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Access and challenges to Use online learning materials in higher education students at remote areas of Nepal: A case study in Bajura

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Abstract

*The integration of online learning materials into higher education has the potential to enhance educational accessibility and flexibility. However, students in remote areas of Nepal, such as Bajura, face significant barriers in accessing and utilizing these resources. This study investigates the current state of internet infrastructure, digital access and the challenges faced by higher education students in Bajura. Utilizing a mixed research design, data was collected through questionnaire and semi-structured interviews involving 30 students and 10 educators from various disciplines. Findings indicate that internet connectivity is poor, with most students relying on mobile devices with moderate to poor service quality. Linguistic barriers, particularly the predominance of English-language materials, hinder effective learning. Socio-economic constraints, including the high cost of internet services, limited access to devices and gender based discrimination make further exacerbate the issue. Digital literacy levels are variable, with students showing considerable deficiencies in essential digital skills compared to educators, who generally exhibit better proficiency. The study underscores the need for improved digital infrastructure, more accessible educational resources in local languages, provide training to the students' to u*se tools like Google Translate, *DeepL, QuillBoot and other application for the translation of texts and enhanced digital literacy training for both students and educators to bridge the educational divide.*

Keywords: *Access, Higher education, Remote area, Leaarning materials*

Introduction

The use of technology in education has become increasingly popular in recent years, with online education being one of the most widely used modes of learning in higher education

institutions (Morze et al., 2021). Simply online learning materials is known as internet materials that includes a wide range of content, such as web pages, images, fact sheets, podcasts, online resources such as blogs, teaching guides, lesson plans, apps and video clips on sites such as YouTube or Vimeo, etc. The materials may include text, images, radio and television broadcasts, films, videos or music. Learning resources that are used in the education of university students are often available online. The potential benefits of online education include increased accessibility, flexibility, and convenience for students (Knightley, 2007). However, there are also challenges associated with this mode of learning, such as the lack of social interaction that occurs in online courses (Kamraju et al., 2024). The nature of new technologies causes an interweaving of formal and informal learning, with the result that a more active role is expected from students with regard to the use of ICT for their learning (Lebenicnik, Pitt & Starcic, 2015). The importance of online learning materials has become increasingly evident in recent years, particularly in light of the COVID-19 pandemic, which forced many educational institutions to shift to online teaching and learning. Online learning content is accessible through different kinds (text, images, sounds, and artefacts) (Moore & Kearsley, 2012) and forms of media (adaptive, interactive, narrative, productive) (Laurillard, 2002). The informed user can employ various online learning resources to create a learning environment that suits his personal learning needs (e.g. learning styles, individual accessibility needs, motivation, etc.). Different online courses are found in different internet portal such as: google, you tube, chrome, google scholar and so on. Online courses have been found to be conducive to students who favour self-regulated learning (You & Kang, 2014). In addition to the knowledge of different types of ICT, it is important to understand someone's personal learning needs. Though there is greater impact of ICT in education system worldwide but not all the people throughout the world are taking benefit from this technology. Mainly the people of the remote area, marginalized or minority people, people of the backward or least developed society are not taking the convenience benefit from this opportunity due to the problem of language, lack of suitable tools, lack of email or internet facilities, problem of appropriate knowledge, gender based discrimination and so on because of this the grate ditch of knowledge is shown in the world today. We can say it in other hand the present era of information, communication and technology crate and enlarge the great ditch of knowledge between haves or have not, back ward and forward society along with opportunity.

Access to online educational materials is a significant challenge for higher education students in remote areas of Nepal like Bajura. These regions often suffer from limited internet connectivity, inadequate technological infrastructure, and a lack of digital literacy among both students and educators. The rugged geography and underdeveloped telecommunication networks further worsen these issues, making it difficult for students to access essential academic resources. Additionally, socio-economic factors, such as poverty and lack of access to devices like computers and smartphones, gender based discrimination and unnecessary control to used digital device hinder students' ability to fully participate in online learning. Addressing these challenges requires concerted efforts from the government and educational institutions itself. Nepal declared in its policy to creating supplementary ODL system to advantage with all the possible opportunities for the citizens belonging to various need contexts to give access to

education and opportunities to obtain formal education and overall personality development especially to the disadvantaged community, women, and working people through distance mode (Giri, 2020). This policy is not implementing effectively. Still there is lacking of basic internet facility in the remote area of Nepal. The access of broadband internet services is in the limited area of country. In this overall situation there is problem in the remote area of country to avail the right education to all the people of the nation.

Statement of the problem

Nepal is a developing country with a significant portion of its population residing in rural and remote areas. The government's push towards digital education aims to bridge the educational divide between remote and accessible areas. Despite these efforts, students in remote regions face numerous obstacles in accessing and effectively utilizing online learning materials. These obstacles include inadequate internet infrastructure, language problem, limited access to digital devices, lack of digital literacy and socio-economic barriers, Gender based discrimination. The research problem is to investigate the access to and challenges faced by higher education students in remote areas of Bajura in using online learning materials. The aim of this study is to identify the availability, barriers and encountered by students in their attempt to benefit from the use of online educational resources for their academic progress.

This study aims to provide a comprehensive understanding of the challenges and barriers faced by higher education students in remote areas of Nepal in accessing and using online learning materials. By identifying these challenges the study seeks to inform policy recommendations and interventions that can enhance digital education in these regions. Addressing these issues is crucial for ensuring equitable access to quality education and bridging the educational divide between accessible and remote areas.

Literature review

The integration of online learning materials into higher education has revolutionized the educational landscape worldwide. However, in remote areas of developing countries like Nepal, the utilization and impact of these resources present unique challenges and opportunities. This literature review examines the access to and challenges faced by higher education students in remote areas of Nepal on the basis of case study in Bajura district in using online learning materials.

The digital divide remains a significant barrier in remote regions of Nepal. According to Pandey and Shrestha (2018), internet penetration in rural Nepal is markedly lower than in urban areas, primarily due to inadequate infrastructure. The Nepal Telecommunications Authority (2020) reports that only a small fraction of remote regions have access to high-speed internet, which is essential for effectively utilizing online learning materials. Though there is access of online materials for students language create the critical barriers for their affective use. The majority of online learning materials are available in English, which is not the first language for students in remote areas of Nepal like Bajura. As pointed out by Adhikari (2020), this language

barrier can hinder comprehension and reduce the effectiveness of online learning. Socio-economic factors play a crucial role in determining access to online educational resources. A study by Koirala et al. (2019) highlights that students from low-income families often lack the necessary digital devices such as android mobile phone, laptops or tablets. Additionally, the high cost of internet services in remote areas further exacerbates the issue (Ghimire & Aryal, 2020). Digital literacy among both students and educators is a significant factor in the successful adoption of online learning materials. According to Poudel and Acharya (2021), many students in remote areas lack basic computer skills, making it difficult for them to navigate and utilize online resources. Similarly, educators often require training to integrate digital tools into their teaching effectively (Sharma, 2020). Various initiatives have been undertaken to improve digital access and literacy in remote areas. The Nepalese government, in collaboration with international organizations, has launched programs to enhance digital infrastructure and provide training to educators (Ministry of Education, Nepal, 2021). Despite these efforts, implementation challenges remain, particularly in the most remote and inaccessible regions. The COVID-19 pandemic has brought the issue of digital education to the forefront. With the closure of educational institutions online learning became a necessity rather than a choice. According to Subedi et al. (2020), this shift exposed the stark disparities in digital access and literacy, with students in remote areas being disproportionately affected.

Methodology

Mix research design has used for this study. The survey was conducted among 30 Far-western university students of the two colleges (60 percent girls and 40 Percent Boys) from the faculty of Education, Management, Humanities and social science. In this sampling process 10 students are taken from each faculty who have been studying in under graduate level and 10 teachers who have been teaching in the same level. Questionnaire and interview are used as tools of data collection and national and international journals, reports, websites, text books have used as reference materials.

Results and Discussion

Most of the Hilly and Mountain region of Nepal are still backwards. There is a lacking of stable and effective transportation, electricity, communication, quality education and health services and other ICT related technology. In this study it's trying to find out the situation of access and challenges to use the online materials for higher education students of Bajura district. The first and foremost necessities for the internet access there will be availability of infrastructure like android mobile, lap top, desk top computer, electricity, fiber optic cables, 4G or more high speed internet facilities and mobile towers etc. The current state of internet infrastructure and digital access to students is presented:

Table 1

Current state of internet infrastructure and digital access of Students

Internet infrastructure	No of students in %	Quality of infrastructure response by students			
		Best	Good	Moderate	Poor
Android Mobile	93	3	10	67	13
lap top	7		7		
desk top computer	7		7		
Electricity	100			10	90
fiber optic cables	33			10	23
Wifi	63		33	7	23
4G	93	0	13	20	60

Source: Field data 2024

This above table shows access and availability of infrastructure to use the online materials for their academic purpose. The majority of students use Android mobile devices for internet access, with most experiencing a moderate quality of service. Only one student reports the best quality, while a few find it good or poor. Very few students use laptops, but those who do report a good quality of infrastructure. Similar to laptops, desktop computers are used by only a couple of students out of 30 students both of whom rate the quality as good. A smaller group of students only 33 percent have access to fiber optic cables, with most rating the quality as poor and a few as moderate. All students have access to electricity, but the vast majority (90 percent) rate the quality as poor, with only a few finding it moderate. Wi-Fi is used by 63 percent students, with over half reporting good quality. However, some find it moderate, and 23 percent students rates it as poor. Majority of students (almost 93 percent) have access to 4G services, but most of the students around 60 percent rate the quality as poor, with some finding it moderate and a few rating it as good. In the case of 4G services students response was very serious they compelled that in the simple rainfall and cloudy environment disturbed not only the 4g services, the mobile network also does not work at their home town. 4g services can work at District Headquarter (DH) and some Accessible Area (AA) of district.

Looking at the above situation, it can be seen that Android Mobile is the most commonly used device but primarily offers moderate to poor quality. Laptops and desktop computers are used by very few students, but those who do report good quality. Electricity is available to all students but the quality is largely poor. Fiber optic cables are not widely used and the quality is mostly poor. Wi-Fi has a mixed reception with some good experiences but also significant poor ratings. Majority of students have formal access of 4G services but mostly considered poor in quality at their home town accept the DH and AA. This assessment highlights significant challenges in both device availability and quality of internet infrastructure

among students, pointing to a need for improvements to support better digital access and learning experiences.

Linguistic Barriers

Many online learning materials are in English, which is the third language in the context of Nepal as well as the Bajura. So the students which are studying in higher education couldn't take the benefit from online materials though they have the access in internet services. The given data illustrates the linguistic challenges faced by students in understanding and using online materials available in English:

Out of 30 students' 27 percent struggle with both reading and comprehending English. This indicates a significant barrier for these students in accessing and benefiting from English-language online resources. **60 percent students** can read English text but fail to grasp its meaning. This suggests that while they have basic reading skills, their comprehension is insufficient for effective use of English materials. **13 percent students** have a limited understanding of English. This minimal comprehension means they can only partially benefit from English online resources often requiring additional support or translation. **47 percent students** frequently misinterpret the meaning of English content. Misunderstanding can lead to confusion and incorrect application of information, highlighting the need for better language support or more accessible materials. **47 percent students** avoid using online resources entirely because they cannot understand English. This complete avoidance underscores the critical need for alternative resources or effective translation tools to bridge the gap. **90 percent students** do not know how to translate English materials into Nepali. This overwhelming majority points to a significant barrier in accessing content, suggesting the necessity for education in using translation tools or availability of pre-translated materials. **Only 10 percent students** can utilize software to convert English materials into Nepali. While a small number this indicates that some students are leveraging technology to overcome language barriers although more widespread training or tools may be needed.

The data highlights substantial linguistic challenges among students in using English-language online materials. Most students either do not understand English well enough or lack the skills to translate content effectively, leading to avoidance or misinterpretation of important information. These issues suggest a strong need for improved language education, better access to translation tools and possibly more resources available directly in Nepali to ensure all students can benefit from online materials

Socio-Economic Barriers

Economic constraints restraining many families from affording devices and internet access. Students from low-income families are less likely to have access to personal computers or smartphones. There is a lack of awareness and motivation among some communities to prioritize digital education, influenced by traditional views on education and technology.

High Cost and Poor Quality of Internet Service

Still many people are under poverty line in Nepal. According to National economic Survey 2024 AD 15.1 percent population of Nepal living under the poverty line. Numbers of students are excluded to achieve education due to poverty. They could not manage school/college fee, computer, laptop, smart phone and internet. The main concern of this study is how is the socio economic condition create the problem to use the online learning materials? How many students are facing the economic problem to use online materials in their learning process? In this situations approximately 93 percent students (28 out of 30 students) indicated that the need to use 4G service for internet access is both unaffordable and unreliable. They mentioned that even simple rainfall or cloudy conditions can disconnect their internet service. This suggests that a significant majority of students face a dual challenge: the economic burden of affording 4G service and the technical issue of poor connectivity. The reliance on 4G, likely due to a lack of more stable alternatives such as broadband, exacerbates the issue. In this case two representative response of the students is as follow:

> *I have one smartphone and I have to share it with my siblings. The internet is slow, and sometimes we don't have money to recharge. It takes long time to download even very short video and small portion of content. Due to such problem data has been lost but the materials cannot be studied." (Indra Rokaya, B. Ed. 6th Sem, Bajura Campus).*

Another respondent viewed as:

> *As a semester based students we need to engage to much for our study. We need to search different course related materials from online. For this I have lacking both appropriate device and expenses. Sometime I feel frustration of not having the right tools for online learning. "I don't have a laptop and good quality smart phone. Some websites does not work well on mobile, and it's hard to read long materials. Most of the time the internet does not work on my mobile. Even if it runs, it runs at a very slow speed. It make me irritate and boring to read online materials. (Bina Giri B.Ed. 5th Sem, Badimalika Campus)*

The narratives of above students highlight significant economic challenges faced by students in accessing online educational materials. Both students lack adequate devices, slow and unreliable internet connections, which make it difficult to download or access study materials efficiently. Financial constraints add another layer of difficulty, as they struggle to afford regular internet recharges. These issues not only hinder their ability to engage in online learning but also lead to frustration and demotivated.

Quality of Internet over Economic Barriers

Two out of 30 students that means around 7 percent stated that their primary issue is the quality of the internet rather than the economic aspect. For these students, affordability is not a problem. While a small minority this highlights that for some students the primary barrier is

technical rather than economic. It indicates that improving the quality of internet services could address some of the barriers faced by students.

Parental Interference

One question to the student is: do you have any family or social problem regarding to study online materials? The student's response to the question was that some time parents do not understand the situation and get angry. Girls respond that we are more likely to experience online harassment, bullying, and threats, which can deter us from engaging with online platforms. If we spend time on our mobile and other digital devices people in the society and in some cases family member will suspect our character so we need to aware with time and situation while we spending the time in digital device respondent girls react. Another girls response that we are not free like boys to the engage with digital device because we have so many duties at home with the compare to boys so it make us less user of online materials then boys. In this case 62 percent girls' students have the same experienced and response. Only 13 percent boys reported that they sometimes bear the abuse of their parents when they are listening to or reading online materials related to our curricula. This reflects a serious socio-cultural barrier and gender barrier where parents may not fully understand or support the students' need for uninterrupted study time, potentially due to a lack of awareness about online learning requirements or other household priorities.

Majority of students (93%) face significant socio-economic barriers in accessing online learning materials primarily due to the high cost and poor quality of internet service. A small portion (7%) of students face issues with internet quality over economic constraints. In the case of social cultural barriers 62 percent girls and 13 percent of boys has not favorable family environment, indicating a need for awareness and support from parents to facilitate a conducive learning environment at home. These findings underscore the need for interventions to improve internet accessibility and quality, along with community education programs to foster a supportive home environment for students engaging in online learning.

Digital literacy levels among students and educators

Digital literacy refers to the ability to effectively and critically navigate, evaluate, and create information using a range of digital technologies. It encompasses a variety of skills necessary to use digital tools and resources competently. Digital literacy can significantly help students overcome linguistic and socio-economic barriers in their learning process, making education more inclusive and accessible. Digital platforms often provide educational materials in multiple languages. Apps like Duolingo or Babbel can assist students in learning new languages, improving their ability to engage with a wider range of educational materials, many digital educational resources, such as Open Educational Resources (OER), Massive Open Online Courses (MOOCs), and educational videos on platforms like YouTube, are available for free digital tools allow students to learn at their own pace and on their own schedule. Digital libraries and e-books provide students with access to a vast range of books and academic papers. To utilize all that opportunities digital literacy is necessary for educators and students. In the study area digital literacy of educators and students is identify as follows:

Table 2

Digital literacy of students and Educators

Digital literacy	**Percentage of students out of 30 total students**					**Percentage of educators out of 10**				
	excellent	Very good	Good	Fair	poor	excellent	Very good	Good	Fair	poor
Basic Computer Skills	13	17	23	33	13	40	30	20	10	
Internet Navigation:	3	8	13	41	35	30	30	20	20	
Communication Tools:		7	13	47	33	20	40	20	20	
Online Safety and Security:		10	17	66	7	20	40	20	20	
Software Proficiency		7	7	66	20	20	30	20	30	
Digital Content Creation:			10	67	23	20	30	20	20	10
Using Digital Devices:	10	10	13	44	23	3	30	20	10	10

Source: Field data 2024

On the basis of above finding the majority of students (56%) have a fair to good level of basic computer skills, indicating a need for improvement. A smaller proportion (30%) have very good to excellent skills, showing a minority who are quite proficient. Most students (76 %) have poor to fair internet navigation skills it indicate that significant portion needing improvement. Only 11 percent students have very good to excellent internet navigation skill. This portion of students can able to efficient use of web browsers like Chrome, Firefox and Safari. Like this a large majority of students (80%) have fair to poor communication tool skills, suggesting this is a weak area. The majority of students (73 %) have fair to poor online safety and security knowledge. Most students (87 %) have fair to poor software proficiency, indicating significant room for improvement. The vast majority of students (90%) have fair to poor digital content creation skills, with no students excelling or even being very good in this area. This indicates a significant deficiency in digital content creation capabilities. More than half of the students (67 %) have good to excellent skills in using digital devices, showing relative proficiency in this area. A smaller proportion (20%) have fair to poor skills, indicating some need for improvement but generally better performance compared to other categories.

The data shows that students generally have better in basic computer skills and using digital devices with significant deficiencies in areas such as internet navigation, communication tools, online safety and security, software proficiency, and digital content creation. These results suggest a need for targeted educational programs to improve digital literacy.

Whereas the situation of educators about the digital literacy seems just reverse to the students. A significant majority of educators (70%) have very good to excellent basic computer skills. This indicates a strong proficiency in fundamental computer operations among educators. Most educators (60%) have very good to excellent internet navigation skills, suggesting good proficiency. However, 40% of educators fall into the fair to good category. The majority of educators (60%) have very good to excellent skills in using communication tools, showing strong proficiency. The remaining 40% have fair to good skills. Similar to communication tools, 60% of educators have very good to excellent online safety and security skills. However, 40% have fair to good skills. A majority of educators (50%) have very good to excellent software proficiency, showing good competence. However, 50% fall into the fair to good category, indicating a need for further development in software skills for a significant portion of educators. While 50% of educators have very good to excellent skills in digital content creation, the other half range from fair to poor. This indicates a clear need for improvement in digital content creation skills among a significant portion of educators. The majority of educators (60%) have very good to excellent skills in using digital devices, indicating strong proficiency. However, 40% fall into the fair to poor category, showing that a notable portion of educators could benefit from additional training in using digital devices.

The data indicates that educators generally have a good level of digital literacy, with the majority showing very good to excellent skills in basic computer skills, internet navigation, communication tools, online safety and security, and using digital devices. However, there are areas that need improvement, particularly in software proficiency and digital content creation, where a significant portion of educators have only fair to poor skills. This suggests that while many educators are proficient, there is a need for targeted training programs to enhance digital literacy in specific areas.

Efforts to tackle the prevalent problems

After COVID-19, the adoption of distance learning and the use of technology in education is rapidly increased, even in rural areas, as the pandemic forced a rapid shift towards online education. Recognizing the challenges, colleges have been actively working to bridge the digital divide by partnering with governments, NGOs, and tech companies to improve internet connectivity and provide digital devices to teachers and facilitated for students. They have also established Wi-Fi hotspots and community learning centers to ensure students can access online materials. Meanwhile, teachers have been at the forefront of adapting to this new reality by advocating for infrastructure improvements and embracing low-bandwidth tools suitable for areas with limited connectivity. They have also developed offline resources and downloadable content to ensure that learning can continue even without a constant internet connection. Through these combined efforts, both colleges and teachers are making significant strides in overcoming the challenges of online education. In the response to the question in the study area: how much support teachers and college to improve the capacity of students to use the online materials? Students' gave varies response. Almost 70 percent students give the different positive response that college and teachers made the various efforts and motivate the students to

use the online materials. Likewise 30 percent students response that there is no significant efforts has been made from college and teachers to increase the use of online materials and diminishing the challenges. The response of the students is given in the following table :

Table 3

Efforts of College and Teacher to increase the use of online materials.

Response	**No of students to responding**	
	Number	**Percentage**
Increasing infrastructure in college	10	33
Providing offline materials by teacher	10	33
Management of free Wi-Fi zone at college	5	17
Provide the learning materials in Nepali through email, messenger and whatsApp etc	12	40
Providing guidance from the teacher	8	27
Use of Technology in teaching	15	50
No significant efforts has been made	9	30

Source : Field survey 2024

Table 3 outlines various efforts made by colleges and teachers to enhance the use of online materials, with responses from students indicating their effectiveness. The data shows that 50% of students highlighted the use of technology in teaching as a significant effort, reflecting its crucial role in increasing online material usage. Providing learning materials in Nepali through email, messenger, and WhatsApp was noted by 40% of the students, underscoring the importance of language accessibility in promoting engagement. Meanwhile, increasing infrastructure and providing offline materials were each cited by 33% of the students, suggesting that these are also key strategies. Efforts like managing free Wi-Fi zones were less emphasized, with only 17% of students recognizing this initiative. Additionally, 27% of students appreciated guidance from teachers, which can help navigate online resources more effectively. However, 30% of students felt that no significant efforts had been made, indicating areas where further improvements could be necessary.

Conclusion

The research reveals significant challenges in the access and use of online learning materials by higher education students in remote areas of Nepal, particularly Bajura. The primary issues include inadequate internet infrastructure, linguistic barriers, socio-economic constraints, and varying levels of digital literacy. The study highlights that while the majority of students rely on mobile devices for internet access, the quality of service remains weak. Linguistic challenges, due to the predominance of English-language resources, hinder comprehension and utilization. Socio-economic barriers, such as the high cost of internet services and limited access to devices, further restrict students' ability to engage with online

education effectively. Despite some improvements in digital literacy among educators, students' skills in critical areas such as online safety, software proficiency, and digital content creation are notably lacking. Addressing these challenges requires a multifaceted approach: enhancing digital infrastructure, providing educational materials in local languages, and implementing targeted digital literacy programs. Collaborative efforts from government bodies, educational institutions, and non-governmental organizations are essential to ensure equitable access to quality education and bridge the digital divide in remote areas. Efforts by colleges and teachers to address these issues, including providing offline materials and increasing technological support, have had mixed success, highlighting the necessity for continued and expanded interventions.

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