Perception and Practices of ICT Integration in Higher Education Classroom

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Abstract

ICT integration in pedagogy has created the new discourse in our educational institutions. It has created the teaching learning is more challenging as well as productive. Gaining these insights, this study searched the perception and practices of ICT integration in higher education classroom and its integrating ways in teaching. This study used the qualitative research design whereas applied the phenomenological design to inquiry. For study, I selected the study area and informants through the convenient and purposive sampling respectively. The focus group discussion, in-depth interview and personal introspection helped me to understand the phenomena of ICT. The major finding is that the motivation factor is crucial for integration of ICT tools. The finding showed that ICT tools can integrate in six phases such as motivation, infrastructure development, training, bridge up, implementation, and monitoring. The ICT tools can be integrated through the brainstorming, self-presenting, collaborative, problem-based learning and project-based learning techniques/methods. The successful integration requires the support and training for the teachers and students. It always promotes the learning culture in supportive way and creates the opportunities to access in information to the users.

Keywords: *ICT integration, higher education, virtual learning, collaborative learning*

Introduction

In the era of technology, everyone and everything seems to have something to do with computers and communications (Aktaruzzaman, Shamim & Clement, 2011). Teachers and students are not exception to it. The technologies that the students use

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can contribute to the scientific and technological progress in the future through the computer and telecommunication. This demands specific process, store, retrieve, and dissemination of the information in text, sound and video form (Mbangwana, 2008). Today, the place of ICT in education and the world in general cannot be undermined. This has given birth to the contemporary e-commerce, e-government, e-medicine, e-banking and e-education among others (Ajayi & Ekundayo, 2009).

ICT have made a very profound and remarkable impact on the quality and quantity of teaching, learning, and research in the educational institutions (Ajayi & Ekundayo, 2009). It has improved the quality of education or raise attainment (Hennessy, Harrison & Wamakote, 2010). The application of technological advances has also influenced on every sector of society and helped to enhance the quality of education with the help of active and innovative exploration of ICT (Mbangwana, 2008). So, the people believe that ICT has the potentials to accelerate, enrich, and deepen skill of individual. They also believe that technology motivates and engages students in learning to help relate school experiences to work practices, helps create economic viability for tomorrow's workers, contributes to radical changes in school, and strengthens teaching and provides opportunities for connection between the school and the world (Ajayi & Ekundayo, 2009). The ICT literacy also helps to develop confidence in the teachers and assist them in integrating ICT into learning areas (Hennessy, Harrison & Wamakote, 2010). It is hoped that the professional teachers can use the ICT for extending subject knowledge, preparing for effective teaching and learning and developing the existing pedagogical practices of teachers (Leach, Ahmed, Makalima & Power, 2005). It is also believed that when the ICT tools appropriately used, it can serve as a vehicle and a platform for meaningful educational reform from didactic instruction to constructivism (Mbangwana, 2008).

ICT is the most emerging phenomena for the school and college education. It has created the new discourse of pedagogical transformation in education (UNESCO, 2014). ICT tools have helped me for upgrading my knowledge, skill and discovery learning. The information thus gained can be found easily for the betterment of learning. In my experience, knowing this importance, different universities of the country have set the mandatory rule for the use of IT as pedagogical approach. One of the reasons is that the new generation has been becoming familiar with the ICT tools and they are highly motivated to their use. Keeping this in mind, the policy documents like national curriculum framework (2007), school sector reform plan (2009-2015) and school sector development program (2016-2023) emphasized the need of information and communication in school's education. These documents advocated the essential of ICT tools for effective teaching and learning. Accordingly, it has been planned that the teacher should be trained in the use of ICT. It has also been planned that universities should develop the ICT friendly teachers through teacher education.

The ministry of education published the master plan of ICT in education which put the value of ICT for improvement of learning and easy access in information. Basically, it raised the four area of target like the development of infrastructure including connectivity, development of human resources, and development of digital learning materials and enhancement of education system in school education (MOE, 2013). This evidence through policy documents created the importance of ICT for the improvement of teaching – learning situation. Similarly, schools and colleges are the unit of society that have various technological tools, digital natives, and interest to learn via technology. These technologies are helpful to make students innovative and adept at overcoming obstacles (Bauer & Kenton, 2005) but the problems is whether stakeholders of education felt comfortable in the use information, communication and technology in school? This question needs answer prior to use ICT in classroom.

Koirala et al. (2016) revealed the necessity of ICT tools in schools. They suggest the ICT tools should be increased in schools for betterment of learning. They also found the positive indication of teachers, students and parents toward the ICT tools. Similarly, Parajuli (2015) also justified the necessity of ICT tools in higher education. He added that the mobile tool is most convenient tool for effective learning in higher education. He also emphasized the internet-based learning for supporting the drop out students. Similarly, he added that it is beneficial for those students who cannot attend the class regularly in higher education.

In this regard, the ICT is growing phenomena in education that directly and indirectly influence our schools and colleges education. However, the beginning situation is to know necessarily for the better intervention in the future. Due to these situations and fact realities, this study has tried to answer the questions such as a). How do teachers and students perceive about the use of ICT tools to integrate in their teaching and learning? b). How do they use the ICT tools into their teaching and learning? and c). What are hindering factors in the use of the information communication technology for teaching and learning?

Methods and Materials

I have chosen the qualitative research design. The qualitative research involves to searching the peoples feeling, ideas, perceptions, and thinking. The nature of information is subjective, and it does not believe in the number value of information, it involves the feelings, perceptions, and ideas (Creswell, 2007). Qualitative research searches many things at the same time. It is multi-paradigmatic in focus. Its practitioners are sensitive to the value of the multi-method approach. They are committed to the naturalistic perspective, and to the interpretative understanding of

human experience (Denzin & Lincoln, 2005, p. 7). Similarly, Best and Kahn (2006) stated that the qualitative method of study is appropriate for in-depth understanding of the events and characteristics. Therefore, it gives the insight about the teachers and students' perception, use styles, and their intended. Within the qualitative approach, this study has used the phenomenological design to explore the subjective aspects of realities. It explores the personal experiences, feeling, perceptions and beliefs. I put my felling in bracketing to reach the data saturation phases (Creswell, 2007).

Qualitative research uses non-probability samples for selecting the population of study. In a non-probability sample, units are deliberately selected to reflect features of or groups within the sampled population (Ritchie & Lewis, 2003, p. 91). There are no rules for sample size in qualitative inquiry. So, I selected the Sanothimi campus as a study area conveniently. The reason was that I was teaching there as a professional core course teacher. The ICT related subject and facilities was established here since 2010. This campus has also launched the open and distance mode program. Similarly, I used the purposive sampling for obtaining the information from the selected informants. Ritchie and Lewis (2003) stated that purposive selection involves quite deliberate choices; this should not suggest any bias in the nature of the choices made (p. 91). I was aware that the informants must be selected to fulfill the purpose of study. The informants were selected based on my research purposes to collect the rich data. I selected the ten teachers and ten students from this campus. Similarly, I used the qualitative data collection methods such as in-depth interview, focus group discussion, participant observation and personal introspection. These methods helped me to collect the in-depth information through the selected informants and research site. After collecting the information, the researcher himself was code, categories and transcribe the information and generated the theme according to the research questions. The thematic analysis process was applied during the interpretation of information through the direct quotation of informants.

Results and Discussion

Technology helps to improve the instructional activities for achieving the better performance in assign tasks. It can be used to transfer the current lecture-based teaching into the constructive teaching learning activities. The teaching pedagogy has changing rapidly due to the impacts of technology in education. The computer is the comprehensive ICT tool that allows us in access of knowledge and information. I found that the ICT advocators claimed, it helps to increase the student's achievement. The integration of ICT tools is inevitable for effective teaching and learning activities in the classroom.

Perception of ICT integration into teaching and learning

One of the teachers focused on the training part to integrate ICT into the classroom. This teacher elaborated in this way that "the most important part of ICT integration is training because it enables us, how can it be integrated and managed effectively." According to him not only students but also teachers should be trained on the use of ICT into the classroom. He also added that the refresher trainings were also necessary because the forms of technology were being upgraded day by day. The teachers also expressed that the training must not necessarily be the face-to-face training rather it could be in a web form, for example, remote controller and/or webinar.

On the other hand, the teachers focused on change in mindset of students rather than providing ICT materials only. Only the proper use of it for them would make a positive impact. One of the informants said,

"I don't believe it is either first. I believe they need to be immersed in using ICT in purposeful ways in the classroom not just as add on or to keep students' busy. They need to become critical consumers - to know their learning intention and think of ways it might be enhanced using particular ICT. If we don't alter their mindsets, buying equipment and developing skills will not be productive."

Teachers mentioned that the novel application of ICT could be designed in such a way that the academic content of the teaching materials would be increased. They also shared, "learning only through video may not cover the entire academic content that the level of education demands". The informants focused on the management of physical and/or infrastructural phases before commencing ICT use. The second important aspect they emphasized teacher training on the use of ICT then only they can integrate ICT into the classroom. While asking about the integration of ICT in the classroom, a teacher said,

"In order to integrate ICT in the classrooms, the physical resources (ICT equipment, broadband etc.) need to be in place and work. Secondly the teachers need to learn how to operate the technology, and further to use it in a pedagogical way for enhancing learning."

Based on the narration, it can be said that the teachers' common perception towards ICT integration into the classroom was management of infrastructural facilities and training to teachers. Then only, they believed that core technical knowledge can be delivered through tutoring; otherwise, the integration can be challenging.

Access to internet and the perception of teachers towards use, it had hindered the integration of ICT into the classroom. A teacher said,

"There are so many factors which hinder collaborative learning through ICT. The first factor is internet access to all of my students. Only few of my students have internet access at their home. Another factor is that all the teachers in my institution do not use virtual collaborative learning. Most of the teachers have been guided by traditional mind set."

Changing perception might be hard but the teachers were found hopeful that the ICT tools and techniques may motivate to those who are really unwilling to use them into the classroom. Once such teachers are motivated to use ICT materials into the classroom, they believed trend will itself be established and modified according to the context of community.

The teachers had focused on the PowerPoint, social networks, and mailing networks, such as Gmail, yahoo. According to them, 'technological, organizational and pedagogical requirements are necessary for the integration of ICT'. Teachers had also pointed out that uses of mobile applications on lesson contents of the course would support integrate ICT into the education. The computer teachers evaluated positively about the effectiveness of e-classes and such applications that would be available at the Google play store in android software system as well as apps store in I-phone. They also found that learning through such applications was effective because it was available anytime and attractive. Similarly, they found quiz contexts, dictionaries, and other informative contents on such applications.

On the flip side of ICT, according to teachers there is a big question of how the different learners perceive and benefit using it. I have asked some teachers that how we can address the diversities of students in the use of ICT. Most of the informants whom I contacted showed their confidence that it was possible but needed to make it more contextual. The teachers suggested that the ICT materials must be managed in the classroom considering the different types of learners. In doing so, they suggested for texts/ presentations/ exercises that can address such learners. One of the teachers said in this way,

"Yes, I think ICT facilities and promote learning. Using ICT in the classroom makes teaching easier and learning also becomes permanent."

Teachers like him focused on the willingness of teachers and students in ICT use. But he added that teachers and students should develop their competencies in ICT tools. He was hopeful that campus could create the ICT infrastructure and lab for its integration in teaching. The informant viewed in this way.

"The perception of aged teachers towards ICT was one of the hindrances for integration. If there was strong willingness in teachers, the learning process of ICT

could not be a barrier but if they were reluctant enough, it would be very hard to make them involved in this process."

The teachers and students suggested that they would need to change the perception towards ICT use and make them positive at first for the effective integration of ICT in the classroom. An informants said in this way,

"If teachers are not comfortable using the equipment, then they are not going to attempt to do so. So, the equipment is a very great idea but teachers must be trained and at some point it has to be mandatory to use after the training has been done. Some teachers will never use technology (even with the training) but if it is mandatory then and only then will some comply. Here, the perception works and deserve changing."

Usages of ICT had greater chances of innovating things, the teachers have urged. In their understanding ICTs boosted up creativity among students. The teachers argued that it was also one of the effective methodologies for visual and kinesthetic learners. Additionally, they believed that it promoted project-based learning in students.

Practice of ICT integration into teaching and learning

One of the teachers of the study area said that usage of ICT in the classroom was effective technique because it helped them in brainstorming of students. I found that the students created new things and boosted up their knowledge and skill through the use of ICT tools. In this connection one teacher argued, "It makes presentation easier and effective one and make easy practicing through the use of ICT materials." His quote helped me understand the necessity of ICT for the effective participation and easier presentation. Like him other teachers also argued that the use of ICT tools helps in study to make more productive. For instance, one teacher said, "Mobile technology (android version) has replaced the note copy/ diary of teachers as well as the dictionary." The smart phones for him consist of dictionary and other note keeping software such as reminders, notebooks inside it which had been used by his students.

Additionally, ICT, according to my informants had supported to develop collaborative network. One of the teachers said, "ICT promotes the collaborative network through Facebook, blogs, and Gmail." She also added that it also accelerated the pace of self-learning. It also promoted the global learning and sharing among teachers. Teachers said that the culture of sharing helped students to learn so many things in an informal setting. For them, the easy access to internet through means such as Google had provided everyone easily tour into the world. They also suggested that if logistical arrangements were availability in the classroom, a webinar among many countries could be organized on a monthly basis or in a shorter interval. The ICT tools can integrate to build the collaborative network through the Facebook, blogs.

From the information that I received from my informants, an important aspect was also found that the use ICT in the classroom was that it demanded qualified and sufficient teachers along with other teaching materials. Teachers believed that due to the lack of qualified teachers, the ICT base teaching did not give them desired result. They even said that they need to seek the meaningful application of ICT in education before intervening it. The teachers suggested for using it in university and school level as well.

Similarly, it is also found that teachers formed virtual learning groups through various web channels such as Facebook, yahoo, and Gmail. They created ICT tools for group work and pair works. For example, teachers encouraged to students for preparing a paper and presenting it by using PowerPoint into the classroom. The methodology for group discussion on the virtual channels that they used seemed to vary depending upon the teachers and students' activeness. In some cases, teachers put queries, question on the group for a discussion and students participated. In other cases, students were leading the discussion. This had been fostering the group learning and peer learning in the classroom. The group discussions brought problem solving skills and creative thinking.

They also added that the use of ICT was helpful for everyone archiving the documents for a long period of time, safely, in a virtual manner. They also urged for the management of infrastructural facilities and availability of trained teachers to integrate into the classroom. They also expressed their suspicion whether the ICT use would bring the desired impact on education or not because proper use of it was a mandatory thing to consider. Accessibility and availability of internet facility and other facilities of ICT materials was also hampering in its integration they said. According to them, motivational trainings and programs to those who seemed to be unenthusiastic towards ICT was necessary to be intervened.

The best way of integration according to them was the PowerPoint presentation and active use of social media such as Facebook, twitter which had been proved to be economic too, resource wise. According to my informants the active discussion in a Facebook group on a certain topic explored the dimensions of that topic. The materials shared in a group through email helped to read and share the learning among group in very limited resources. They further added that the cases of sustainable archiving of documents are only possible through virtual methods which teachers also indicated in their response.

According to students, infrastructure was poor and there was a high demand and need for skilled teachers, teacher professional development for the integration. The computers and other tools proved an inevitable for improving teaching learning. The traditional methods of the teaching learning that they found had been going to

change due to the emergence of technology. They believed that it can be integrated in planning the lesson, demonstrating the materials, helping in teaching methods and assessment practices. One informant presented the idea in this way.

"ICT allows the users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community. In contrast, the web sites where people are limited to the passive viewing of content. The social networking sites, blogs, wikis, video sharing sites, hosted services, Web applications; collaborative consumption platforms are more favorable for learning integration."

Following my informants, I noted that for effective implementation of ICT, the teachers also updated and learnt new technologies. I also noted that campus need to develop their ICT infrastructures according to the market-based ICT tools. Some of my informants perceived ICT as necessary but lack of training and infrastructure development; it was difficult to integrate in learning. One student said, "Traditional physical structure of the classroom should be reorganized. The chalkboard at the front of the class should be replaced by the multimedia projector". Students like him wanted to keep the computer in the classroom for the independently search for knowledge. The centralized lab system for them were not effective for their learning, they emphasized such technology that had taken in the classroom. It facilitated more interaction and participation with the teachers and peers.

The discussion paves that teachers focused on the ICT integration during teaching methods. They put the value in the brainstorming, project work and collaborative network. They also focused on it in developing self-learning habit. Similarly, they also promoted the virtual learning groups and video demonstration. They valued on the cell phone for the dictionary use. On the other side, students focused on it from preparing the lesson to the assessment practices. They valued both the chalkboard and multimedia projector simultaneously. Through this perceptions and practices of informants on ICT integration, I drew the six phases of ICT integration in higher level intuitions according to the teachers and students' perception. The six phases are motivated, infrastructure development, training and encouragement, bridge up, implementation, and monitoring. These six phases could be applied in cyclic manner. Similarly, the technological, organizational and pedagogical requirements were necessary for the ICT technology integration. According to the teachers and students view, I explored that the technological requirements were laptop, desktop /computer, multimedia projector, internet, and other apps. The organizational structure needs to be modified into the ICT friendly and trained them. When these two requirements were fulfilled, the pedagogical intervention could be used successfully they mentioned. I also found that the ICT integration could be implemented through the different apps like the quiz, dictionary and other informative content. Comparing with this result, Rhema

and Miliszewska (2014) claimed that those stakeholders' who have better access to technology and internet facilities; they have stronger positive attitudes towards ICT use. These ideas support the second phase like infrastructure development, which is poor condition in the study area.

Mainly two types of perception were found in the field. The first perception was that ICT integration should be mandatory and interest based. The reason as they said was that teachers and students who were familiar in ICT tools, they provoked the mandatory and those who had little knowledge about ICT, they provoked the interest based. The second perception that I found was the practices of ICT integration in the classroom through the brainstorming, self-presenting, collaborative, problem-based learning and project-based learning techniques/methods. Through these methods, the ICT tools helped to facilitate the creative learning and promote the cooperative learning environment. They preferred these methods to boost up the teachers and students' eagerness to learn.

Amadi (2012) have shown that it promotes the collaborative and collective approach involving teacher, trainer, training institutions and trainees for meaningful learning. In this research, the informants' claimed that the ICT tools can be integrated through the brainstorming, self-presenting, collaborative, problem-based learning and project-based learning techniques/methods. Mingaine (2013) on the other hand explored that it could help in meeting varying needs of students, make their work more organized, make teaching effective and help in lesson plan preparation. I also found that if we use the variety of tools in the collaborative technique, the students could learn in their self-pacing and also use the tools according to their interest and availability. Aktaruzzaman, Shamim and Clement (2011) finding also support the result of my study.

Ramali and Ramali (2013) research claimed that today's generation demands a lot more than the traditional teaching and learning approach. Students are so adept to the use of technology in their daily life; the conventional 'chalk and talk' method has rapidly lost its appeal to these youngsters. In my research, teachers perceived the importance of ICT tools and effective implementation but they were reluctant due to their habituation on their former practice. Both teachers and students were motivated and encouraged to implement and integrate the ICT tools in their teaching learning. They tried to blend into their chalk and talk method through the power point presentation used by multimedia projector. Similarly, I also claimed from my study that they used it for their convenience in paper presentation, thesis writing and note making.

The problem solving, inquiry based, collaborative, creative and critical way of learning through the ICT could be seen in the instructional tasks like the seminar

preparation, assignment writing, reporting, presenting the assign tasks, thesis writing and questioning to the teachers and students. In this scenario, teachers were aware to ensure the justice in teaching but the traditional mindset of them and other stakeholders interrupt for the effective implementation. So, all types of learners could not ensure for learning in present instructional pedagogical practices.

Hindering factors

I found that the electricity is the major hindering factor found for technology use. Though there was availability of multimedia projector, internet facilities and computer for all teachers and students, they are not given opportunity to use as per their need. There is still large number of students in the classroom. The sitting arrangement was still traditional row and column. As a result, it is challenging to transform into the modern technology-based classroom. One teacher claimed by saying.

"Electricity, availability of multimedia projector, class size (audio/ visual), sometimes appropriate content from virtual sources for my students."

Lacks of competency, administrative support, facilities, accountability, and training have been found the other types of problems in implementing ICT. The huge gap in understanding the role between the administrators and teachers had impacted the effective application. The teachers and administrators whom I consulted blamed each other's for the betterment of teaching learning through the use ICT. Teachers blamed the administrators.

"They don't know the ICT tools and no idea about using it. They take it burden for management."

According to students, there was also problem in the access and speed of internet. One student said, "Due to the slow speed of internet, it had difficult to attach the files." This was found due to the sharing of wifi among various people. It would be cost high through the use of mobile data. Thus, access of internet, speed of it in the accessed area, and the ability of students to afford the cost of mobile data had been hampering the use of internet among students. The one respondent said that in this way.

"There are many problems in using ICT in my classroom. The main problem is power cut. Another problem is safety of equipment. There is no one to care the equipment. Another serious problem is internet connectivity which is not common everywhere."

The evidence above helped me know also that the main problem was the power cut and internet connectivity. The users as I found wanted to use but the power problem and availability of internet connection were main barriers. The equipment was not the major problem to use it in the classroom.

It was found that the main hindering factor was electricity. There was one generator available, due to the burden of extra cost, the administration did not provide the ICT facilities for all teaching and non-teaching staff as well as students. Apart from electricity, the tools viz. multimedia projector, internet were not sufficient for each classroom and department. The desktop computer and laptop were also available for those students enroll in computer subject and limited administrative staffs. The others used their personal laptop. Most of the teachers and students whom I consulted used the mobile data. The internet is very slow and not accessible to all of the stakeholders.

Conclusion

The less practices of ICT tools have seen in classroom. The teachers and students use ICT tools occasionally to search, collect, send and report information. The computer, multimedia projector, cell phone and printer are more popular tools in campus. In contrary, the social media related tools like Facebook, Twitter, Blogs, Gmail, Google search, Skype, Viber only popular in entertainment and communication with others. The economic and cheapest tool is multimedia projector for power point presentation and video demonstration. ICT tools facilitated to transfer the traditional teacher centered method into the ICT based collaborative method. The changed students' demography invited the android ICT tools in the classroom. The social media could be blended within the android version ICT tool to integrate in teaching. Social media like Gmail, Facebook and Blogs are convenient to connect internet within the cell phone. The practice tools were computer/laptop and multimedia projector to type, report and present the information. In other side, the main obstacle to use ICT tools in the classroom is lack of infrastructure development. The insufficient situation of infrastructure creates the huddles for effective integration of ICT in classroom. The huddle is the infrastructures that are computer lab, web connectivity, and insufficient multimedia projector. The limited multimedia projector and internet facilities could not make the ICT friendly teaching learning environment in the campus. The lack of ICT related training for teachers are another barrier for proper use of ICT tools.

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