



Online Education as a New Paradigm for Teaching and Learning in Higher Education in Nepal: Issues and Challenges

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Abstract: This article mainly concerns the present context of online education and its major issues and challenges in higher education in Nepal. It has adopted an exploratory research design to reveal the basic information mainly by adopting the observation, survey and review of the different literatures. The prevailing condition of regularly running online teaching-learning in higher education in universities and institutions was not found very effective. However, the M Phil classes and other training programs conducted by the different institutions and organizations were found running regularly and effectively. The classes of the bachelor's programs of different universities were also found running rather less effectively. The overview issues and challenges that occur during the delivery of the online courses were identified by exploring from those directly involved: the students, the teachers and the parents. Some of the issues and challenges were found consistent with the previous literature. In this course, three issues related to the students, the teachers and the curriculum were identified. Similarly, seven challenges were identified, namely related to, technology, students' guidance and support, equity, pedagogy, access, time and attitude. To address these issues and challenges, the government, universities and the other concerned institutions should focus on the infrastructural development, technical and other supports for the students and the teachers; make provisions of a better access to electronic equipment and digital resources as a process of improvement.

Keywords: *Online education, online learning, E-learning, higher education, learning platforms.*

1. INTRODUCTION

Simply, education through online teaching and learning is termed as online education. The term online education is frequently used in distance education. Online learning involves an internet connection and can include virtual interactions such as, webinar, online lecture, virtual meeting etc. and uses online tools for learning. As Hubackova (2015) observes, the development of e-learning begun in the late eighties of the last century when the first form of electronic education Computer Based Training (CBT) came into being. Online learning has included many distinct and overlapping terms. such as e-learning, online learning, virtual learning, blended learning etc. The ambiguity of such terms while interpreting the concept of online learning became a matter of wider discussion in the beginning. Now, online education, which takes place at distance via the internet technology, has been an umbrella term to refer to any type of online course or learning rather than in a traditional classroom (Singh & Thurman, 2019). The concept of online learning relating to technology is a crucial part of the definition. It is defined as learning experiences in synchronous or asynchronous environments using different devices with the internet access. In these environments, students can be anywhere, removed in

space, to learn and interact with instructors and other students (Singh and Thurman, 2019).

A. The Present Context of Online Education in Nepal

In an attempt to cope somehow with the adverse situation of the lockdown caused by Covid-19, many educational institutions have started switching from the traditional classroom teaching to online teaching. Distance education was started long before in Tribhuvan University (TU), the largest university in Nepal, but the provision of the online learning system was not yet introduced due to the very little enthusiasm in the stakeholders in the past. However, now they are coming up with certain directives to adopt it. Recently, TU has officially endorsed the online class model along with a guideline and circulated a notice among its constituent and affiliated institutions. In the same way, the Ministry of Education, Science and Technology has recently appealed the stakeholders to start classes using the available/possible alternatives. The local government, news media and relevant stakeholders have argued for the need for promoting such classes and also working as partners for delivering online education. Nepal Open University (NOU) has been running its programs in the online mode despite different barriers after the lockdown. In the same way, Kathmandu University (KU) has also run some classes in online mode. Likewise, other different universities and institutions have been running some classes in online mode at higher level after the lockdown.

However, regarding online education in the context of Nepal, there have been some critical questions. The question related to the access of quality internet to attend the classes without disturbance for all the learners and the teachers in rural areas, the teachers' preparation to run the online classes effectively, the students' and parents' motivation and their preparedness for the use of this opportunity, the familiarity and access of the students about the resources and technology related to online learning are some of the most prominent ones. Experts in the field opine that new technologies should not be imposed without enabling lecturers and students to understand these fundamental shifts (Odero, 2017). Operationally, many of the institutions do not have the capacity to synchronize student learning, databases, support systems, use innovative educational technologies, and university-wide connectedness.

It is really difficult to switch from the traditional classroom to the online class radically for the entire students and teachers. However, it is a mandatory condition to shift from the traditional face-to-face learning to the distance learning mode via different e-learning platforms connecting to the internet, television, radio, newspaper etc. Different institutions from the basic level to higher education, are attempting to adopt the new approach to class delivery—virtual class or distance mode—through the radio and television. This initiation

is helping all the stakeholders for planning and preparing the class, mastering the new technology, stimulating for discussions, to keeping in touch with the students and motivating them for learning.

B. Significance of the Study

The major issues of online education discussed earlier enlighten educators as well as the concerned authority to be addressed for improvement of the quality of online education. This study has bridged the gap and brought into light the major challenges of online teaching and learning found in the literature. The findings of the study are considered to be of great significance to different stakeholders for several reasons. In the present context, there is a small body of previous literature regarding online education aimed by educational institutions at keeping students engaged during such an emergency period as the lockdown. This study can help to reveal critical areas and contribute to the local literature in the area, which, in turn, could be used by relevant authorities in improving their education initiatives. Different stakeholders may realize the present context of online education in Nepal, and its major issues and challenges for undertaking online learning. This study brings out the condition about the access of the subordinate aspects for the online learning like physical, social, psychological and technological conditions. The findings of this study may also contribute to the benefit of the higher education institutions by providing significant insights into the ICT incorporated teaching by enabling them to support and prepare their programs better for the days to come.

Furthermore the study is supposed to help the concerned authority to address the prevailing issues and challenges for the better installation of the online learning program in the future and also to prepare more for the concerned stakeholders. Specifically, the findings may be of great value to the teachers as they are in constant touch with the students. They may be able to understand their behavior better and manage online issues properly. In the same way, it may also provide important information to the education authorities on the benefits of ICT incorporated learning, thus, enabling them to include the insights in pedagogical reforms: they may revisit the curriculum to introduce further ICT integrated pedagogy at higher education institutions. The findings are also expected to be helpful for the teachers as well as the learners in developing the varied knowledge and skills related to ICT so as to get them engaged and interactive in learning new knowledge and skills either independently or as complementary to the face-to-face classroom mode.

II. METHODOLOGY

In this study, an exploratory research design has been used to reveal the salient features associated with online learning in the higher education context in Nepal, especially in the emergency period due to COVID-19. Using this design, the baseline information of the different aspects related to online learning in higher education was explored. The design uses rigorous qualitative methods and synthesizes the relevant qualitative studies to construct better meaning through an interpretative process. To this end, both primary and secondary sources of data were used to explore the present context of implementing online education amid its emerging issues and challenges in higher education. Observation, survey as well as the reviews of various publications, reports,

periodicals, books, journals and newspapers were used to collect this secondary information for the study.

III. RESULTS AND DISCUSSION

A. Online Education as a New Paradigm in Higher Education

As knowledge regarding ICT development and learning has grown at a rapid pace, the opportunity to shape more effective educational practices has also increased. Shifting to the online mode of teaching from traditional teaching has different measurable issues and challenges to the teachers as well as students. However, there are no any other options for delivering education in such a condition till this date. The students, particularly at the undergraduate level, are found unwilling to study online due to different barriers. In the same way, the lack of digital literacy among the teachers was found as the main reasons for the reluctance of many teachers to utilize the technologies effectively in their teaching. COVID-19 emerged as the "Digital Year 2020" in respect of implementing the online mode of teaching and learning at higher education throughout the world. The crisis compels people to adopt the way to better preparation for the future. This event has also enforced online education as a paradigm shift in higher education. This emergency has been a lesson for stakeholders to interconnect globally and navigate across boundaries to work in a collaborative way. It has redefined the notion of the teacher as the knowledge holder who imparts wisdom to their pupil. The online teacher or educator may be referred to as a facilitator, online teacher, e-moderator, e-tutor, online tutor, online instructor, online trainer, distance education tutor or teaching assistant (Adnan, 2018). Similarly, the role of online learning is expected not only to deliver contents to massive learners anywhere and anytime but also to promote successful learning for the learners (Temdee, 2020). It has also taught the lesson the need for life skills in the ever-changing global environment for a better adaptability. It has also compelled the educational institutions across the world to adapt the available technological tools suddenly creating content and its delivery. Thus, each educator and learner across the world is getting familiar with new experiences, possibilities to do things differently and greater flexibility to ensure accessibility to education.

In the Nepalese context, it is vital that most of the university teachers were being provided training opportunities for online teaching as almost all of them have not done the job before. A large number of teachers in higher education institutions like, TU, KU, NOU and their different affiliated colleges have already conducted teacher training programs on online teaching and learning and the remaining universities and their affiliated institutions are also on the way to this campaign. This initiation is working as a sensitizer towards shifting the paradigm from the traditional class to the digitalized class through assimilating to all stakeholders; triggered the students to participate in online classes; made the teachers shift for new teaching alternatives; kept the students engaged in learning in this critical period. However, making an immediate shift to the online class is extremely difficult due to some issues and challenges. For example, most of the universities have no (or little) experience of conducting online classes except NOU (Dawadi, Giri & Simkhada, 2020). Similarly, most of the teachers do not seem to have adequate

skills to run online classes as they have neither been trained to do the job nor have they been involved in online teaching before this crisis. The act of online delivery in the real sense is also difficult due to the insufficient and unreliable access of the internet and electricity. Nevertheless, after the pandemic, the education system has been changed dramatically, with the distinctive rise of e-learning whereby teaching and learning is undertaken remotely and on digital platforms (Dawadi, Giri & Simkhada, 2020).

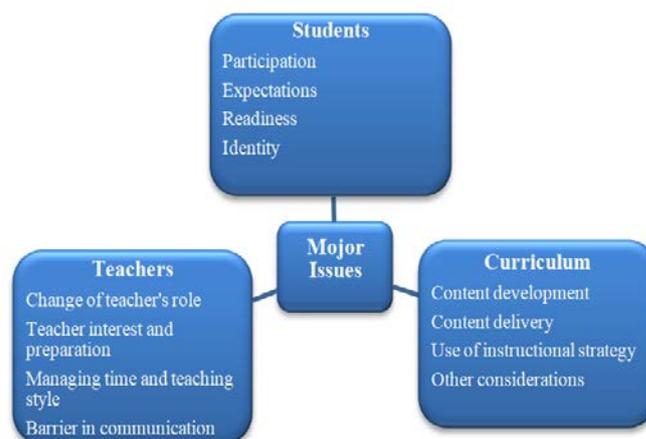
B. Major Issues Related to Online Education at the Higher Level

Issues generally denote a protocol for addressing the challenge in small pieces, so that it can be addressed on the basis of priority. The rapid development of ICT and the growing rate of internet users, especially the young generation, also impact on online learning at the higher level of education. Ali (2018) concluded that the students tend to have a strong attachment with ICT. The children of these days are exposed to technological gadgets such as mobile phones and the tablet from very tender ages the world over (Shava, Chinyamurindi & Somdyala, 2016). Similarly, there exist some paradoxes and misconceptions concerning the new generation that need to be considered as the belief that they know all about ICT is a fatal misconception (Ali, 2020). O'Sullivan (2018) states that most of the young people, who are the so-called digital natives, even have shown limitations in their use of technology. The teachers have been forced into online teaching although they are not well prepared. As a result, we are far from using the best practices for online learning and are scrambling for emergency online homeschooling (OECD, 2020).

In our context, applying online teaching and learning to higher education has some issues that are needed to address for the successful online education. First, students need to be more disciplined as well as skillful to operate in online courses. Similarly, it should be ensured that physical facilities like the internet, electricity and personal computer or smart phone are available for each student. It's also difficult for those students who belong to remote areas to take online classes due to the internet and electricity access. Learning should not be halted due to these factors and it should be equally accessed by everyone regardless of what backgrounds they belong to. The major categories of issues related to teaching online courses are related to the students, teachers, and the curriculum.

Figure 1

The major issues related to online education.



1. *Issues Related to the Students:* The online learning method in higher education can be a highly effective alternative means of education for the mature, self-disciplined and skilled students. This is to say that, it may not be an effective learning method for more dependent learners. In the successful online learning program, the students need to be well organized, self-motivated, and possess a high degree of time management skills in order to keep up with the pace of the course. Thus it can be more appropriate for the higher level learner in comparison to the lower level and other students who are independent and have simplicity assuming responsibilities required by the online paradigm. The issues related to the students' online learning may be the learners' participation, expectations, readiness and identity as shown in Figure 1.

a) *Learners' Participation:* The nature of learners' participation and engagement in online settings depends on its success or failure. The independent and active learner can take part in online listening, observing and discussion even on a complex phenomenon. Online listening or observing is a form of active learning, as it consists of engagement with the content, thought, and reflection (Hrastinski, 2009). Similarly, the learners' participation in online discussions can be enhanced by mixing audio or video discussions with online text discussions (Ching & Hsu, 2015). Audio or video components enhance communication and connection with peers, encourage learners to participate in the discussions, and support learners to elaborate their responses, as it facilitates less time consuming communication as compared with the text discussion in the face-to-face classroom (Ching & Hsu, 2015). Thus learners' participation is fundamentally essential for successful online learning.

b) *Learners' Expectations:* The development of ICT and digital technology enforce to shift the traditional teaching system and learning into the online learning system. However, most of the learners and teachers have years of experience in the face-to-face classroom teaching and learning and very low experience about online learning. Thus the teachers as well as the learners may have varied expectations for online learning. For successful online learning, the students should feel comfortable as well as familiar with it. The expectations and needs of the learner should be addressed after removing their barriers (Powell, 2003).

c) *Learners' Readiness:* Learners' readiness to attend online courses is one of the major issues (Hung, Chou, Chen & Own, 2010). The self-motivated and self-directed learner can achieve more in online learning (Kebritchi, Lipschuetz &

Santiago, 2017). The learner may have low readiness for online learning due to the lack of technical skills related to computers and the internet (Peng, Tsai & Wu, 2006) and digital equipment and negative attitude towards online learning. As suggested by Hung et al. (2010), self-directed learning, motivation for learning, computer and internet self-efficacy, online communication self-efficacy, and learner control offer the learner readiness for online learning. Thus the learners who are not ready or have no willingness to learn through online learning should be supported, motivated and inspired with all ways and means that are possible to participate actively in the learning process.

d) Learners' Identity: Learners' identity is also an important issue for online learning. In learning online courses the learner may feel isolated and disconnected (McInnery & Roberts, 2004), that may negatively affect their learning. Identity is a fluid construct, one that is negotiated both with our interaction partners and within the context in which it is being performed (Seargeant & Tagg, 2014). We construct our identities through the stories that we tell (Deumert, 2014). The teacher should develop the sense of community and belonging for the better facilitation and interactive learning that may seek to reduce the barriers often felt by isolated students. This may help to encourage the students' intrinsic motivation to participate in the learning process and make meaningful contributions to the online learning and among other learners. A strong sense of identity along with belonging to the knowledge community as a valued member plays a critical role in effective knowledge building (Goodyear & Zenios, 2007).

2. Issues Related to the Curriculum: The curriculum of any online program must be carefully developed and considered in order to make it a success. The online curriculum should be developed so as to meet the needs of the online teaching and learning process. It offers technology-based instruction that expands learning opportunities through a variety of formats and modalities. The issues related to the curriculum consist of the delivery of content that also comprises pedagogical content knowledge especially in teaching online courses. The pedagogical content knowledge comprises two knowledge dimensions for teaching in an integrated form: content and pedagogy (Kunwar, 2019). Online education can be successful when the curriculum, the teacher, technology and the students are balanced to take the fullest advantage of the strength of this format. The teacher should divide the contents into several small modules, each lasting approximately 20–25 minutes to ensure the successful online class delivery (Bao, 2020). The issues related to the curriculum can be considered as the role of the teacher in content development, integration of ICT for content delivery, these of instructional strategies, and other considerations like assignment, assessment, study environment and feedback system as shown in Figure 1.

a) Teacher's Role in Content Development: The role of the teacher in content development of the online curriculum seems necessary. While delivering the content, the teachers face the issue of lack of empowerment (Evrin, Correia & Thompson, 2011). In such situations, the role of instructors in creating, shaping, and integrating their own experiences into the content of the courses has been downplayed (Rennert-Ariev, 2008). Thus the online instructors are encouraged to engage in designing the content and adopting an autonomous

and active role through constantly criticizing their assumptions toward online teaching (Evrin et al., 2011). Martin et al. (2019) consider that there are three components in effective online courses: design, assessment and evaluation, and facilitation. If teachers get the chance of content selection and development then they can be more responsible for planning and preparing the materials, and conducting online courses.

b) Integration of ICT in Content Delivery: The design and delivery process of online learning may be influenced by the learners' attitude, knowledge and skills, learning context and access to technology. The effective implementation of online education depends on the skillful and interactive operation of ICT services that provide the learner an access to information, tools and resources to support educational delivery and management. The content can be delivered in a best way integrating the multimedia to enhance the learning experience using the constructivist theory (Almala, 2005). ICT integration in education generally means the technology-based teaching and learning process that closely relates to the utilization of learning technologies and the integration is to improve and increase the quality, accessibility and cost-efficiency of the delivery of instruction to students (Ghavifekr & Rosdy, 2015). Thus the integration of ICT in content delivery highly contributes to learner engagement, learner interest and overall the better effect on online learning.

c) Use of Instructional Strategies: In online learning, the learners discuss each other, collaborate, listen to others, reflect, appraise peers and internalize the learning experience with the help of different collaborative learning platforms such as MS Teams, Google Hangouts, Zoom, Google Docs, Google Drive etc. The best practices recommended for developing content in an online course are a combination of collaborative activities, reflective activities, clear assessment criteria, and integration of technology (Niess & Gillow-Wiles, 2013). The online courses successfully integrate technology and applied technology friendly instructional strategies (Spiceland, Spiceland & Schaeffer, 2015). Online education can use learning strategies based on the cognitivist perspective to enable learners to process information efficiently (Dwivedi, 2016). Thus, the mode of delivery and the pacing of the delivery of information should all be considered accordingly. As mentioned by Ally (2008), a number of relevant strategies can be used to promote attention and perception for online education. As stated by Miller (2014) there are six principles that can be used for effective instruction, viz. peer-to-peer interaction, active student engagement in learning, emphasis on practice and student effort, personalization to the individual student, variety, and emphasis on higher thought processes. Thus, the appropriate instructional strategies are necessary to implement the effective online class delivery.

d) Other Considerations: The successful online learning consists of other considerations like assignment, assessment, study environment and feedback system. Such aspects should be laid out clearly for the students, and the content should be presented in meaningful sections throughout the course (Allen, Kiser & Owens, 2013). The assignment for the learner is necessary to improve student understanding along with an additional time for students to complete online collaborative learning activities (Allen et al., 2013; Miller, 2014). Assessment is also an significant part of this mode of learning, which gives an accurate picture of the students' performance. It performs as a catalyst and offers a positive reinforcement to

the learners by encouraging them for better performance. The proper study environment is also a critical component. The study environment is considered more likely to have peace and quietness, good lighting and comfortable seating. Similarly, the feedback system is an important intervention for the online educator because it is an opportunity to develop the instructor-learner relationship, improve academic performance, and enhance learning (Leibold & Schwarz, 2015). Student feedback could assist them in adjusting course assignments and learning may be another way to address the issues instructors and students face in the online classroom (Anderson et al., 2011). Effective feedback is constructive, meaning that it is capable of improving students' performance by correcting errors (Zsohar & Smith, 2009) in a positive, future-focused, helpful manner.

3. Issues Related to the Teacher: A successful teacher in the real classroom instruction may not necessarily be successful in the online instruction. Teaching online is different in the roles, competencies and professional development approaches required to equip online educators to teach effectively in the online higher education environment (Ni She et al., 2019). The teacher as the facilitator needs to be properly trained and made skillful in the online delivery and methodologies as well as in the use of ICT. Online learning program will be weakened if the teachers are not adequately prepared to administer the virtual class. They must be able to compensate for lack of physical presence by creating a supportive environment in the virtual class where all students feel comfortable for participating. The issues related to the teacher about online learning can be considered as the change of teacher's role (switching from face-to-face to online) his/her interest and preparation, managing time, teaching styles and barriers in communication, as shown in Figure 1.

a) Change in Teacher's Role: The change from the traditional face-to-face teaching to online teaching can be viewed as a paradigm shift. It is from the traditional teacher-centered to the student-centered role with digital technology. As stated by Berge (2013) the roles of the online instructors are identified as being fourfold: social, pedagogical, managerial, and technical. Pedagogical roles concern teaching methods; social role refers to the ways of establishing social relationships with the students; managerial role concerns administrative and organizational tasks; and technical responsibilities are the technical support that the teacher provides for the students. The central role of the teacher in online teaching is considered as the content facilitator, metacognition facilitator, technologist, process facilitator, assessor, advisor and resource provider and the peripheral roles are as manager/administrator, designer, co-learner, and researcher (Metz & Bezuidenhout, 2018). The teacher needs professional development to use online pedagogies (Bezuidenhout, 2018). The use of ICT in online teaching changes both the nature of the teaching and learning processes as well as the need to develop ICT and other pedagogical skills (Carril et al, 2013). It is a paradigm shift in perceptions of instructional time and space, virtual management techniques, and ways of engaging students (Chang et al., 2014).

b) Teachers' Interest and Preparation: The teacher interest and preparation for delivering the online class is also an important issue for online education. The instructor who

have long experiences of teaching face-to-face, do not feel comfortable switching to the online format (Kebritchi, Lipschuetz & Santiago, 2017). It may be due to the lack of preparation both in terms of content and pedagogy. The ability of the teacher to facilitate and develop student higher-order thinking skills is equally important in both online and face-to-face delivery modes, particularly when seeking to engage students in group activities (Gillett-Swan, 2017). Little attention paid to the crucial role of the teacher in online settings results in a restricted and moderate adaptation of the technologies in higher education so far (Guri-Rosenblit, 2018). Thus the interest of the teacher teaching online class is important for the best content delivery.

c) Managing Time and Teaching Styles: Time management is an important issue in online teaching and learning. Poor time management is one of the biggest issues that negatively impacts online learners. The lack of a fixed schedule, designated work space, too many distractions and multitasking can lead to the mismanagement of time. This may create trouble in students to maintain the flexible schedule for the online class. Similarly, the online learners may suffer from the distractions like problems of their computers, slow internet, irregular power supply and other technical problems while participating in online learning. Sometimes, online discussion forums, social media and other viral posts and issues also distract the learner. In the same way, the lack of proper work space also hampers online learning.

The interaction between the teacher and students plays a prominent role in the success of online learning. It establishes relationship between the students and the teacher and also assures the students and helps them to find themselves as a part of the class. Such relationship between students and the teacher promotes student motivation and to continue their learning and makes them actively engage. Active learning consists of a number of related learning modes, methods, and movements that cover group activities, pair discussions, hands-on learning activities, and limited use of traditional lectures (Huang, et al., 2020). Similarly, online learning can be made interactive and successful by the effective use of technology and providing immediate feedback to the students on their weakness. Timely responses by educators in all aspects of the teaching and learning process lead to better outcomes (Martin, Ritzhaupt, Kumar & Budhrani, 2019). According to Coker (2018) student engagement and interaction needs to be supported to ensure effective facilitation of online courses.

d) Barrier in Communication: Communication barrier is the main issue of effective online class delivery. Communication to each other, such as forwarding or receiving the messages that others use to convey their information, ideas and thoughts are an important aspect in online learning. The teacher communication barrier includes language barrier (Sherry, 1996), technological barrier (Limperos et al., 2015) and social barrier (Berge, 2013). In lack of access to communication to each learner, it is difficult to understand the interest and feeling of the students in learning. A technological barrier refers to the access to technology or technological competency among the learners and the teacher. The online teacher needs to be comfortable with the technology and the know-how of using it to be successful (Kebritchi, Lipschuetz & Santiago, 2017). The social barrier refers to the degree of

perceived differences in class and socio-economic status. It is associated with affinity, closeness, or support related to the learner. Thus, the teacher should be capable of operating the current technology,

C. Major Challenges for Implementing Online Teaching and Learning in Higher Education

Online learning in higher education helps to provide quality open educational resources and utilize a variety of pedagogical and collaborative tools to engage the learners for reflective and critical thinking. It saves instructional delivery time; assists in exploratory learning; and supplements core physical interactions in a blended learning environment. In this sort of learning students can learn autonomously without unnecessary pressure to learn. Rather, they can learn under flexible conditions and self-pace their learning experiences. Online technology must be able to increase opportunities for students to access higher education, increase retention rates, and increase learning quality, and to result in good outcomes for students (Mahlangu, 2018). However, student maturity level and their digital preference, digital competency and digital ability impact in online learning. Therefore, regardless of the demographic of the cohort, assumptions around technological preference and capacities should be sidelined at least until the necessary social and peer support mechanisms are in place (Gillett-Swan, 2017). Adapting to the online environment can be a challenge for both facilitators and students alike (Kirkwood & Price, 2014).

Nevertheless, as the potential benefits, most of the higher education institutions in Nepal are facing different challenges due to inadequate physical, legislative and operational capacities to accommodate online learning and the use of educational technologies. In the real sense, to adopt online learning in higher education, a long term strategy for the processes of instructional reforms and well-established bases for the digital learning system as well as its implementation should be developed. The major challenges that are related to the implementation of online learning are presented in the Figure 2.

Figure 2

Major challenges for online teaching and learning at higher education.



1. **Technological Challenges:** The emerging technology related to online teaching and learning or e-learning with

regard to operating different learning platforms, creating materials, sharing, designing, developing, communicating to others etc. raises the issues. As stated by Orlando and Attard (2015) teaching with technology is not a one size fits all approach as it depends on the types of technology in use at the time and also the curriculum content being taught. This shows that the integration of ICT in teaching provides extra concern in terms of teaching pedagogy and construction of learning experiences. Even with this, it is often taken for granted that technologies can enhance learning (Kirkwood & Price, 2014). Technological knowledge supports the isolated student by way of technological proficiency and competence, social support, interaction, and skill development (Gillett-Swan, 2017). Technology is defined as the making, modifying, using, and knowing of tools, machines, techniques, crafts, systems, and methods of organizing them in order to solving a problem, improving a pre-existing solution to a problem, achieving a goal, handling an applied input/output relation or perform a specific function (Patil, 2014; Aithal & Aithal, 2015).

Technological knowledge refers to the capabilities related to operating technology related resources and digitalized instructional technology that will enable academics to learn the online learning features and functions correctly and use them effectively. In online mode of teaching, quality of virtual classrooms also depends on the students' and teachers' familiarity with the new technologies as well as on the technical equipment and support provided by the university (Sanchez-Serrano, et al., 2020). While delivering class through online mode, the teacher may face the difficulties related on the issues. The skilled users even in certain situations face limitations due to the equipment and tools used at the moment and connections break during sessions with synchronous two-way communications, students cannot upload files of big dimensions, students need a scanner to upload their assignments. The instructor must have the ability to motivate students, show empathy, resolve emergency problems and respond to emails rapidly (Gillett-Swan, 2017). Thus in this modern context, the proper knowledge of utilizing technology not only in education but in the global context is most essential and challenging for teacher as well as the learner. Hence the online learning or e-learning cannot be possible without the proper knowledge of ICT.

2. **Student Guidance and Support:** Student guidance and support ensures the students as being equipped with knowledge and skills that are significant, favorable and enable them to reveal best practice in their own future activities. Students' guidance refers to the assistance given to the students. It is primarily concerned with the student's success in his educational career, adjustment to the institution and fulfills the needs, and interests of the students. As stated by (Everitt, Neary, Delgado, and Clark, 2018) students' personal guidance impact on the students' individual effectiveness such as self-awareness and self-esteem; career readiness such as career plans and decision making; and improved attendance and attainment. Thus, the students can support by timely feedback, monitoring student progress regularly, managing especial time, managing learning environment, providing content knowledge as per the need of the students and being responsiveness for the students' wellbeing.

Student support fosters, promotes, and increases interpersonal competencies and achievement directly in their academic life (Shaterloo & Mohammadyari, 2011). Student support includes

the social, intellectual, emotional, and physical aspects of students' lives. In our context, the student support like, providing internet data pack and other related equipment with a huge student discount for online learning. Similarly, the government should provide a soft loan for purchasing the learning material and equipment related to online learning for the poor and educationally disadvantaged students. Such initiation can help to reduce educational disparity in higher education. It is necessary to establish the online learning culture through providing necessary support and resources to the students and the teacher, and motivational orientation should also provide to all the stakeholders. Furthermore, it is necessary to create a suitable culture, and familiarize teachers and learners by developing and using the e-learning system (Shahmoradi et al., 2018).

3. *Equity*: Equity in education is a vague term. It requires an autonomous system that ensures for every child an equal chance for success. As defined by OECD (2008) equity in education consists of two dimensions. The first is fairness, which basically means ensuring that personal and social conditions do not prevent students from achieving their educational potential. The second is inclusion, which means setting a basic minimum standard for education that is shared by all students despite of background, personal characteristics or location. Equity in education includes focusing particularly on children excluded on the basis of gender, children with disabilities, the poorest, ethnic and linguistic minorities, and children affected by emergencies, minority and marginalized groups (Bista, Sharma & Raby (2020). It cannot be achieved by providing equal chances thus it requires some sort of individual support including necessary resources.

The government policy in consistency with the Constitution of Nepal (2015) has provisions for equitable access for women, the Dalit community, people with disabilities and poor families. However there is no any remarkable provision of priority support or academic support for minority and marginalized students to overcome structural inequities in higher education (Olson-Strom & Rao, 2020). Inequity in access for female and disadvantaged social groups, the lack of access in remote area and disparities between rural and urban areas are among the key issues in Nepali higher education (ADB, 2015). Thus, equity of education is considerably lower in Nepal and education participation across social groups remains unequal (Educate Nepal, 2016). So, to expand the access to higher education financial support for higher education would be the most effective and efficient way to promote equity in education (ADB, 2015). For this, adequate scholarships, grants, and different types of loans could be effective ways of equalizing opportunity for higher education (Marginson, 2002). Besides these factors, the unavailability or the resources like, high-speed internet, regular electricity at home, culture, parents' views, lack of essential knowledge of ICT, low motivation and poor family background for purchasing internet pack and other electronic devices necessary for the online class are also creating challenges to maintain the equity in education.

4. *Pedagogical Challenges*: Pedagogy is concerned with enabling students in the best way to achieve learning. Successful pedagogy requires the teacher to understand how students learn then design and deliver course materials, and mentor students appropriately, so that knowledge and skills are passed on (Morley, 2010). It requires a different approach

to teaching especially in the areas such as individual and group interaction and online assessment. It is a challenge how to make students motivated and keep them active. Successful pedagogy requires the teacher to understand how students learn, then design and deliver course materials and mentor students appropriately, so that knowledge and skills are passed on (Sanchez-Serrano, et al., 2020). They further suggest that the teacher requires careful planning and design of teaching scenario, respecting pedagogical and didactical concerns.

In the present context, online education is shifting from the traditional learning trend globally at a faster rate, however, the academicians who are not well equipped technically to handle developments of materials and delivering online modules are hampering the progress, and they require extensive skill development. However, the technical skills are not only the problems but also appropriate designing of contents. In order for academics to effectively make the transition to become online teachers they need to do more than just develop new ICT skills; it should be pedagogy based (Morley, 2010). The online learning pedagogy requires higher-order technical skills as well as critical thinking and the ability to learn more independently, as well as in larger groups, both in person and online. The online learning pedagogy should be treated in a comfortable way to help students to learn, and to access, share, and create useful information and gain better fluency in a subject. It should be implemented by using different technology to enhance course materials and further support their pedagogies providing different digital resources like videos, lecture notes, quizzes, and further readings.

The appropriate pedagogy for online teaching consists of the approaches as to match the technology; organize and promote different tutorial modalities; organize and facilitate student participation; link the subject with scientific, social and cultural phenomena; validation of student knowledge acquired; use a virtual classroom to facilitate learning; apply aspects of collaborative, active, constructive, reflective and authentic learning (Ni She et al., 2019). Pedagogy is an important and serious consideration for learning. It is not about dumping information on a website and hoping students will learn it, but a process to be followed to enable pedagogy in the e-learning tools, which institutions should show utmost importance (Ferguson et al., 2019). Thus pedagogy must be suitable to the learners, and focus on helping students to develop technological skills an understanding of the content beyond basic memorization and surface knowledge. Pedagogy supports to transmission of knowledge in a conducive and collaborative approach and provides a number of scaffolding strategies that online educators can use to better facilitate online teaching (Feng et al., 2017). Adopting online learning is not only a technical issue but it is a pedagogical as well as instructional challenge (Ali, 2020). It is the means for delivery and requires a close cross-collaboration between content, instruction and technology. The teachers need additional information about how to efficiently use and reuse the open educational resources, with a regular opportunity for peer to peer sharing of good practices and advice (Sanchez-Serrano et al., 2020).

5. *Access*: The online learning system automatically demands the digital operating skills in students and teacher, access of technology, electronic devices, and regular power supply and quality of the connectivity. The low-income students, who have not the connection resources and facilities

for online learning, cannot take part in online education. This may cause due to the low income to purchase internet data or data packs and purchase the laptops and smart phones. The few education systems, even the high performing, may not be that well equipped to offer online learning for all students at such a large scale (World Bank, 2020). It is also necessary to establish the infrastructure, ICT system and tools as well as hardware and software support system for delivering effective online learning. There is no doubt that the integration of the ICT as an instructional device in academic courses has escalated at a rapid rate (World Bank, 2020). The relevant literatures disclose that in recent years, there has been an increasing interest in the development and use of multimedia-enhanced content through the use of ICT to enhance the quality of teaching and learning (Smith & Judd, 2020; UNESCO, 2020; World Bank, 2020). In some areas, the unavailability of electricity and network also creates problem in online learning. The low speed internet and fluctuation speed of the internet and some sort of disturbance of electricity may also cause problem in online learning. In some rural areas, the people are still facing this issue but the situation is much better compared to that in the past.

The National ICT Policy 2015, was aimed at providing access to the internet to the entire population of Nepal by 2020. However, only 72% of the population seems to have an access to the internet so far (Sharma, 2020) of which most of the population are from urban areas. Among them an awesome number rely on mobile data to access the internet. Only around 12 percent of the people have broadband internet connection. On the other hand, getting access to internet or technology is very costly for many parents. The available internet connection is also with very low speed that cannot be properly utilized in the different learning platforms. Only access to the internet and devices alone is not adequate to run online classes. The technologically capable teachers to deliver effective classes are also needed. It should also consider that students might have similar problems making the transition to digital learning as well. Most important thing to grow up is to establish a reliable connection with the establishment of better infrastructure. For this, Nepal government and Nepal Telecommunications authority should aware and take strong decision and action ahead. The unequal access of high-speed internet service, many students who are not connected by the internet, mostly in rural areas, are failing to participate in online classes, and their absence is depriving them of learning. Such disparity makes the learner disempowering and hopeless and also may increase education inequality.

Besides the gap related to internet (in)accessibility, another significant challenge to online education is inadequate technological competency. Technological competency in both teachers and students is a precondition for successful online education and in the absence of such competence, imparting online education is a challenge for many educators and students. Similarly the power supply especially in rural areas also are not reliable due to the lack of well managed electricity supply. Thus, to meet the challenges related to access for online learning, mature digital learning ecosystems, sufficient digital infrastructure, digital library, digital open sources, digital learning portals, ICT training for students and teacher, adequate social interaction, internet facilities and other necessary supports should be introduced.

6. *Time Management:* The academician who uses online learning systems faces difficulties in managing time. The prerequisite needed to be an effective online instructor is that academics must visit the discussion page at least once a day to see if there is a posting by the students (Burd & Buchman 2004). A viable question is that visiting the discussion board once a day may not be seen as adequate according to cyber culture values (Islam, Beer & Slack, 2015). Some researchers have declared that academics should always maintain a strong presence on online discussion boards so they control discussion, provide answers and feedback that helps the students to engage effectively. Time management is a difficult for online learner in their online courses that requires a lot of time and intensive work.

The time factor in online education is mainly considered in terms of delivering the contents, responding to the questions asked by the learners and developing materials for online courses. Especially developing some digital materials for online learning may be time consuming and that institutions need to support this process both in the allocation of scheduled time and provision of professional development (Baran & Correia, 2014). The online and other digital technology is changing at a faster rate. This requires developing special knowledge and skills to the teacher as well as the students to adopt new technology, system and resources. Bezuidenhout (2018) refers to the lack of time as the 'silent barrier' and suggests that educators and their institutions have to manage time efficiently. While preparing and conducting online learning activities difficulties may occur about managing their time with regard to preparing new materials, promptly answering the students' questions via learning platforms or e-mails and managing other curriculum related work take a significant part of their working time. The teacher should usually engage for almost of these activities regularly when preparing the course, producing teaching materials, preparing quizzes, creating/uploading videos, uploading links to external materials, checking students' queries, assignments etc. These activities are important as well as essential in online learning which makes learning effective.

Another problem concerns making live communication with the students via different learning platforms. To save the teacher's time for other important tasks, good quality open educational resources should be used whenever appropriate, as it will not be possible to produce novel educational materials for all the courses in a reasonable amount of time with existing resources. Sometimes organizational tricks and tips known to some teachers should be shared with the others in order to optimize the efficiency and users' satisfaction, leaving them more time and energy to concentrate on how to ensure learning outcomes to be achieved (Sanchez-Serrano, et al., 2020). Online class takes quite a bit of time to prepare, plan, and teach an online class (Humphries, 2010). It takes faculty two times as long to prepare and teach online than face-to-face, thus spending more time per student to facilitate the class (Cavanaugh, 2005). Thus, the main challenge of online teaching is to manage the time factor.

7. *Attitudes:* The factors related to students' characteristics have a direct impact on their attitude towards e-learning and affect the adopting of e-learning. Such factors are self-motivation, patience, self-discipline, time management, computer software experience, communication and organizing skills (Sabah, 2013). Attitude and behavior have a strong

connection. Student who has a positive attitude creates willingness to learn the subject and help in developing positive learning behaviors on the subject (Bem, 1972). Similarly, students with a positive attitude show a greater probability of accepting the learning system (Sabah, 2013). The attitude of the teacher also affects the teaching and learning process of their students (Nilsson, 2018). The teachers with a positive attitude are more likely to use technology efficiently in their teaching (Yang & Kwok, 2017). Abdullah et al. (2006) state that if teachers have more positive affective, cognitive and behavioral attitudes about technology such as virtual learning platforms, then they would have a greater intention to integrate this technology in the teaching and learning process with their students. Attitudes can become major challenges for e-learning if not addressed openly (Gammill & Newman, 2005). Teachers who are motivated and have an encouraging attitude towards the e-learning technology will enable a positive learning outcome (Gillett-Swan, 2017).

Semerci and Aydin (2018), define attitude as an element that guides the behavior of an individual in coherence with their feelings and thoughts. Moreover, attitude has come to be considered as being positive or negative effects and is associated with a particular object or belief (Kumar & Ratnakar, 2016). Cai, Fan & Du, (2017) affirm that attitude towards ICT can be considered as a multifaceted construct composed of different elements, such as anxiety, motivation, beliefs or the self-efficacy of teachers. Therefore, it is also necessary to boost up the attitude and feeling of the learners, teachers and parents towards the use of technology, its relevancies and legal ground for effective implementation of online education..

IV. CONCLUSIONS

The development of new technologies has changed the teaching and learning trends in higher education, moving from the traditional face-to-face classroom to online learning (Ni She. et al., 2019). The shift to the online education system is rapidly evolving each day throughout the world. In the present situation, online education may not be affordable for all due to the limited or no internet and access to digital devices. It is difficult to cover everyone in the online learning environments in the present context. However, it is not very easy for can stay far from the digital technology in the globalized society today. Technology can help learning move beyond the classroom and take advantage of learning opportunities available in museums, libraries, and other out-of-school settings (Darling-Hammond et al., 2020). Online education, especially in the higher education context has been established worldwide as a radical departure from traditional styles of teaching due to the unexpected emergency created by Covid-19. Switching over the online mode of teaching has a huge challenge for stakeholders.

The article reveals the present context of online education at the higher level, its importance and some major issues and challenges for online learning in Nepal. Observing the present context of online education at the higher education level in Nepal, a very small number of institutions are providing their online classes regularly, especially at Masters and Mphil levels. In some institutions, especially in technical subject areas, very few teachers are attending online classes regularly. In this course, the number of absent students is increasing day by day due to ineffective class delivery and the disturbance of

the internet, electricity and other barriers related to the personal computer, smart phone or others. To sustain the online learning campaign, the application of ICT and educational technology should be exploited properly for online education.

The students in higher education are expected to manage their time effectively and can develop communication and technological skills themselves. Due to their maturity, they can be self-motivated; can exhibit commitment and accept the flexibility that goes with online engagements. However, the poor internet access, irregular supply of electricity, and inadequate institutional support dispute their internal conditions and expectations. Similarly, in the present context, most of the higher education institutions in Nepal do not have enough preparedness for the support services with regard to online pedagogy, online resources, digital library, and learning requirements and competencies. Due to the nature of the teacher centered curriculum design and instructional delivery based on lecturing from the school level to higher education, students are conditioned as passive recipients of knowledge. Nonetheless, these barriers and difficulties could be overcome through common efforts exerted by the stakeholders. Some of the faculty members lack the online pedagogical competencies needed for innovative teaching in higher education.

V. RECOMMENDATIONS

On the basis of the discussion and conclusions, it is recommended that the government and the concerned authority take initiatives for the sincere establishment and management to adopt online education more effectively. Professional training programs for the teachers, adequate support for the technical issues and installation of electronic equipment as well as infrastructure development is essential for the enhancement of quality online education at the higher level. Similarly, more affordable electronic devices needed for online learning should be provided and offline digital learning resources for learners, especially in those remote areas should be developed. This will help to provide an effective approach to the e-inclusion in educational settings.

Priority should be given to a reliable network infrastructure so that online class as well as watching videos, downloading, and uploading interactive media resources can be carried out effectively. The establishment of an online helpdesk is needed to address the queries raised by the students, teachers and parents related to online education. Similarly, the government should manage/establish national learning platforms for interactive virtual classes as well as synchronous and asynchronous communication to exchange the educational resources. The single nationwide learning platform can be expected to facilitate each individual student and teacher whenever they need. Then they should be trained to use such online platform appropriately. This will also facilitate the guidance to the students, teachers and parents on how to use digital tools and platforms for an effective online learning experience uniformly. It may take time, resources and efforts to bring about desired changes from the deeply rooted Nepali teacher-centered tradition and culture of education a new, digital pedagogy. Yet, it is recommended that flexible learning that covers course content, instructional approach, class times, use of technology, learning resources and location, the requirements for entry and communication medium would be the best alternative to the face-to-face class for the time being.

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