ICT integration in teaching and learning activities in higher education: A case study of Nepal's teacher education

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ABSTRACT

This article reports an examination of information and communication technology (ICT) integration in teaching and learning activities in higher education in Nepal. ICT education policy by the government of Nepal emphasises the need to develop teachers' ICT competencies and suggests the use of ICT will transform traditional models of teaching to ones that are student-centred. The case study reported the lack of clear strategy to implement the ICT education policy and to fund for the ICT infrastructure and professional development of university staff to integrate ICT in teacher education. In this case, the Faculty of Education in the university, where there is no funding from the government and university for the ICT in education project, received funding from an international organisation to install ICT infrastructure and provide ICT training for teachers and other staff. It is argued that, to realise the policy in practice, more sustainable mechanisms need to be developed to provide ICT facilities for teachers and to train them how to use ICT in teaching activities.

Keywords: *ICT, higher education, policy, implementation, challenge*

INTRODUCTION

The original study (Rana, 2017) found that there is a gap between the educational policy in ICT and the reality of teacher education in Nepal. The policy intends to equip teachers with modern pedagogical and technological skills, but the teaching and learning culture of current teacher education system is traditional.

The *IT Policy 2000* was the first government policy document which aimed to bring information technology (IT) into educational institutions for various purposes including distance learning (Nepal Telecommunication Authority, 2012, November 22). However, there was a lack of clear educational policy in ICT. The *National Curriculum Framework for School Education 2005* included ICT to be integrated into school education as a tool and to be taught as a separate subject (MoES, 2005) and the reformed curriculum 2007 reiterated the objectives (MoES, 2007). The *School Sector Reformed Plan 2009 – 2015* emphasised the integration of ICT tools in school teaching and learning activities (MoE, 2009), but it clearly stated that there was no funding for ICT infrastructure and ICT training. The *ICT in Education Master Plan 2013*, the first standard policy document, emphasised the integration of ICT in higher education and school teaching and learning but clearly stated the lack of funding for the project (MoE, 2013). The *School Sector Development Plan 2016 – 2023* also emphasises the use of ICT in education and its promotion to transform the traditional pedagogy to modern learning strategies, but it also states the lack of funding for the project (MoE, 2016). However, a recent study (Rana, 2018) reported that there are several hundred schools, particularly primary schools, which have already adopted digital technology in their teaching and learning activities, and that the schools have been trying to transform their traditional teaching strategies into the modern learning

environment. The study also reported that, although the government does not have specific strategies to provide resources and ICT infrastructure for schools and how to train teachers to use ICT, the government has involved several non-governmental organisations (NGOs), for example, Open Learning Exchange (OLE), in the project to fund for ICT infrastructure and teacher training on how to use ICT.

Although the *ICT in Education Master Plan 2013* emphasises the integration of ICT in teacher education, school teaching and in-service teacher training programmes (MoE, 2013), none of the universities in Nepal has the systematic use of digital technologies in their educational programmes (Rana, 2018). Tribhuvan University, the oldest key university in Nepal, has Bachelors and Masters programmes including "ICT in Education", a separate module, but the course is too technical and focused on teaching computer programmes (Rana, 2018). However, the rapid growth and development of digital technology and internet facilities have been a basic need of individuals, particularly in urban areas. For example, the majority of the population of Nepal (96%) live under the coverage of telecommunication service. In mid-2018, about 63% of the total population of Nepal (Neupane, 2018) had access to internet, which was recorded 58.72% in 2017 (News24Nepal, 2017) and 50.11% in 2016 (Pokharel, 2016). It shows that the use of modern technologies is rapidly increasing in people's life. Particularly in urban areas, internet has been a fundamental need of people.

Although the government universities and schools are still waiting for funding support to adopt ICT in their teaching and learning activities, most of the private colleges and schools have already got internet facilities for teachers and students. The majority of teachers and students particularly in urban areas have access to internet facilities outside their schools in their daily life. A recent study (Rana, 2018) reported that, although private colleges and schools have their own plans to manage ICT facilities and to train their teachers to use ICT, the government does not have a clear strategy for equipping government institutions with ICT infrastructure and for training teachers to use digital technologies. This study (Rana, 2017) reported that, because the University Grants Commission develops policy and provides funding for resourcing colleges, recruiting staff and training the staff, the University Grants Commission has a significant role in overall development of universities. The following historical background of initial teacher training in Nepal also provides brief information about the role of University Grants Commission.

Initial teacher training (ITT) in Nepal

For promoting, facilitating and supporting the development of higher education in Nepal, University Grants Commission (UGC) was established under the University Grants Commission Act approved by the parliament in 1993 as a statutory autonomous body (University Grants Commission, 2014b). University Grants Commission (2014a, p. 29) states that "higher education institutions of Nepal receive financial support from the government through the Ministry of Education; it is managed and distributed by the UGC. However, the medical academies receive the financial support for higher education directly from the Ministry of Health and Population. Thus, the UGC is especially responsible for allocating and disbursing grants to the universities and their campuses. In addition, the UGC formulates policies, plans and programs to promote and enhance the quality and development of higher education in Nepal. It also makes necessary arrangements for the exchange of facilities and fellowships between universities and educational institutions within and outside Nepal (University Grants Commission, 2010).

With the need of teachers and teacher training, *Nepal National Educational Planning Commission (NNEPC) Report 1954-55* recommended for the establishment of a teacher education college in the country and the College of Education was established in 1956 (Tribhuvan University Faculty of Education, 2018). The college was owned by Tribhuvan University after its establishment in 1959, which was renamed Institute of Education in 1971, and since then the college has been known as Faculty of Education (*ibid*). The prime objective of teacher education is to produce trained teachers to teach at the primary and secondary schools, education planners, trainers and policymakers. Currently, there are eleven universities in the country including the recently established Nepal Open University, and half of them have teacher education programmes. All the universities in Nepal are governed by the UGC under the Ministry of Education, Science and Technology.

LITERATURE REVIEW

The original study (Rana, 2017) and a recent research by Rana (2018) found that the use of ICT in teaching and learning activities is an under-researched area in the context of Nepal and that there is limited literature found in this field. However, the studies affirm that this is a widely researched area in the context of developed countries, particularly western countries. The following sections offer some literature about teachers' access to ICT resources and opportunities for using the available resources in their planning and delivery of lessons, the interrelationship between the technology and education, and ICT integration in teacher education.

ICT changing the way of learning

The world is rapidly moving into digital media and information. The role of ICT is widely accepted, and its presence has basically transformed the practices and procedures of all forms of venture within education, business, governance and personal life. Although a study by Oliver (2002) found that the education sector is comparatively less influenced by the development and use of ICT than other fields such as business and industrial fields, several studies (Freitas & Conole, 2010; Meier & Spada, 2008; Rana, 2018; Rana, Greenwood & Fox-Turnbull, 2019; Roth, 2009; Stensaker, Maassen, Borgan, Oftebro & Karseth, 2007) reported that the rapid development of digital technology and its use has internationalised and commercialised higher education, and provided multiple flexible learning options such as part-time and distance learning. Gulati (2008) argues that with the dynamic features of ICT, teachers and learners can create open independent and accessible educational prospects. He further emphasises that the web technology has made it possible to share the issues of educational disparity and social exclusion, and ideas to solve such problems and that the use of digital technology has gradually shifted teaching and learning strategies. Ferreira, Haddad and Faria (2014) emphasise that ICT can be resources for learning for both teachers and students and it provides them with opportunities for sharing their experiences and for updating themselves with the latest informative materials and theoretical improvements in education.

Many studies (Bai, Wang & Chai, 2019; Hoyles, 2018; Rana, Greenwood, Fox-Turnbull & Wise, 2018; Rana et al., 2019) related to ICT and education have informed that it is essential to learn about ICT how they can be effectively used and that we need to know the new technology can enhance teaching and learning if it is used appropriately. Crook (2011) argues that ICT can be an effective vehicle to deliver course content where learners participate in working in the form of a collaborative community. Albayrak and Yildirim (2015) stress that ICT as a valuable gift in lifelong and distance learning can promote cooperative learning and support knowledge development on a wide array. They further emphasise that digital technologies can even create a context-free environment where students can participate in constructive learning and knowledge building. In these respects, ICT is a rich source of learning (Dysthe, Lillejord, Wasson & Vines, 2010; Kirkwood, 2014). Despite the fact that the usefulness and opportunities ICT provides in teaching and learning in the higher education context, several challenges are encountered in both developed and developing countries. Some studies (Khan, Hossain, Hasan & Clement, 2012; Kozma & Vota, 2014) conducted in developing countries revealed that the implementation of ICT policy and plan in teaching and learning in higher education is influenced by the lack of fundamental ICT infrastructure, lack of funding for ICT resources, and unskilled workforce in the universities and schools. Rana (2013) argues that, although there is a wide range of access to internet facilities in the capital city of Nepal, the traditional schooling system and teachers' lack of modern pedagogical skills to integrate new technologies in teaching and learning activities are major challenges to adopt ICT in planning and teaching activities. Andersson and Grönlund (2009) argue that the lack of technological confidence in teachers and their weak motivation are also major challenges in addition to the challenges at the policy and implementation level. Therefore, technology-supportive infrastructures, sufficient fund, technology awareness and knowledge, and motivation are pre-requisites (Bhuasiri, Xaymoungkhoun, Zo, Rho & Ciganek, 2012) for the successful implementation of ICT in higher education of developing countries.

Teacher education requiring transformation with ICT

Many studies have reported that information and communication technology (ICT) has brought changes in a range of sectors with extensive impact on contemporary society, and fundamentally changing the way that we communicate, work, and entertain. For example, Karagiannidis, Politis and Karasavvidis (2014) argue that education is no exception, where ICT applications have been used extensively over the years. In Nepal's context, Khaniya (2007) stress that university education has changed in such a way that there is growing pressure on the teachers to adopt new technology requiring them to undergo new orientation and training. Kozma (2003) emphasises that the use of educational technology is essential for enhancing both teaching and learning activities in higher education. He suggests that teachers can use ICT including various technologies in teaching and learning activities, student assessment and planning activities, and that the use of internet facilities provides both students and teachers with opportunities for working in teams in distant as well as face-to-face mode. Rogers (2010) argues that the use of digital technology in teacher education as an innovative idea and practice helps prospective teachers form a network where they can share their ideas to overcome teaching and learning problems.

Some researchers suggest that with the rapid development of computer technology, digital learning materials offer additional affordances over traditional print materials. For example, Karagiannidis et al. (2014) and Laurillard (2010) emphasise that the use of digital technology and materials, digital technologies can facilitate learning through interaction, construction, discussion and collaboration and significantly improve the quality of education. Karagiannidis et al. (2014) argue that with the acceptance of the use of digital technology for various purposes and the initiatives from ministries, educational organisations, companies, etc around the world have promoted the rapid development of digital technology and its use in educational activities.

Koper, Merriënboer and Jochems (2004) argue that the integration of digital technology in teacher education develops the professional skills of prospective teachers. Ferreira et al. (2014) emphasise that ICT allows teachers to access a wide range of openly available digital information and to develop their own professional network virtually. López-Pérez, Pérez-López, Rodríguez-Ariza and Argente-Linares (2013) argue that the internet facilities provide learners with opportunities for learning autonomously on their own pace and facilitates their positive results. A study by Rasiah (2014) revealed that social media like the Facebook was indeed viewed as an effective tool in a student-centred learning environment which enriched students' educational experiences increasing the relevance of the subject matter and encouraging students to collaborate with their peers. In addition, Albayrak and Yildirim (2015) state that Facebook as a course management system has the potential to increase student involvement in discussions and out-of-class communication among teachers and students. Hung and Yuen (2010) also emphasise that social networking websites provide opportunities for students to interact beyond the classroom, which, as a result, leads to additional learning opportunities and also enhances participation in the face-to-face classroom. However, Rana (2018) argues that in absence of specific strategies to implement the ICT in education policy, lack of funding for the resources and ICT infrastructure and teachers' professional development, it may take decades to realise the minimum level of ICT resources in educational organisations.

Need of sustainable systems to adopt digital technology in education

Although several studies (Bai et al., 2019; Hoyles, 2018; Rana et al., 2018; Rana et al., 2019) have revealed that educational technologies can enhance teaching and learning processes, there are many practical challenges being faced while implementing them in practice. Challenges about technology use in teaching and learning activities differ between developed and developing countries (Rana et al., 2019). Developing countries often represent contextual factors in organisational culture and societal structures which are different compared to developed countries. Technological factors such as cost, usability and appropriateness of technology, as well as management characteristics, are major challenges in developing countries (Andersson & Grönlund, 2009). For example, while European countries use advanced information and communication technology in education as an integrated part of societal structures, most of the African countries are unable to independently create and use new technologies in their education system due to various reasons such as lack of government approach to innovative technology, poor economic condition,

absence of skilled workforce and other socio-political issues (Hamidi, Ghorbandordinejad, Rezaee & Jafari, 2011). In the context of Nepal, Rana (2018) argues that the lack of implementation strategies of ICT education policy, no funding for resources and ICT infrastructure, traditional culture of universities, lack of skilled workforce and political influence in the education sector are major challenges to transform traditional education systems of universities and schools.

Several studies including Malapile and Keengwe (2014) reported that developing countries have fundamental challenges such as the poor economic condition of country and communities, and unemployment and, therefore, members of the public cannot afford expensive technology and the government cannot provide sufficient funding for ICT infrastructure and teacher training on how to use ICT. Ramorola (2013) stresses that lack of clear ICT policy, insufficient technology resources in the classrooms, lack of ICT skilled teachers, lack of maintenance of available technology resources and lack of continuous support for teachers are major challenges affecting the integration of technology at the school level. Bhuasiri et al. (2012) argue that teachers' limited knowledge and skills in digital technology are early barriers to integrating digital technology in educational activities. Olutola and Olatoye (2015) emphasise that access to digital technology in and outside the classroom for teachers and students determines the technology integration in higher education. Khan et al. (2012) suggest that the developing countries need to prepare their ICT education policy, strategy and plan depending on their context and implement the policy carefully to achieve the ICT goals rather than investing on the ideas of developed countries.

CONTEXT AND RESEARCH DESIGN

The context of this study was the Faculty of Education at a key university in Nepal. The Faculty of Education is one of the leading faculties at the university in terms of the number of students. This study, which was based on qualitative interpretive design, followed semi-structured interviews with the participants and observation of university facilities and availability of ICT resources, and document analysis.

In this case study, six participants: a faculty head, a tutor and four Masters Degree students from four different departments were involved. The participants were randomly selected by following a lottery strategy, as suggested by Cohen, Manion and Morrison (2011). In this simple random strategy, paper balls containing student roll numbers were rolled into a big pot and one ball was blindly pulled out of the pot to represent all the students of the individual department. This was repeated to select other student participants. When selecting a tutor, the same strategy was applied.

The participants were followed by semi-structured interviews, as suggested by Cohen et al. (2011), to explore their understanding of ICT and availability of ICT infrastructure in the university and its use in teaching and learning activities. The observation of university facilities explored the resources and ICT infrastructure in the Faculty of Education. The contents of policy documents were analysed against the qualitative information gathered through interviews and observations. The interview with the faculty head explored how the ICT policy is approached by the Faculty of Education and the level of ICT resources provided for teachers and students. The interview with the teacher investigated their access to ICT resources, the practice of available technology in planning and teaching activities, how the college managed to install computer lab in the college, and difficulties and challenges he faced in his ICT practice. The interviews with the students representing four different departments explored their access to ICT resources in and outside the university and use of available digital technology in their learning. The interviews were audio-taped, and the observation notes were made when frequently visited the university particularly the Faculty of Education. The audio recordings were transcribed, and the information was systematically organised under key themes. As suggested by Braun and Clarke (2006), the themes were generated by analysing the interviews and observation.

FINDINGS

This section reports a cluster of findings from the original study. The findings are related to organisational strategy for the implementation of ICT policy, teachers' perspective of ICT use and students' perceived potential of ICT for own learning and teaching practices.

Organisational strategy for the implementation of ICT policy

This study has found that the Faculty of Education in the university, although there was no specific strategic document found about the integration of ICT or technology in teacher education, has already exercised to integrate digital technology in educational activities. For example, the faculty provided 100-hour ICT training for teaching and non-teaching staff at its several campuses located in different districts and funded for the installation of ICT labs in those campuses so that the campuses could train their teaching and non-teaching staff to use ICT in teaching as well as administrative activities. In collaboration with projects like Second Higher Education Project (SHEP) and the Norwegian Programme for Capacity Building in Higher Education and Research for Development (NORHED) under Norwegian Agency for Development Cooperation (NORAD), the Faculty of Education provided ICT training for both teaching and non-teaching staff to develop their ICT skills for using ICT in teaching and learning activities.

The interview with the head of the Faculty of Education explored that the SHEP and NORHED projects initially provided 66 laptops and some multimedia projectors to establish a computer lab. In addition, the NORHED project further aimed at providing continuous technological and training support for the capacity building of the faculty. There was no allocated budget from the government for the project. The head stated that the Faculty of Education had a plan to digitise accounting and examination systems, to establish a digital library and to equip the college and staff with ICT tools and skills. He shared his plan to transform a traditional system of teacher education with the integration of digital technology. He reported that, although the laptops, projectors and internet (Wi-Fi) were available for the tutors and students in the lab, the practice of digital technology in teaching and learning was at the early stage. In the continuous interview, he expressed his dissatisfaction: “We have some level of educational technologies, but I have observed some classes without using them.” His expression indicated teachers’ limited use of available technology in their planning and teaching activities. Although he did not like to say much about teachers’ attitude and technology skills, his dissatisfaction against teachers’ limited use of ICT facilities indicated that perhaps the teachers had a low level of ICT skills and a lack of motivation to use available ICT facilities in their teaching plans and delivery.

This study reported some major challenges to implementing higher education policy in ICT for many reasons. The challenges include the development of ICT infrastructure in every department and classroom, lack of government funding and reliable source of income of the university for the ICT project, unskilled staff and insufficient ICT training for staff particularly lecturers and professors, and unreliable electricity supply. The observation explored that the infrastructure including classrooms and furniture was not well managed with the technology although international projects (SHEP and NORHED) had contributed to solving these problems to some extent. Nevertheless, teachers’ limited ICT skills seem to be one of the major challenges to effectively integrate digital technology in teacher education and produce skilful teachers to transform the traditional education system to modern learning way in Nepal. For example, the head in the interview said: “All teachers especially those belonging to the old generation, soon going to retire, are reluctant to learn how to use ICT in teaching and learning.” However, the access to internet facilities provided by Nepal Telecommunication Authority, only the government agency and private companies for competitively reduced prices in the capital city and availability of mobile devices with 3G and 4G data in the daily life of teachers and students provide them with opportunities for learning new skills to use modern technologies (Rana, 2018).

Teacher’ experiences and perceived value of ICT use

The open interviews with the teacher explored his experience of using digital technologies, motivation towards the new practice in teaching and learning and understanding of technology use. His expression indicated that ICT tools if used in the right way facilitate teaching and learning activities: “With educational technology, it is easier for teachers to prepare their lessons, deliver them and receive feedback.” He further emphasised that the dynamic features of digital technology allow teachers and students to create a virtual network of colleagues where they can discuss learning issues and share ideas: “Students and teachers can establish immediate communication through technologies. If students have some problems or difficulties in understanding some subject matters, they don’t have to wait for another day.” He added that

web technology has made it possible to teach and learn in a distant mode at a flexible time and space: “Sitting in a corner of a room, we can share information, materials, works, etc with the help of technologies.”

The teacher stressed that, although teachers tried their best to use available ICT tools and projectors in their classroom delivery, poor and unreliable internet and insufficient computers in the lab would limit the teachers’ ICT use in their teaching activities and then the teachers would get frustrated in their practices. He worried that the teachers’ limited ICT skills would cause weak practice of new technology in their teaching and learning activities: “Most teachers and students perceive only slides displayed through the multimedia projector as technology.” The study found that there was limited use of available digital technology in teaching and learning activities. The interviews also explored some factors which caused the limited use of ICT such as the majority of tutors and professors in the university, particularly the Faculty of Education, belonged to an aged group who even did lack basic computer skills and were waiting their retirement time. The teacher echoed the head of the faculty that, although all the lecturers and professors have been provided training on how to use ICT to enhance teaching and learning, the older generation teachers were less motivated to use ICT in their planning and teaching activities.

The findings indicate that only making technology available for teachers in the classroom and providing essential training on ICT use cannot assure the effective integration of the technology in pedagogics.

Students’ experiences of ICT use and perception of teachers’ ICT practice

The original study reported that the students interviewed had some level of digital technology knowledge and its practice in education: “Technology can enhance their learning. It can help establish interaction among students and teachers and provide opportunities for sharing their thoughts, ideas and problems with teachers and friends.”

In the interviews, the students shared their classroom experiences of using ICT and teachers’ practice of available ICT resources in their teaching activities. In response to the question: “What sorts of educational technology do your teachers use in the class?”, they echoed that the teachers mostly use PowerPoint and laptop to support their lectures. For example, one of the students said: “When teachers teach, they display slides on the wall. This makes it easier for us to understand the lessons delivered. However, all the teachers don’t use this technology.” His expression affirmed the teacher’s voice that there was limited use of the available ICT resources.

In the interviews, the students expressed their dissatisfaction towards their teachers’ limited use of available technologies and expected that their teachers would have effectively utilised available computers and internet facilities in their planning and delivery of lessons and to give regular feedback for students’ works and assessment systems. When asked about their use of digital technology, they stated that they mostly used their own mobile phones, and that few students used their personal laptop to share materials and exchange messages related to their lessons and courses. However, they expressed their dissatisfaction against the poor and unstable Wi-Fi and lack of a digital library in their university.

The students reported that university’s limited investment in ICT infrastructure and professional development of staff including both teaching and non-teaching, teachers’ unwillingness to learn how to use ICT, irregular power supply, and negligible support of administration for the effective utilisation of available ICT resources were major challenges to effectively integrate ICT in teacher education. They reported that the weak internet facility limited their access to a wide range of digital information. They argued that one of the causes of teachers’ limited use of technology in teaching and learning activities was the limited ICT resources. Although the students agreed the use of digital technology in education can change the way of learning in flexible mode, they rarely used internet facilities in their learning activities. Most of them expressed that they had limited knowledge and skills in accessing online resources and that they needed a more advanced level of ICT facilities and training to develop their ICT skills.

The findings indicate that the currently available ICT facilities are insufficient to realise the effective practice of ICT in teacher education at the university. However, the students had an enthusiasm to use a higher level of ICT facilities if made available in their classrooms.

DISCUSSION

The study found a gap between ICT policies and the reality of the ICT use in higher education. Although the educational policy in ICT emphasises the integration of digital technology in teacher education including in-service teacher training and school teaching (MoE, 2013), there is no clear strategy of the government and public institutions to equip the universities with ICT infrastructure and to train teachers and other staff how to use digital technologies. The findings show that the Faculty of Education has managed to install a computer lab, purchase projectors and provide internet facility for the teachers and students with the support of the international organisations. However, the findings align with Rana et al. (2019), Rana (2018) and Rana et al. (2018) that without the systematic investment of the government and the university in the project, the foreign support which works for a certain time is unlikely to assure the sustainability of the new project and bring changes in the existing traditional education system.

Insufficient devices for a large number of students and weak and unreliable internet (Wi-Fi) seemed to limit teachers' practice of digital technology. Many studies (Braun, 2010; Dawadi & Shakya, 2016; Mndzebele, 2013; Thapa & Saebo, 2011) in developing countries also reported similar findings that the poor economic condition of the country, limited ICT resources in and outside the classroom, teachers' lack of previous ICT knowledge and skills and low level of technology prevent developing countries to effectively implement ICT policy in education, and to access and achieve the benefits of ICT. Goktas, Yildirim and Yildirim (2009) suggest that the proper institutional plan, teacher preparation for using new technology and administrative support can help the effective practice of ICT in pre-service teacher training. However, the students' dissatisfaction against the teachers' limited use of available ICT infrastructure in planning and teaching activities affirmed the argument of Paola, Feroz, Moon and Jeung (2011) that making ICT resources available in schools does not guarantee the successful use of the resources in educational activities.

The teachers' low level of ICT knowledge and skills seemed to be barriers to effective use of the available ICT resources in teacher education. Nevertheless, their lack of sufficient technology skills was found to be causing the teachers' low level of ICT use in the classroom. It indicates that ICT training was a fundamental need of, particularly teachers who were mainly responsible for changing the traditional teaching strategies to modern learning ways. The majority of teachers' limited use of ICT resources in their teaching activities aligned with the findings of Rana (2018) that the majority of teachers in Nepal, who belong to old generation group and are less familiar with web technologies, are struggling to use new technologies in their teaching activities where their students are already familiar with the technologies particularly in urban areas.

In absence of concrete plans and strategies to implement ICT in teaching and learning, it is doubtful whether or not the national goal of integrating Nepal with international digital world by transforming the existing traditional education system into the contemporary society of digital technology can be achieved soon. The lack of technology supportive physical environment in the university and absence of government, as well as institutional preparation to integrate ICT in education, are major problems in the contexts of developing countries (Khan et al., 2012; Kozma & Vota, 2014). Although the Second Higher Education Project (SHEP) and Norwegian Programme for Capacity Building in Higher Education and Research for Development (NORHED) project have contributed to establishing an ICT lab and purchasing some computers, there was no further plan of the university and government to take over the role and provide further support to the faculty. There was a need to bring systematic change in the traditional teacher education system. However, students' motivation to use digital technology indicates that it is possible to transform the traditional teaching and learning to modern learning environment by equipping the college with sufficient ICT infrastructure and by training teachers to use the new technology.

CONCLUSION

The discussion identified some problems and possibilities of integrating ICT in teacher education in the universities in the context of Nepal. The lack of clear educational policy in ICT, strategic document and institutional plan are found to be major initial problems to effectively integrate ICT in planning and teaching activities in the universities. The limited ICT infrastructure and teachers' poor ICT knowledge and skills have impacted the expected efficient practice of available digital technology. The majority of old generation teachers in the Faculty of Education, who have limited ICT knowledge and skills, needed advanced professional development training to effectively use the new technology and to transform traditional teacher education to the modern system of teacher preparation.

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