

Exploring Creation of Connected Classroom in Rural College: Students perspective on Challenges and Implications

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Abstract

This study is based on an intervention of the connected classroom to seek out the teaching faculty shortage alternative. Two Government colleges, rural and urban colleges, coordinated for the intervention of the connected classroom through a software application 'Skype.' The urban college serves as the host institution. The urban college teacher delivers lectures to two classes simultaneously, through 'Skype' for rural students and face-to-face class interaction for urban colleges. The experiment was continued for four months to teach chemistry subjects. A focus group discussion was arranged for the class students after the successful completion of the connected classroom experiment. The data collected from the focus group discussion revealed that the participants enjoyed and appreciated learning through the experiment of the connected classroom, and they were satisfied at the end of the intervention. They expressed the learning through the connected classroom can be a useful alternative for the colleges facing the problems of shortage of teaching faculty. Students were happy that they got the opportunity of the connected classroom at the right time, and they completed their course well in time even when the teachers were not physically present there in the college. They consider the connected classroom is vital to reduce the distresses of poor village students. They say the permanent implementation of this strategy can assist and help rural students during the non-availability of teaching faculty.

Keywords: Connected Classroom; Educational Technology; Learning; Teaching Faculty; A Qualitative Study.

Introduction

Education plays an imperative role in the life of every person. Education develops an individual's skills, competencies, outlooks, behavior, and attitude (Saleem & Shah, 2015). There is no adequate access to education in developing countries. In Pakistan, while considering higher education, science subjects particularly and humanities subjects generally are not in rural people's access. Because rural areas have only a few colleges, and these colleges have an acute shortage of teaching faculty. The existing faculty manages the teaching humanities group and compulsory subjects. The rural students are deprived of their basic rights, and they cannot get the education of their own choice. They cannot use their academic potential because they don't have the choice to choose subjects of their interest.

Remote and rural communities worldwide, including developed countries of the world, like the United States, face limited access to higher education for their rural area students (Ellen, 2001). The wave of new technologies comprising over the last 20 years strongly supports the change in the learning process (Facer, 2011). Emerging technologies have the potential and capacity of sharing and learning from a worldwide community that includes participants' customizable outcomes (Davidson & Goldberg, 2009). Technology brought a change in the process of learning. Being a learner and educator, it is our responsibility to become a part of this worldwide community and accept the change (Harasim, 2012). Global pedagogical practices through different mediums should be adopted by using new technology that promotes informal learning and collaboration. (O'Connell, 2016)

The connected classroom can be introduced in the rural colleges to overcome the teaching faculty shortage. It is one of the technological innovations. Advanced technology tools are used to connect classrooms by using online-networks and promote human learning resources through

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collaboration with the communities of personal and professional learning networks (Siemens, 2005). With a focus on collective and individual learning capacities, it seeks to build up to teach communities (Ito et al., 2013). It was observed that in Pakistani rural and remote areas, opportunities are limited in colleges for higher education. Students move to colleges after completing their secondary education in rural areas. There they don't get enough options to choose subjects of their interest in the rural colleges because of the non-availability of the teaching faculty. As a result, students are compelled to select subjects in which they don't have any interest, or they move to cities to avail educational opportunities of their choice. Another sad factor is that many students don't have enough financial resources for traveling and getting admission to urban colleges to get a quality education. This study introduced the connected classroom technology for remote and rural communities at college to improve students' enrollment in colleges of the rural area instead of moving to urban colleges. Also, it helps to overcome the issue of subject teacher shortage at rural colleges as well.

Objectives of the study

The study was carried out with the following objectives:

1. To find the problems of rural college students about their learning.
2. To try out the possibilities of implementation of the connected classroom for rural and remote colleges.

Research questions

The study comprises the following research questions:

1. What problems do students face in rural colleges?
2. What are the views of rural college students about their learning through the connected classroom?

Literature Review

In the current century, developing countries are struggling in the field of science and technology, and they know the importance of knowledge and learning. The living and thinking style and work patterns of human beings are transformed through innovative technologies (Grabe, 2007). Technology plays an important role in transforming educational institutions so that they prepare their students to meet and compete for the highest standards of a knowledge-driven society (Ghavifekr, 2012).

A connected classroom is a network-connected system of technological equipment such as computers, multimedia, and internet with the updated instructional software (Penuel, Abrahamson &, Roschelle, 2004). A connected classroom provides a learning environment in which teachers, lecturers, pupils, and students can learn together without traveling requirements. The connected classroom, in an educational context, is a very useful technique that facilitates a live exchange among different locations (Leiss, D et al., 2016).

Connected classroom as a teaching method

It is generally observed that traditional teaching methods are not much effective, and learners prefer learning through new and modern learning methods, which are more flexible and interesting (Abdous, 2010). Connected classroom strategies encourage learners to expand their thinking beyond the boundaries of formal classroom strategies. Through project-based learning, the connected classroom is a useful learning opportunity for pupils to enhance knowledge, develop models, and create innovative ideas (Delay et al. 2008). The main characteristics of a connected classroom are relevant to the learning experience, leading a broader educational community, and collaborative work (Bauer, 2010). A connected classroom can help to develop peer relationships based on cooperative work and similar interests. Cooperative work and peer feedback promote the exploration of important topics and enhance education quality positively (Hattie, 2003). The use of a connected classroom regularly improves teachers' technological skills. (Harper et al. 2010).

Connected classroom a – technology

A connected classroom has different models for students, such as live video streaming with real-time Twitter feeds, email, or conference calls (Abdous, 2010). The connected classroom technology is useful for students living in rural areas. Mitchell et al. (2010) conducted research that reflects that the teacher prefers technological base teaching over their traditional teaching methodology. The technology adoption in the teaching process enhances the professional development of teachers, online collaboration and promotes inquiry projects (Harper et al., 2004). Recent studies emphasize

technology use in normal classroom settings that must be according to the pedagogical style of a teacher (Al-Qirim 2011 & Warwick et al. 2010).

Research Methodology

The present study is phenomenology. The researcher describes the lived experiences of all participants in the phenomenology study (Creswell, 2014). In the current study, after the experiment of the connected classroom, students were selected for a focus group discussion about their learning experiences with new technology. As the study is based on the creation of a connected classroom, two government colleges, i.e., rural and urban, were selected. One was a rural college located in a remote area. This college was an ideal institute for the creation of a connected class. This was the only girls' college established by the government to facilitate female students of about 45 villages. There was an acute shortage of teaching faculty. Students were facing academic problems in the learning process. There was a requirement for innovative connected classroom technology to overcome the problem of teaching faculty shortage. The host college was located in the main city of Punjab province. The urban college was well organized and facilitated with ICT equipment for the creation of a connected classroom. The urban college was also selected as the host classroom as per the requirement of the connected classroom. This institution has all the necessary facilities. A high-speed uninterrupted internet facility, ICT equipment, and availability of teaching faculty members were the main features of the host college. Technical persons were also available for assistance.

Procedure of the Study

After talking to teachers and students of the rural college, it was decided to teach Chemistry subjects, because no teaching staff was available for chemistry subjects in the college. After a little struggle, administrative authorities granted permission to experiment with the connected classroom. Provision of all basic infrastructure was the next challenge for the experiment. No technological equipment was available in the college. In this situation, it was decided to provide the necessary equipment to the college such as a laptop, a high-quality sound system, a microphone, a projector, power cables, and a strong internet facility. College management provided a room where all necessary equipment was installed. A technical assistant was locally arranged for this purpose. On the other hand, a Charji EVO for internet connection and a laptop were handed over to the teacher of the chemistry of Urban College. A software application, 'Skype' was installed on the laptop for the lesson delivery. A camera was also installed on the appropriate location in the classroom of the urban college for a clear view of the whiteboard and teacher.

The timetable of both colleges was adjusted so that the chemistry class can be started at the same time in both colleges. The connected classroom experiment was conducted for four months. Every week six classes of chemistry subjects were conducted through the connected classroom. The duration of each period was 45 minutes. During four months, a total of one hundred and three classes were organized. During the sessions, a chemistry teacher dedicatedly delivered lectures from urban college to both classes. She delivered lectures through 'Skype' for students of the rural college; at the same time, she was available for her class through face-to-face interaction. The researcher was a participant-observer in the rural classes during the session of the connected classroom to manage the technical and internet connectivity issues daily. At the start of the intervention, it was a much challenging task, but with time after a few classes, things become easier. All the connected classroom sessions were interactive, and the teacher used different instructional methods to teach students. After four months of intervention, a focus group discussion was organized for students of the rural college. These students participated in the classes through 'Skype' during the session.

Data Analysis

The research was purely qualitative. The data is based on five focus group discussions with students. With the permission of all participants, focus group discussions were audio-recorded. The data was transcribed word to word and analyzed through coding. At the first stage, open coding was done that helped to cover all the essential information. After that, themes were generated according to the system theory framework. System theory focuses on "A systems view of the world and the elucidation systems thinking as an approach to theoretical and real-world problems" (Banathy & Jenlink, 2004, p. 39).

Finally, concept maps were established based on the Systems theory framework. Individual needs, integration, beliefs and views, the accomplishment of needs after coordination were the concept map's main categories. System theory deals with problems of the real-world. The problems

discussed in the current study were the educational problems of students of the rural college. While dealing with real-life issues, the system theory identifies individual needs. The individual needs concerning the particular study are the rights of getting better educational opportunities. The educational needs are discussed under the themes of why they get admission to a rural college that is derived from the data. After identifying individual needs, system theory gives importance to the beliefs and views of the individual of the particular society. In this study, from the concept of beliefs and view, the theme of learning opportunities was generated, keeping in view the data of focus group in which the students’ views are taken about the learning opportunities provided them in rural college. The next component of system theory is the integration related to the theme of connected classroom technology and student learning. A connected classroom was created through the technology integration into classroom learning. Coordination is another important element of system theory. In this study, with the coordination of two institutions, a connected classroom was created.

At the last step, the system theory focuses on the individual’s need accomplishment as in the current research; the connected classroom was used to help rural students. Themes of students’ interest and suggestions for improvement of the connected classroom were generated from the concept of accomplishment of needs.

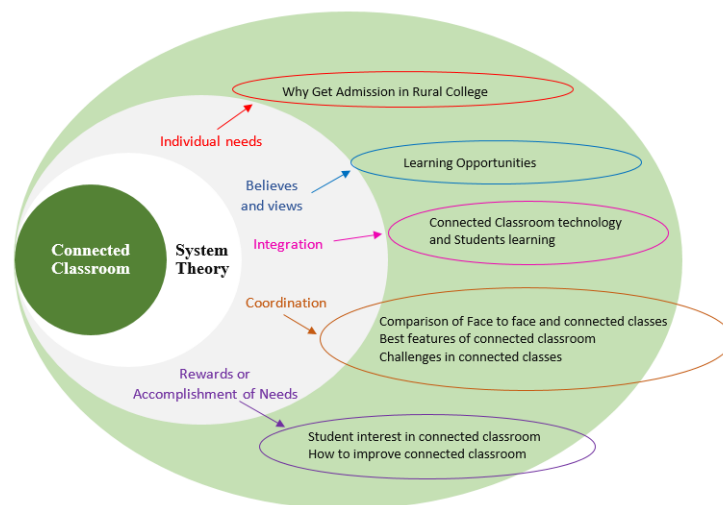


Figure 1. Concept Map theme’s generation from data in the light of system theory

Results

To know the students’ views and examine their experiences of the connected classroom and the issues they faced in the rural area college, a focus group discussion was conducted. Five groups of students were created, and each group containing six students. The discussion emphasizes and focuses on the importance of the connected classroom after identifying the problems of rural students and finding their solutions.

Why get admission in a rural college

Students said that they got admission to this rural college because of its easy accessibility. This is located near to their homes. Some of the students said that they belong to poor families, and their families couldn’t bear the educational expenditures of any urban college. They couldn’t afford hostel and transport charges. It is important to mention parents of many students belong to the labor class. In some families, it is taboo due to cultural restrictions; therefore, they avoid sending their daughters to cities for higher education. A student said, “It is very difficult for my parents to pay monthly and admission expenditure of my study even in a rural college. It is, therefore, impossible to think about the admission in any other urban college.”

Learning opportunities

Learning opportunities refer here to all the opportunities and facilities that are conducive to learning. The learning opportunities necessary for the learning process include the availability of competent staff, well-established libraries, well-equipped science laboratories, a computer lab, and all basic learning facilities. But it is a sad reflection that this college is deprived of those necessary facilities for the provision of a healthy learning environment.

When students were asked about the learning opportunities provided to them in the college, they were disappointed. The reasons for dissatisfaction were an extreme shortage of faculty, teachers’

transfer from college, the late joining of CTI (college teacher internee) and their leftism, lack of basic facilities like IT lab, library, sports opportunities, provision of drinking water, sanitation, and no transport. One of the students described this issue in the following words “The College has a magnificent building, wide playground for sports activities, well-furnished and ventilated rooms, but these facilities are not appropriately utilized. A big room is available for the library, but there was no book. The equipment is not sufficient for a well-built science lab. A big hall is available for the computer lab, but there was no computer, and only three permanent teachers are available in the college. The college depends on CTIs (college teacher internee) to overcome the problem of teaching faculty shortage. CTIs often left the job during the session when they get some better job opportunity”. Their dissatisfaction can easily be envisaged from the last first-year result, which was only 10%. While talking about their dissatisfaction, one student commented, “I want to become a medical doctor, but my future place and dreams devastated due to my bad performance in annual exams of first-year. Nonavailability of the subject teacher was the major cause of my poor result.”

Students learning & connected classroom technology

At the end of the experimental process, students considered the connected classroom one of the best options for students learning in rural colleges facing the shortage of teaching faculty. The connected classroom was an innovative opportunity for them to complete their course well before time. They didn't waste time on gossips and utilized their time productively. Some of the students called the connected classroom an innovative learning, a great blessing, and a time-saving teaching method. It enabled students to complete the chemistry syllabus, clear problematic concepts, and reduce their academic stress. One student expressed his thoughts in these words, “this innovative strategy of the connected classroom facilitated us at the right time.”

Comparison of the face-to-face and the connected classes

Students said there was no significant difference between both teaching methodologies. They were interacting with the teachers in both cases to clarify their queries. Some of the students said face-to-face learning was comparatively easy and suitable. In face-to-face learning, they could ask questions to resolve queries without any hesitation. Teachers are available for 45 minutes in online mode, and there is less opportunity to interact with the teacher in this short time. Therefore, in online mode, it takes some time to familiarize students with teachers.

Students' interests in a connected classroom

Students called the concept of the connected classroom a substitute to face-to-face teaching in the absence of teaching staff. It saves time, facilitates students academically, and helps them to complete their syllabus well before the end of the term. Many students expressed that during the absence of teaching faculty, this could be an instant solution for the rural colleges. Students called the connected classroom a miracle. One student said, “It was a miracle that helped us at the right time and reduced our worries by completing our syllabus.” All students liked to participate in the connected classes as it was a new learning model for them; moreover, this was the only solution in their hands to complete their syllabus. Instead of wasting time on gossips and remain idlers, it's better to involve in teaching and learning. The connected classroom is the best way to complete the course work in the absence of teaching faculty in the rural college. As per students' point of view, the same strategy could be introduced for all rural colleges facing the teaching staff shortage. Students said that “Connected classroom is a blessing of Allah that helps us.” Another student commented, “The innovative idea of the connected classroom brought a revolutionary change in our learning and achieving the educational goals.” We were depressed at the beginning of the academic session in the 2nd year due to the non-availability of teaching staff. However, the connected classroom suppressed our worries and enabled us to focus on the studies with devotion. We completed our course work and learned new ways of acquiring education in the sessions of the connected classroom.

Best features of the connected classroom

The best features of the connected classroom are highlighted in this theme. The responses from students reflect the adoption of connected classroom technology is the best option and online teaching facility for the students of rural area colleges. Poor economic conditions of parents in the villages don't allow them to send their girls to urban colleges for higher education. On the other hand, the teaching faculty shortage in the rural area colleges is also destructive to the student's future. In these circumstances, a connected classroom is one of the best alternatives that successfully replaces the face-to-face teaching method. According to students, the connected classroom is a blessing in crucial

times. It is time-saving to cover their syllabus well before time, cost-effective with the potential to replace the teaching faculty shortage, and a wonderful intervention that provides solutions to their academic problems in the rural area colleges. One student explains that “A connected classroom enables a teacher of an urban college to take many classes simultaneously, and this strategy is cost-effective.” One student said, “Delivering the online lecture through connected classroom is a perfect solution adopted by the teacher to facilitate students who are facing the problem of shortage of teachers.” Another student said, “Rural students cannot afford better education in urban area colleges and get admission in rural area college but academically suffers badly. Using advanced technology such as a connected classroom setting is a blessing for underprivileged students of villages.”

Challenges in the connected classes

This theme highlight different challenges encountered during the implementation process of the connected classes technique. The connected classroom technique is a modern and educational technology feature. It is obvious that everywhere, rural areas have a lot of issues related to the utilization of educational facilities. Hosseini, Niknami, and Chizari (2009) define that all rural communities across the globe do not have enough resources to get benefits from ICT (information and communication technology).

Some of the problems involved during the establishment of a connected classroom are internet connectivity issues, electricity failure. The instability in internet signals results in poor voice and video quality during class sessions. If the internet fails for the whole period, in such a condition, the next consecutive session becomes more challenging, and students face difficulty in understanding the next topic. During dis-connectivity or internet failure, students make noise and are getting involved in gossiping with each other. One student stated that “Once there was a problem with the software application ‘Skype’ and the video lecture was playing without any sound. We were able to see the teacher but unable to hear what she was saying”.

How to improve the connected classroom setting

There were many useful suggestions from the students to enhance and improve the quality and applicability of the connected classroom setting. These suggestions include the availability of high-speed internet to avoid any dis connectivity problem, an alternate electric power supply such as generator or UPS to overcome the problem of the sudden electric shortfall, and the appointment of a technical person will help attain the best results. They also suggested the availability of more microphones in class to enable maximum students to ask questions. Students suggested an introductory session should be arranged to familiarize them with the connected classroom and technological equipment used.

Discussion

The implication of a connected classroom is the focus of this study. It also investigates the opinions of the rural college students’ about the role and implication of the connected classroom during the absence of teaching faculty in their college. Unfortunately, higher educational facilities are not up to the required standards in rural area colleges. Well-furnished buildings are available in the colleges of rural areas but, educational and learning are unsatisfactory because of the non-availability of permanent teaching staff. Mostly the permanent teachers who belong to urban areas prefer to serve in urban area colleges. They avoid serving in rural colleges. If they get appointed in any rural area college through Punjab public service commission, generally, their priority becomes to get transferred to any urban area college. In the absence of an enthusiastic and permanent teaching faculty, it is challenging to provide quality education in any rural college. The connected classroom was planned to introduce in a remote rural college to introduce an alternative to resolve the shortage of teaching faculty. All set up for the connected classroom was arranged personally by the researcher.

Through focus group discussion with students, it was evident that they got admission to fulfill their dreams of getting higher education, but their dreams were not fulfilled. They were much worried about their studies. It was shocking when they told that during the first year of their FSc, they did not attend a single class of chemistry subject. Many of them wanted to be a doctor or engineer, but in the absence of a teacher, they got poor grades and unable to achieve their academic goals. They were suffering from severe mental distress. The connected classroom brought a ray of hope for them. They were surprised to know about this innovation. With the help of a connected classroom, they were able to attend online classes for four months. They have completed their syllabus of chemistry subjects. The teacher from the host institution helped a lot to complete the syllabus and clarify their concepts.

The teaching method and attitude of the teacher were satisfactory for the students. Students shared that a connected classroom proved to be a blessing of God for them. It was introduced at the exact time when they need it. Students also said that it is an amazing feature of technology. Information technology can overcome the problems of rural area students. Students said that the connected classroom was a cost-effective, time-saving, and innovative technique. It has the potential to overcome the issues of rural students. For those rural students who belong to the lower class and want to get a higher education, it is the best strategy for them. The student commented that connected class supports rural colleges to resolve the issue of shortage of teachers. Every year their college depends on CTIs (college teacher internee). Those CTIs join in October, but the academic session starts in August. Connected classes can be introduced at the start of the academic session to save students time and engage them in learning activities. There were some subjects like chemistry for which CTIs are not available. The connected classroom can be introduced for the whole academic session with the coordination of any other urban college, where relevant subject teachers are available. The review of related studies also supports the effectiveness of connected classrooms for remote rural communities.

Students suggested that more subjects should be introduced by using the connected classroom technique. So the poor villagers get the education according to their area of interest. Students describe they faced the challenges of power failure, connectivity issues, and technical problems that disturbed the lesson's flow and created disciplinary problems during the connected classroom session.

Conclusion

A major part of our population lived in villages. Rural areas' students have a great potential of getting higher education according to their interests. However, opportunities are insufficient. Financially strong people prefer to educate their daughters in urban colleges. But the majority of villagers belong to a poor community that cannot bear the expenditures of even the rural colleges. Education standard in rural colleges is unsatisfactory because of the non-availability of permanent teaching staff, and also this is one of the reasons for a limited choice of subject's selection in rural area colleges. The rural students are talented, but they are not getting a quality education, which is their fundamental right. The advanced strategy of the connected classroom by using modern technology may facilitate the deserving and talented students of the villages. Discovering the suitable alternative of teaching faculty for the colleges facing the teaching faculty shortage is the philosophy behind the intervention of the connected classroom. Students appreciated the connected classroom idea as it assisted them in completing their chemistry syllabus well in time. The connected classroom proved itself an advanced technique that can overcome the problems of rural students and can help them to cover their syllabus. It is concluded that a connected classroom technique is one of the best and cost-effective solutions to overcome the problems of faculty shortage.

Recommendations

The study recommended that the intervention of the connected classroom can be used permanently in rural colleges to facilitate rural students for those subjects for which teachers are not available. New subjects should be introduced with the coordination of well-developed colleges of the district and the remote rural colleges through the connected classroom.

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