and opinions were incorporated into the questionnaire and taken into account for future improvements. Consistency is known as reliability (Tavakol & Dennick, 2011). Reliability is a level of uniformity, stability, or regularity. The consistency level where the identification is gauged is estimated or calculated. The value of Cronbach alpha was 0.884 which is highly reliable.

Results

Result of Quantitative Study

Based on collected and analyzed data, the following findings were drawn:

Table 1

Teachers' Perceptions Regarding COVID

Statements	Frequency	Yes	Neutral	No
Familiar with the technology at the time of pandemic	248	40 (16%)	8 (3%)	200 (81%)
Attend training courses to deal with teaching technologies and procedures	248	86 (35%)	15 (6%)	147 (59%)
Follow lecture method in online classes	248	138 (56%)	11 (4%)	99 (40%)
Easy to use online boards	248	60 (24%)	06 (2%)	182 (73%)
Share screen with students	248	166 (67%)	25 (10%)	57 (23%)

Table 1 shows that the majority of teachers were not familiar with the technology at the time of the pandemic. So, they attended training courses to deal with teaching technologies and procedures. But, majority of teachers were followed lecture method in online classes. Teachers struggled with using online boards and agreed to share their screens with students during lectures.

Table 2

Teachers' Preference in Online Classes

Statements	Frequency	
Most common technology which teachers used most at the time of pandemic.	248	Zoom (59%) WhatsApp (22%) Google Meet (19%)
Source used to share notes with students.	248	PowerPoint Slides (57%) PDFs (31%) Online Books (11%)

Table 2 shows that the majority of teachers used the Zoom App for online classes. They shared notes with the students in the form of slides.

Result of Qualitative Study

Thematic analysis is the process of identifying patterns or themes within qualitative data. The goal of thematic analysis is to identify themes, i.e., patterns in the data that are important or interesting, and use these themes to address the research or say something about an issue. This is much more than simply summarizing the data; a good thematic analysis interprets and makes sense of it. Braun provide a six-phase guide which is a very useful framework for conducting this kind of analysis. There are six steps of thematic analysis that the researcher as it is followed in the analysis of open-ended questions (Brown, 2014).

- Become familiar with the data;
- Generate initial codes;
- Search for themes;
- Review themes;
- Define themes;
- Write-up.

Clear the concepts of students in online classes. Some teachers used charts and diagrams to clear the concepts of students in online classes. The majority of teachers used videos and shared screens to make students' concepts clearer. Few teachers said that they gave daily life examples to students but, it was not satisfying as in the physical classroom.

Assign projects to the students in online classes. The majority of teachers used Google Classroom to assign projects to the students. Also mentioned deadlines there and after the deadline, they marked assignments online. Majority of teachers assigned group presentations to the students.

Pedagogical innovations. There are a lot of pedagogical innovations which teachers adopted during a pandemic. It includes flipped classrooms, audiobooks, online books in pdf forms, social media for collaborative learning, simulation games, etc.

Readiness for digital instructional practices. The majority of teachers were not ready for online classes. It was the first time that all educational institutes were shut down.

Problems faced at the beginning of pedagogical innovations. Teachers faced a lot of problems at the beginning of pedagogical innovations. Some problems are as follows:

- Lack of technology know-how;
- Content restructuring;
- Shortage of facilities;
- Restricted time;
- Lack of expertise in online teaching;
- Uncooperative learner attitudes;
- Lack of cooperation from learners' families;
- Lack of ICT knowledge;
- Teacher's technological confidence;
- New learning style confidence;
- Poor content development;
- Training of teachers;
- Knowledge management;
- Online class announcements via social media;
- Creative lecture preparation.

Issues faced in online teaching practices. The majority of teachers faced internet issues in online teaching practices during a pandemic. Noise disturbance was also an issue that most teachers faced.

Discussion

The present research was aimed at investigating the pedagogical innovations during a pandemic. It also seeks to identify issues that teachers encountered while implementing pedagogical innovations.

Concerning the first research question to investigate the pedagogical innovations during a pandemic at the university level in Pakistan, according to the study's findings, there are a variety of pedagogical innovations that teachers adopted during a pandemic that include flipped classrooms, audiobooks, online books, the use of social media for collaborative learning, simulation games, etc. This finding is consistent with the findings of Ferguson (2019) who reported that there are a lot of technical changes in education due to online classes.

The findings for the second research question on the problems teachers faced while adapting pedagogical innovations revealed a lack of technology know-how, content restructuring, shortage of facilities, a lack of expertise in online teaching, and a lack of ICT knowledge. This finding is similar to the findings of Nachmias (2004) who reported that teachers faced various problems at the beginning of lockdown. This finding contradicts the findings of Law (2005) who reported that the use of ICT in teaching and learning was convenient in online classes.

Conclusion

1. The majority of teachers were not familiar with the technology at the time of the pandemic. They did not attend any training sessions. Even in online classes most teachers still followed the lecture method of teaching.

2. There are a lot of pedagogical innovations during the pandemic. Teachers used Zoom, Google Meet, Google Classroom, Online Books, and PowerPoint Slides to deliver the lecture.

3. At the beginning of the pandemic, teachers faced a lot of problems in adapting to change in the education system such as lack of technical know-how, shortage of facilities, restricted time, lack of ICT knowledge, creative lecture preparation, etc.

4. The majority of teachers faced issues in adopting new pedagogies because they were not ready for a sudden change in the education system.

Recommendations

Based on findings and conclusions it is recommended that:

1. Teachers were not familiar with the technology at the time of the pandemic and they did not attend proper training sessions. It is recommended that teachers may attend the training sessions to become familiar with innovations in teaching methods and educational technology.

2. There was a shortage of facilities at the time of the pandemic. So, it is recommended that proper resources should be provided such as technical facilities laptops, mobile with fast internet connection.

3. Teachers encountered difficulties with content restructuring; therefore, it is recommended that teachers prepare all lectures for both physical and virtual classes.

4. Teachers lacked confidence in educational technologies, so it is suggested that teachers use online tools on a regular basis.

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