Impact of ICT on Adopting Online Education at Higher Education in Nepal: A Factual Analysis

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Abstract

This article primarily concerns the impact of ICT in adopting online education in higher education in Nepal. It focuses on the baseline information about the impact of ICT on higher education. This study has adopted a narrative literature review with a descriptive-analytic method to reveal the salient features associated with the impact of ICT in higher education. The study has adopted a rigorous interpretative process and synthesized the impact of ICT on adopting online education. The utilization of ICT in education is enforcing teachers as well as educational institutions to review pedagogical practices. No matter, the issue of use of ICT has been raised in the whole educational system; and similarly, there are also the issues related to equality in access to education and the delivery of quality education for the learner due to the lack of policy provisions, infrastructure and competencies of the teacher and the student. Thus, the increasing trends of utilizing ICT have been enforcing to transform the structure of education system as well as educational pedagogy.

Keywords: higher education, ICT, online education, technology

Introduction

Education in the world is full of inspiring innovations and it is in the course of extent beyond the immediate context. It is due to flourishing the life of every child by giving them access to the best possible education innovations (Spencer-Keyse and Warren, 2018). Nepal has been taking initiatives to connect with the emerging useful innovations in education to transform the traditional teaching strategies into the modern learning environment (Rana, 2018). However, the inequalities in access due to lack of physical infrastructure and resources, it has been reinforcing social inequalities and

disturbing the access to higher education (Devkota, 2021). The key challenges of innovations are in adapting and implementing these innovations well in different contexts and scales. But, at the same time, it is also necessary to be careful while managing, developing and implementing such innovations rapidly on a larger scale throughout the country otherwise such innovations can sometimes do more harm than good in the long run.

Online education or e-learning is also one of such innovations for educating people in the formal education system by the use of Information Communication Technology (ICT). It is used as an umbrella term for any type of online course and learning that takes place across distance education and not in a traditional classroom (Singh and Thurman, 2019). ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association is found in social, economic and cultural matters (UNESCO, 2002). ICT tool comprises electronic devices like computer software and hardware, networking, telephone, video, multimedia and the internet. ICT is used in education in different forms of technology-assisted programmes, like television-assisted instruction, radio-assisted instruction, computer-assisted instruction, mobile learning, and internet-assisted instruction.

In the Nepalese context regarding online education, some questions are critically related to the access of quality internet for each learner and the skillful human resource to handle the ICT. Proper knowledge and skill about operating and implementing ICT in education are essential for effective knowledge transformation; otherwise such new technologies should not be imposed without enabling the teachers and students to comprehend these fundamental shifts (Odero, 2017). Without the knowledge and skills of such technologies among the entire students and teachers, it is really a difficult task to radically switch from a traditional classroom to an online class.

Nepal has developed and implemented different plans and policies concerning ICT in education from school to university level. Gradually the use of ICT in education is scaling up day by day in terms of infrastructure, skill and content. ICT has been introduced as a subject as well as a tool for instruction in various subjects in school education through the National Curriculum Framework for School Education 2005 (Ministry of Education and Sports, 2005). In the same way, the ICT master plan (2013-2017) also aims to enhance equal and equitable access for quality education by improving the service delivery system and increasing digital devices in education (MOE, 2013). Similarly, the use of ICT assists students in the

knowledge-building process, gaining better results, increasing interest in quality education, and making them able to solve problems (Jha and others, 2019). Thus, students' attraction towards ICT is also increasing day by day. However, the efforts for integrating ICT in teacher education, training and professional development programs seem to be insufficient and unsatisfactory in comparison to its adaption in society (Kunwar and others, 2020). However, to underpin online learning, ICT and educational technology in online education should be used properly (Kunwar and others, 2020; Paudel, 2021). The School Sector Development Plan 2017 has emphasized ICT to improve classroom delivery, increase access to learning materials; and improve the effectiveness and efficiency of educational governance and management by establishing an ICT enabling learning environment. Thus, technology can help to learn move beyond the classroom and take advantage of learning opportunities available in museums, libraries, and other out-of-school settings (Darling-Hammond and others, 2020).

Present Context of using ICT in Teaching and Learning

Integration of ICT in teaching and learning is a complex process. It may encounter a number of hurdles due to the lack of infrastructural and technical accessibility. The present condition of using ICT in the classroom, in the context of Nepal, has faced several problems regarding limited accessibility and network connection. The inaccessibility to resources in teaching and learning de-motivates the teachers and also discourages them from integrating new technologies into education. In the Nepalese context, infrastructural barriers such as equal access to broadband internet throughout the country are creating difficulties (Kunwar and others, 2020). Similarly, inaccessibility and an insufficient number of ICT tools have been also creating barriers to the successful ICT implementation in education. The technical assistance or support in the classroom to utilize the resources related to ICT is another problem that is also affecting the integration of ICT in teaching. Technical problems are also the barriers for teachers in the Nepalese context that have created problems in the smooth delivery of class in natural flow (Devkota, 2021; Rana and Rana, 2020). Thus, ICT-friendly training and essential ICT tools for each teacher are necessary for effective classroom delivery.

Learners' attitude and access to technology may influence the delivery process of online education. Successful implementation of online learning depends on the skillful integration of ICT services. Integration of ICT in

education generally means technology-based teaching and learning that closely relates to the utilization of learning technologies and the integration to improve and increase the quality, accessibility and cost-efficiency of the delivery of instruction to students (Ghavifekr and Rosdy, 2015). Hence, the integration of ICT in content delivery makes the learner engaging and online learning effective (Kunwar and others, 2020). In the context of Nepal, lack of implementation strategies of ICT education policy, low funding for resources and ICT infrastructure, traditional knowledge delivery mode 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 (Rana and others, 2019). Most of the teachers with limited ICT skills are one of the major challenges to effectively integrate digital technology in teacher education and produce skillful teachers to transform the traditional education system to a modern way of learning in Nepal (Rana and Rana, 2020). Similarly, lack of clear educational policy, limited ICT infrastructure and teachers' poor ICT knowledge and skills have impacted the expected efficient practice and teaching activities in the higher education institutions using available digital technology. Hence, teacher preparation with advanced professional training related to ICT and integrating of ICT in education is necessary for the effective implementation of online education in higher education in Nepal.

The impact of ICT on all aspects of human activities has been so wonderful (Jha and others, 2019). Most significantly it can impact human activity through teaching and learning. Additionally, ICT plays a key role in digital curriculum, governance, and success of education at all levels around the globe, as well as in Nepal (Malak and others, 2019). ICT can assist the student to learn more effectively by the use of a wide range of new pedagogy. A distance learning programme cannot be envisioned without the use of ICT (ibid.). It gives the frame of teaching and learning through distance education mode, and also gives speed to learning. Thus, ICT has a greater impact on implementing online classes.

Significance of the study

The increasing trends of adapting ICT in modern society have also been affecting the education system in the world. In these scenarios, especially the developed countries are adopting technology in the instructional activities in schools and colleges as per the need and progress of the society. However, some countries like Nepal have been struggling to maintain the technological

gap between the progress of the society and instructional activities in the educational institution. The use of technology in teaching and learning activities at school and colleges has been lagging behind in comparison to the technology being used in society. The educational pedagogy or the way of transforming knowledge in school and college is still teacher-centric. Thus, the use of technology as per the demand of society is essential and educational institutions should fulfill the need of society. So, the study has great significance to make aware of the concerned individuals and the institutions about the use of the technology in education as per the demand of the society and the needs of the learners.

The study can sensitize the educational stakeholders about the impact of ICT in online education in the context of Nepal. This study also brings out the barriers of utilizing ICT in education due to the access of different aspects like physical, social and technological conditions. This study can provide some important insights about ICT integrated teaching and learning and can help to strengthen and prepare better educational programs for the days to come. Furthermore, it helps the concerned authority for better installation of the online learning programme in the future. It also helps to enable the educational authority to develop an ICT integrated curriculum as well as to reform pedagogical aspects in education. The objective of this paper is to find out the impact of ICT in online education at higher education in Nepal that could contribute to pedagogical perspectives in Nepal and other countries.

Methodology

The study is based on a review with the descriptive-analytic method, which was used to disclose the salient features associated with the impact of ICT in higher education in Nepal. Based on this method, some related studies have been compared and summarized on the basis of the author's self-experiences of more than two decades of teaching at university level. Thus, the baseline information regarding the impact of ICT in higher education was deduced. A rigorous qualitative approach was followed in the study and data were synthesized following interpretative process. To this end, mostly secondary sources of data were used to explore the impact of ICT in different dimensions of online education at higher levels. In this connection, various research results, publications, reports, periodicals, books, journals and newspapers were reviewed to collect the data.

Results

This section presents some results and discussion concerning the impact of ICT on implementation of online education in higher education in Nepal.

New innovations and adaptation of resources

The main concern of adapting innovations and resources in education is hoping to provide at least some help, encouragement and inspiration to the learner. Modern education system should provide equity in education globally and narrow down the diversified allocation of resources, tools and technology by means of special support and interventions. Teaching and learning in contemporary higher education in several contexts are largely traditional and often ineffective to meet the demands of learners and the market (Mandal, 2018). This shows substantial improvement in the whole education system in the present situation. However, the traditional classroom teaching with the use of body language, eye contact, facial expressions and intonation create visual and sensuous effects on learners' perception (Gulnaz and Ismaiel, 2017). Effective utilization of these cues not only address learners' heart and mind but also tend to heighten their feelings and emotions, and make them behold to contemplate on the wonders of the lesson. Anyway, such learning is becoming more teacher-centered. In the present situation, innovation of new resources and technology is making the learner continually more creative, constructive and independent. It is also making the world boundless regarding the access to skill and knowledge. Such increasing use of emerging modern technology and learning trend gradually push the world to the online learning ecosystem (Kunwar and others, 2020). Nevertheless, if the traditional system is switched to online teaching then body language and facial expressions are under restrictions as it is difficult to use these skills through virtual class and only voice can fully function in such cases. Therefore, in online teaching, faculty should appropriately slow down their speech to allow students to capture the points being presented; otherwise the faculty has less control over teaching, and students are more likely to "skip the class" (Bao, 2020).

Impact of ICT in online education

The impact of the technologies on teaching and learning in higher education in Nepal is still unclear; and there is a huge gap between policy and government implementation systems (Rana and others, 2019). The discourse on the implementation of digital technology in higher education settings

focuses mainly on students' learning rather than on professors' teaching (Alexander and others, 2017; Bates and Sangra, 2011). Students and teachers feel online classes more stressful and physically sleepy due to remaining busy for a long time on the computer and mobile screens (Khan and others, 2021). Therefore, online classes cannot replace traditional face-to-face instruction. Online teaching may create some obstacles such as decreased student motivation, delayed feedback and feelings of isolation due to the lack of physical presence of classmates and teachers (Verma and others, 2020). Therefore, the loneliness of students in online teaching can have more likely to skip the class or inactive participation in learning activity. The roles of teachers in online environment differ meaningfully from their traditional roles in a face-to-face classroom setting (Guri-Rosenblit, 2018). Most teachers nowadays do not possess sufficient digital literacy (Wineburg and others, 2016; Alexander and others, 2017). To equip the teachers with adequate tools to use efficiently and effectively the wide range of capabilities enabled by the new technologies necessitates a conceptual redefinition of the teachers' roles, well-designed training, and ongoing support systems for students and teachers in teaching-learning (Guri-Rosenblit, 2018). The little attention paid to the key role of teachers in online settings results in a restricted adoption of technologies in higher education so far. In most higher education institutions, the new technologies are used mainly for add-on functions and not for substituting face-to-face encounters or for intensive web-enhanced teaching. (Bates and Sangra, 2011)

Young students possess a natural inclination towards studying through the web, taking more responsibility for their personal and educational activities; and they are found expecting to use relevant digital tools when they study at university (Ubachs and Konings, 2017). Many of them use the new technologies for various purposes, such as downloading music files, chatting with friends, playing complex video games and even preparing fancy Powerpoint presentations; but most of them do not know how to study extensively through the electronic media, or sometimes not willing to do so (Wineburg and others, 2016). They must be familiarized with new digital environments; and develop habits that cultivate the continuous mastery of new digital skills, given the rapid pace of technological development (Alexander and others, 2017; Ubachs and Konings, 2017). It follows that learning effectively and efficiently through electronic technologies requires training and cannot be taken for granted as a natural attribute possessed by the young generation (Guri-Rosenblit, 2018). Thus, shifting to digital

platforms from the traditional face-to-face mode of classroom learning in higher education, different challenges concerning access and implementation of the resources and technology related to teachers, students, parents, and pedagogy should be endured. In online classes, students feel isolated due to the lack of group projects, communication and restriction in outdoor activities, which leads to social isolation (Adnan and Anwar, 2020). In addition, social isolation is a symptom of dropout from school (Khan and others, 2021).

As stated by Devkota (2021), infrastructural preparedness, curricular constraints; students' and teachers' ICT knowledge and access; internet access to them, etc. have impact on implementing online education. Similarly, online teaching and learning experiences of teachers and students, their attitude towards online instruction, challenges for attending online classes, socio-economic constraints, info-techno literacy, student support system, etc. can also impact on employing online learning. (ibid.)

Therefore, special mechanism should be established to support the effective implementation of online learning in higher education. In the present context, online education cannot cover all learners due to limited access to the internet and digital devices (Kunwar, Shrestha and Poudel, 2020). Thus, it is difficult to settle everyone in online learning environments in the prevailing context due to the lack of adequate knowledge of ICT.

Role of ICT in pedagogic transformation

ICT helps to strengthen the delivering process and makes teaching and learning easy, interesting and attractive (Shakya and others, 2017). It is the means of pedagogic transformation as potential digital technology (Tariq Zafar, 2019). Thus, the use of ICT is enforced to redefine the pedagogical boundary as well as the physical distance, classroom, school, college and university. Student-driven learning and inquiry, collaboration, personalization and flexible learning may all be enabled and enhanced through the use of ICT in education. The use of ICT has enabled the learners to access learning online materials, get immediate feedback, communication with each other through different synchronized and asynchronized modes, or collaborative platforms or social media (Kunwar and others, 2020). In the present context, social media and other communication technologies are becoming powerful means for knowledge transformation and flourishing (Ferguson and others, 2019). Such platforms are becoming equally useful for the students, teachers and parents. Though educational technologies can

enhance teaching and learning processes, many practical challenges are being faced while implementing them in practice (Bai and others, 2019; Rana and others, 2019). Students can engage in their formal class, discussions and other collaborative communication for their knowledge development and the teachers can engage with different professional communities or sharing knowledge to others as the expert elsewhere (OECD, 2017).

The use of ICT in education also helps to spark the process of effective delivery (Ferguson and others, 2019). It also opens up new perspectives of the teaching and learning process. Rapid spread of ICT in education has caused the teacher, administrators and the educational planners to rethink their roles for the future (Tariq Zafar, 2019). The proper integration of ICT in teaching and learning not only increases the chance of gaining education along with increased productivity but also provides various opportunities to the learners and makes teachers aware of their new roles and responsibilities in the educational setup (Sharma, 2015). Nonetheless, technological competency in both teachers and students is a prerequisite for successful online education and in the absence of such skills, imparting online education is a challenge for many educators and students (Kunwar and others, 2020). The use of ICT may change many of the strategies employed by both students and teachers in the learning process. The use of ICT helps to process, extracting, and editing, sending or receiving digital data at a faster rate.

It utilizes a variety of tools and services that handles knowledge efficiently, and quietly contributes to societies for the overall growth and development. ICTs are increasingly seen as an integral part of modern education system; thus it is known as a catalyst for change, and it has the power to transform every aspect of society (UNESCO, 2011). However, in the present situation, most of our higher education institutions do not have enough preparedness for the support services with regard to students towards online pedagogy, online resources, digital library, and learning requirements and competencies (Kunwar and others, 2020).

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Role of ICT in higher education

ICT is the means of delivering education using different tools and techniques. It helps to foster live contact between the teacher and the student through different live platforms. Proper use of ICT in education can transform the whole teaching and learning process leading to a paradigm shift in both content and teaching methodology (Kjellsdotter, 2020). The integration of ICT in education can impact incredibly in improving the quality of education and make it more accessible and affordable. The new technologies have been changing the teaching and learning in higher education moving from the traditional face-to-face classroom to online learning (Ni She and others, 2019). Some major roles of ICT in higher education deduced from the different literature are as follows.

- helps teaching and learning process through the use of effective software and hardware,
- helps teachers to instruct, interact and provide feedback to their students,
- helps teachers and students to be accessed with their concerned institutions,
- helps to promote effective innovative teaching skills as well as teachers' professional development,
- helps to prepare, develop and disseminate various technology-based plans and documents related to teaching and learning,
- helps in different fields of education and research as an assisting tool like assignments, communication, data collection, documentation, and conducting research,
- helps to perform technology-related tasks at a faster rate and keep relevant records safely,
- helps to communicate properly with students, teachers and other persons fast and easily,
- helps the teacher to motivate students and make learning fun and interesting,
- helps teachers to shift towards technology-based instruction from traditional instruction,

- helps to restructure the curriculum, materials and pedagogy in education.

Conclusion

The use of ICT in education, no doubt, has been transforming education from traditional teacher-centered to digital learner-centered mode. The growing trend of using ICT in society is enforcing the teachers and educational institutions to re-assess their own beliefs and pedagogical practices. Such a growing trend of adopting ICT in education requires redefining the meaning of literacy. The use of ICT has been changing the working style, educational system, curriculum, teaching-learning approaches and assessment system. The use of emerging technologies has been changing the definition of education as well as its pedagogy. Use of ICT in teaching and learning is rapidly growing everyday throughout the world. Hence, integration of ICT and educational technology should be improved to keep up flourishing online learning. The ICT infrastructure, as well as the knowledge and skills of the teachers, are necessary to enhance utilization ICT in education.

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