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Community College Teachers' Perceptions and Practices of ICT Integrated Teaching

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Min Prasad Dawadi *
dawadimin2021@gmail.com

Abstract

In the present pedagogical context of higher education in Nepal, Information and Communication Technology (ICT) integration in classroom pedagogy has become an evolving phenomenon. The community college teachers of Chitwan district are gradually shifting to technology-enhanced classroom pedagogy from the conventional mode of instruction for better teaching and learning outcomes. Although the stakeholders have emphasized ICT integrated pedagogy, teachers have experienced several barriers to its effective integration in the regular classroom activities. In this context, the present study examined community college teachers' perceptions and practices of integrating ICT in the community colleges in Chitwan, the perceived barriers to its effective integration, and ways of overcoming such barriers. The study was carried out employing a quantitative research approach and survey design. The researcher used the Convenience Sampling Method to purposively collect responses from forty teachers from nine community colleges teaching at bachelor's and master's levels. The data collected through the questionnaire were analyzed using percentage and frequency distribution statistical tools. The analysis of responses revealed that the status of ICT integration in the classroom did not seem satisfactory, although the teachers had positive perceptions of technology-supported teaching. The perceived major barriers were lack of enough ICT-friendly infrastructures and resources, insufficient ICT-based professional development opportunities, and the lack of students' digital literacy. The findings of the research imply that community colleges and faculties need more ICT-based teacher development programs, well-equipped ICT infrastructure, budgetary support, increased digital competence and accessibility of students, and an inculcation of ICT-based pedagogical culture to enhance its effectiveness for better teaching-learning outcomes.

Key Words: classroom pedagogy, digital competence, ICT tools, technology-supported teaching, perceptions, practices

Introduction

Information and Communication Technologies (ICTs) have been an indispensable mainstay of the present society (Joshi, 2017). Its proliferation can be witnessed in the present pedagogy and practices of academia including higher educational institutes.

* Min Prasad Dawadi is an assistant lecturer of English at Bhuwanishankar Multiple College, Khairahani, Chitwan.

In this regard, Sarkar (2012) states that the application of ICT has been a fundamental component of the 21st-century curriculum at school and college levels. Schools, colleges, and universities are gradually integrating ICT as an ingredient of their curricular practices, classroom pedagogy, and evaluation systems due to its effectiveness in enhancing teaching-learning output. It has become a universal prerequisite to substitute traditional teaching methods with technology-based pedagogical tools and facilities (Ghavifekr & Rosdy, 2015). We can observe a noticeable difference in the way teachers prepare the materials, deliver the content in the class, run the classroom discourse, and evaluate students' achievement. In academia equipped with modern infrastructures, teachers are found using digital devices such as laptops, desktops, multimedia projectors, interactive whiteboards, and so on to deliver the content. Similarly, Microsoft Word, PowerPoint, and other animation tools are used to further assist teachers in creating audio-visual materials that can be used in regular classrooms.

Studies on technology-supported pedagogy reveal that digital technologies scaffold learners by facilitating the knowledge construction process and creating new avenues for learning. They have uncovered the increasing trend of integrating ICT tools into education in the 21st century. The application of ICT tools has created new learning opportunities for both teachers and learners. Revealing the changed scenario in academia, Leow and Neo (2014) state that the progression of technologies has inspired the stakeholders to produce more interesting and compelling approaches in teaching and learning contexts in the media-dominated 21st century. Technology has amplified collaborative learning because various tools support individuals to be linked effortlessly (Paudyal, 2020). Digital devices make classroom practices more interactive, visually appealing and stimulating by facilitating the learners' creative genius for constructing knowledge and acquiring skills. They broaden the horizons of the pedagogical process and enable interactive learning to make the learning meaningful (Demo & Seli, 2012, as cited in Leow and Neo 2014). Teachers can explore the resources available on the web and expand the horizons of their knowledge, experience, and skills. They assist the learners to enhance their learning achievement, where they can become part of the learning and sharing forums both virtually and face-to-face by playing the role of a teacher support group. The ideas and experiences shared and discussed in these forums contribute to the effective delivery of the content in the classroom. These practices ultimately benefit the learners because trained, resourceful, and innovative teachers can effectively and efficiently guide them. The use of ICT in the teaching and learning process 'brings about powerful learning environments and helps students deal with knowledge in active, creative, self-directed, and constructive ways' (Bhusal, 2020). It keeps the learners engaged in reading, writing, practicing language skills, communicating and thinking critically and creatively about the assigned tasks. In this regard, technology

facilitates learners' engagement in learning, interacting, and sharing their knowledge and skills. As the globe is getting flat due to the information superhighway, learners can utilize a plethora of opportunities to widen the horizons of their knowledge and skills by transcending the barriers of the classroom through technology. Along this line, Mdlongwa (2012, as cited in Joshi, 2017) states that the use of ICT in teaching and learning facilitates the learners' ability to be linked with scholarly professionals, enables access to the quality learning materials that are globally available, and supports autonomous learning by making the communication easier and faster.

In recent pedagogy, ICT has been a call of academia as it arouses motivation and enthusiasm in the learners in the classroom, ruptures geographical barriers if resources are in the access of both teachers and learners, and contributes to better learning outcomes. Highlighting its importance, Bhusal (2020) claims that technology-based teaching is more effective than traditional classrooms because such practice creates an active learning environment that makes the teaching-learning process more interesting and effective for all concerned. ICT fosters creativity, productivity, and self-motivation in learners. The availability of internet access in academia opens convenient learning spaces for both teachers and learners. Teachers can explore the resources from different websites and online portals, which increases the domain of students by enabling them to access the learning resources globally and get support from teachers, who are competent and up-to-date with innovative pedagogy. Its use enhances multiple skills of the learners and manages their independent learning (Yunus et al., 2009).

Although the use of ICT has become indispensable in modern pedagogy, studies (Ramorola, 2013; Rabah, 2015; Parajuli, 2016; Rana, 2018; Bhandary, 2020; Rana & Rana, 2020) have shown that its effective use depends on the preparedness of the teachers, ICT-friendly physical infrastructures, sustainable financial resources, and the positive attitude of the stakeholders. The stakeholders are expected to emphasize the need for digital literacy in both teachers and students. The academia, which can allocate enough budget for infrastructural development of the college and faculty development programs through ICT-focused programs, can produce desired learning output. In the context of Nepal, effective integration of ICT is relative to infrastructural availability, training opportunities, competence in ICT use, financial limitations, policy-practice contradictions, the readiness of the teachers, and the identification of curricular needs (Laudary & Mehar, 2019). Teachers in rural areas are not trained enough in the pedagogical use of digital tools. Similarly, schools and colleges are not well-equipped with ICT facilities and they lack enough financial resources to set up essential infrastructure. Such hindrances entrap the schools and colleges of urban and semi-urban areas. A digital divide between urban and rural areas, as well as between the rich and poor, makes it further complicated.

Several studies (Aslan & Zhu, 2015; Hossain et al. 2016; Parajuli, 2016; Bhandary, 2020; Laudari et al., 2021; Adhikari, 2021; Mishra, 2021) investigated the status of ICT integration and stakeholders' perceptions on its effectiveness, perceived barriers and ways to overcome them. The majority of these investigations focused on the issues of the status of ICT in school education, overall higher studies, perceived opportunities and challenges faced by the stakeholders, policy-practice contradictions, the digital divide between urban and rural areas, haves and have-nots, and so on. However, there is a dearth of research examining the prime issues related to the status of ICT-integrated pedagogy and perceptions of teachers specifically in the context of community colleges in Chitwan, Nepal, where ICT integration has been an evolving phenomenon. Thus, the present study aims to identify community college teachers' perceptions and practices of ICT integrated teaching, perceived barriers, and ways to overcome such barriers.

Review of Recent Literature

A plethora of empirical studies deal with the concerns of ICT use in education, its effectiveness, and challenges in global, Asian, and local contexts. Most of the studies (Rabah, 2015; Nasreen & Chaudhary, 2018; Ahmed et al., 2021; Kunwar et al., 2022; Shrestha et al., 2022) explored emerging issues and practices of ICT concerning ICT status in education, attitudes of stakeholders to ICT integration in classroom pedagogy, challenges encountered by the practitioners, and expectations from the teachers to have effective ICT integration in their classes.

ICT integration in education bears both opportunities and challenges. Studies show that educational institutions in developing countries like Nepal are yet to adopt ICT-integrated pedagogy in a full-fledged manner although teachers and other concerned stakeholders have positive perceptions. It is due to the barriers related to infrastructures, teacher training, budgetary limitations, and so on. Exploring the issues of challenges and benefits of ICT integration in the context of Turkish schools, Rabah (2015) revealed that engagement of a higher number of students, opportunities to combine both global and local aspects in education, and scaffolding for the learning process of the students are the major benefits of ICT-supported pedagogy, whereas the deficiency of supporting school headship, uneven investment in digital devices, insufficiency of required resources, the necessity of further support for professional development, and use of ICT in the evaluation and curricular plans are hindrances to the effective ICT integration. In such a situation, the educational stakeholders are expected to plan and work out a way to transform the challenges into opportunities. ICT-based faculty development programs could ease innovative practice and contribute to better learning output along with infrastructural development. Along this line, Aslan and Zhu's (2015) study on the perceptions of pre-service university teachers on ICT integration in teacher education

programs uncovered that academicians should be more competent in ICT integration into their teaching practice as a teacher's competence positively affects the process of designing, planning, and delivering the courses. The maximization of ICT skills and experiences is essential for a better learning output.

The success or failure of any program or practice is considered a relative concept in the evaluation process. It is considered to be determined by the appropriateness of all the concerned dynamics. The studies on ICT integration mirror this ontology. In this vein, the findings of Albugami and Ahmed' (2015) study on the success factors of ICT integration in Saudi Arabian schools revealed the need for a positive perception of the stakeholders besides the availability of the resources. Although the teachers perceived ICT as an important tool to enhance performance, create a collaborative culture, and support better learning outcomes, the lack of enough resources, the deficiency of head teachers' ICT competence, and the lack of clear policies for ICT integration obstructed its effective implementation.

Studies in the South Asian educational context revealed that inadequacy of resource and ICT-based infrastructure have hampered technology-supported teaching. In this regard, Hossain et al. (2016) explored the issue of readiness and challenges of ICT in the context of higher education in Bangladesh. The research uncovered that higher institutions in Bangladesh were facing infrastructural issues related to both physical and human resources that hindered effective ICT integration in the classroom. Along with ICT-based services in the classroom, the teachers needed training for their professional development and quality enhancement. Nasreen and Chaudhary (2018) explored the obstacles to successful ICT integration, which revealed that the lack of willingness of the teachers was one of the key hindrances to ICT integration. Resonating with other similar research findings, it uncovered that the readiness of the teachers, positive attitudes toward technology-supported teaching, ICT- based training programs, enhancement of logistic capacity, time adjustment in courses, and flexibility in classroom practices, as well as an evaluation system, could better ease the teaching-learning through technology. Similarly, Ahmed et al. (2021) found that teachers were positive towards ICT integration in their teaching, irrespective of their gender, academic level, and computer competence in the South Yemeni higher educational context. Yet there existed a gap between perceptions and practices, variation in the teachers' level of competence; insufficiency of ICT tools; need for competency-based training; and lack of enough logistics, which hindered the effective practice of ICT-integrated pedagogy.

In the context of Nepal, empirical studies on ICT explored the status and issues of ICT integration in Nepalese academia. Parajuli (2016) investigated the practice of mobile

learning in higher education in Nepal. The study revealed the positive implications of using mobile phones to access resources, explore content, and enhance knowledge and skills. However, university-level students encountered several challenges to the effective implementation due to a lack of sufficient financial resources to manage the cost of devices and data packs or the internet, technological issues, issues of ethics, policy, and practices. This indicates that the motivation and readiness of the teachers and students for ICT integration are obstructed by the deficiency of an ICT-friendly atmosphere, supportive facilities, and financial resources. The study of Bhandary (2020) on English teachers' perceptions and practices of integrating ICT in ELT revealed similar circumstances in ICT integrated ELT classroom practices where the regular classes were hindered due to the issues related to ICT infrastructures, ICT competence in teachers, deficiency of resources, connectivity, and policy-practice gaps although teachers had a positive attitude toward innovative teaching through ICT integration. The stakeholders expected these issues to be addressed well for better teaching-learning output. The study of Bhusal (2020) on Nepalese teachers' perceptions of integrating technology into ELT exposed similar findings related to technological hurdles that prevented the teachers from running regular classes in a constructivist manner with the integration of digital tools.

In a similar vein, the study of Adhikari (2021) on teachers' perceptions and challenges of using ICT in teaching mathematics at secondary-level schools in the Kathmandu district revealed that mathematics teachers' ICT-integrated teaching was hindered by a lack of ICT-based knowledge, a low-level of confidence, insufficient experience in using digital tools for teaching-learning, the unwillingness of some practitioners, and infrastructural and logistic issues. This implies that the successful integration of ICT into regular pedagogy results from the sufficiency of resources, and infrastructures trained teachers, and the readiness of the stakeholders. Uncovering the perceptions and practices of college teachers, Mishra (2021) uncovered that enthusiasm and readiness were crucial factors for this innovation in teaching-learning. These findings infer that the integration of ICT is a gradual process rather than a one-time completion of everything. It commences with the motivation of the stakeholders and proceeds ahead with infrastructural improvement, training for the teachers and learners, teamwork, and problem-centered learning activities.

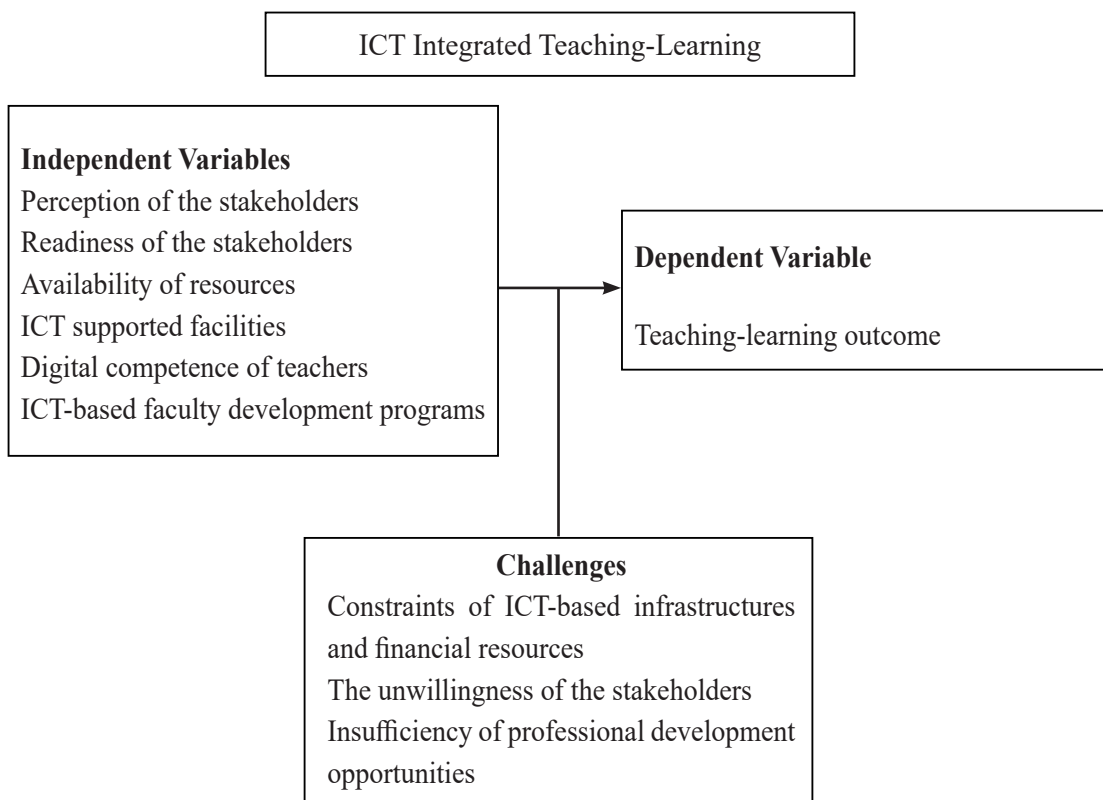
The COVID-19 pandemic in 2020 AD and 2021 AD caused the forceful closure of all schools and colleges for several months in Nepal. It further compelled academia to transform from a conventional face-to-face mode of teaching to virtual mode that gave both agony and ecstasy to the teachers and students. Laudari et al. (2021) explored teachers' perspectives on the issue of a remote teaching in Nepalese higher education

during COVID-19. The research uncovered that remote teaching was hindered by issues related to exam policies, support for teachers' professional development, and integration of technology. Despite these barriers, teachers strived to give their optimum results with an optimistic outlook, beliefs, and self-supported learning. The blended model of instruction was advised to address the needs of all types of learners as our schools were gradually adopting technology-supported teaching. Similarly, Kunwar et al. (2022) researched the impact of the force paradigm shift on the pedagogical practices of higher education. The study revealed that access to a plethora of resources, technological adoption, and access to quality education were the major impacts. However, all the teachers and students could not benefit from it due to a deficiency of resources and infrastructures, ICT incompetence, and technical difficulties in several schools and colleges in the country. In a similar vein, Shrestha et al. (2022) investigated the issue of preparation and practices of online education in Nepal and Bangladesh during Covid-19. The study indicated that infrastructural and connectivity issues, lack of effectiveness and confidence due to technical knowledge and skills in teachers, low attendance of the learners, and unclear policies of the educational institutions hindered the effectiveness of ICT integrated virtual classes.

The majority of studies on ICT-intergrated teaching conducted in the global context, Asian context, and local context uncovered the opportunities and challenges encountered by the stakeholders at the school level. However, they have not sufficiently pointed out the issues of perceptions, practices, challenges, and ways to overcome those challenges in the context of the community colleges of Nepal, which is a clear research gap unveiled through the literature review. In addition to these, the literature review enabled the researcher to identify the variables affecting the ICT integration in teaching, possible barriers, and the outcomes in the teaching-learning process.

Conceptual Framework

The conceptual framework for this study is based on the review of existing literature, which revealed that the effective integration and desired output of technology-supported teaching depend on the availability of essential infrastructures, the readiness of the stakeholders, professional development opportunities, and the appropriateness of the teaching courses for such integration. The perception of the stakeholders, the availability ICT facilities, the digital competence of the teachers, and ICT-based faculty development programs are the independent variables for this study, whereas, the teaching-learning outcome is the dependent variable.



Research Methods

Governed by positivist ontology, epistemology, and axiology, the present study aimed to uncover the objectivity of the phenomenon related to perceptions and practices of community college teachers on ICT integrated teaching. For the purpose, the researcher adopted a quantitative research approach and a sample survey as its research design to reveal the characteristics of the population. Creswell (2012) states, “Survey research designs are procedures in which the researcher administers a survey to a sample or entire population to describe the attitude, opinions, and behaviors of the population (p. 336)”. As the nature of the present research fits with the essence of this definition, the researcher adopted the survey design for the present study. To elicit the data, the researcher purposively sampled 40 community college teachers from Chitwan district teaching at bachelor's and master's levels using a Convenience Sampling Method. The questionnaire was the data collection tool adopted for this sample survey. Before administering them, the researcher modified, edited and finalized structured questionnaire according to the feedback of the expert to maintain their reliability and validity. The expert-verified data collection tool was administered to collect responses from the respondents. The respondents were asked twenty close-ended and two open-

ended questions to extract their perceptions and practices of using ICT in their classroom pedagogy, and ways of overcoming the challenges. The researcher organized, analyzed, and interpreted respondents' perceptions, practices, and suggestions using descriptive statistical tools of frequency and percentage under the four thematic sub-headings: demographic profile, status of ICT use in community colleges, perception of community college teachers on ICT integrated teaching and its challenges, and overcoming the barriers to ICT integrated teaching.

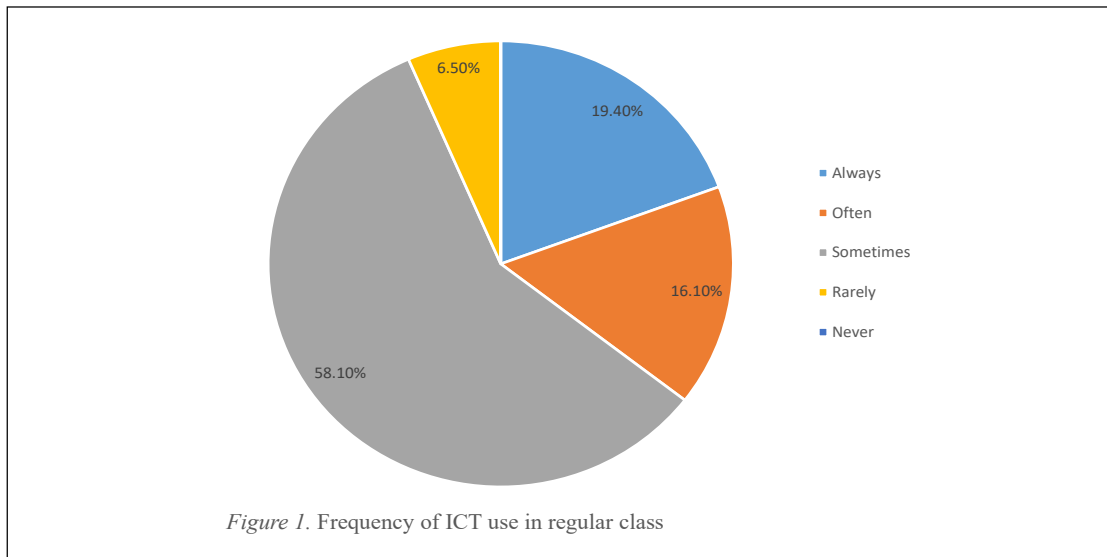
Results and Analysis

This study explored the specific issues of perceptions and practices of community college teachers on ICT integrated pedagogy, and perceived challenges to its effective integration, and ways to overcome them for this purpose, the data obtained from the survey questionnaire have been presented under four thematic headings along with representative figures and tables to present the major findings and derive their logical implications in the succeeding sections of the discussion and conclusion.

Demographic profile of the respondents

For this research, the researcher selected 40 respondents from nine community colleges of Chitwan district, Nepal using convenient sampling. Out of them, 30 percent of respondents (12) were females and 70 percent of them (28) were males. Based on this demographic information, the majority of the faculties teaching at the higher-level of community colleges in Chitwan were males. The reason behind this may be the influence of the age-long male-dominated society of Nepal due to which the number of females holding master's or above degrees and engaged in teaching at the higher level is low. Regarding the age group, 32.3 % of teachers belonged to the age group 31-40, whereas 67.7 % of teachers belonged to the 41-50 age group. It indicates that senior teachers who may have long teaching experience are teaching at community colleges. Equally, their performance depends not only on how long they have served but also on how dynamic, innovative, and updated they are. In terms of qualification, 87.1 % of teachers possessed the qualification of a Master's degree, whereas 12.9 % possessed an M. Phil degree and above. This suggests that most of the community colleges in Chitwan possess only a few faculties having research degrees, M. Phil. and above. Regarding the teaching level, 64.5 % of teachers taught at the bachelor's level, 9.7 % of teachers percent taught at the master's level, whereas 25.8 % taught at both levels. This shows that the majority of community college teachers are engaged in teaching students of bachelor's level. The reason maybe the number of students and programs in bachelor's level are higher than master's level. Among the teachers, some faculties have the experience of teaching at both levels, and very few of the teachers possess the experience of teaching at the master's level.

Status of ICT Use in the Community Colleges of Chitwan



As shown in the above figure, the majority of the community college teachers (58.10 %) run ICT-supported classes occasionally. This indicates that the conventional mode of teaching is still dominating the community college classes, where only a few teachers (19.40 %) use ICT in their classes as an ingredient of their regular pedagogy. Similarly, only 16.10 % of the teachers often use digital technology to deliver the content in the class and facilitate students' learning. This shows that teachers are yet to integrate ICT into their classes in a full-fledged manner and become accustomed to ICT-based innovative pedagogy. Analyzing from another perspective, the survey responses in the above figure reveal the plus sides of ICT status as they expose that at least 19.40 % and 16.10 % of teachers use digital technology in their classes regularly and more often respectively. It can be inferred as an indication of community college teachers' gradual shift to ICT-supported pedagogy.

Responding to the survey questionnaire, 61.3 % of teachers stated that they had taken training on general applications of ICT tools, whereas 38.7 % of teachers responded that they had not taken any training related to ICT. This indicates that the majority of community college teachers are acquainted with ICT as they have taken ICT-related training on its general application. It reflects the familiarity of the teachers with the general use of digital tools. However, their responses also indicate that a significant percentage of the teachers are not trained and accustomed to using the same technology in the real classroom due to which they fail to have meaningful integration of ICT for better learning output. Among the ICT users, 96.8 % of respondents said that they used one or another digital tools, namely, a laptop/tablet, multi-media projector, and

smartphone in the classroom. This signposts a positive scenario and the effort of the teachers to use modern ICT devices commonly used in the present classes. However, it is the practice of ICT users only. Regarding the frequency of use, 45.2 % of teachers responded that its use depended on the topic, 35.5 % of teachers said that they used it some days a week, 3.2% of teachers said that they used it some days in a month, and only 16.1 % of teachers responded that they used it in their regular classes daily. It implies that community college teachers are yet to adopt ICT-based classroom practices as an integral component of their pedagogical practice regularly. Teachers who are less familiar and less trained or untrained tend to use ICT sparingly in class. It depends on the availability of the essential infrastructures as well. Among the practitioners, laptop/ tablet was found most frequently used device (83.9 %), whereas audio-visual player was found least used device (3.2 %). Among them, 12.9 % of teachers responded that they used their smartphones for classroom purposes. The reason behind this may be laptops are portable and compatible with other accessories, namely, multimedia projectors, audio-visual players, and so on.

The study revealed that community college teachers used multiple applications and modes to disseminate learning-related information to the students inside and outside the classroom. It was found in the survey that 64.59 % of teachers used Messenger, 54.8 % used Facebook, 45.2 % used MS Word, and 41.9 % used PowerPoint for such purposes. It indicates that social media and other virtual platforms are also being used by community college teachers to impart knowledge and skills to learners inside and outside the classroom. This seems to be a positive sign of innovation in the teaching-learning practices of community colleges as teachers disseminate the content to the learners through Messenger and Facebook as well. This reflects their attempt to move ahead with technology to take classes beyond classroom borders. Most of the teachers who used ICT were found delivering the content using PowerPoint. Team, Zoom, Google Classroom, and Google Meet were used for virtual classes. It shows that, gradually, community college teachers are striving to bridge the knowledge gap of the learners by any means available. However, several teachers are yet to be digitally competent for the pedagogical shift.

Regarding internet connectivity, all respondents said that they had internet connectivity at home. This seems to be a positive indicator for ICT-supported teaching-learning practice as it enables teachers to explore the resources, prepare materials, and disseminate them from home as well. Among the respondents, 38.7 % of teachers in the survey said that they often used the internet at home; 32.3% of them use to it sometimes; and 29 % of teachers always used the internet at home. It reveals that the majority of community college teachers do not use the internet for teaching and

learning purposes at home. This habit can be linked with their classroom behavior, and the time and effort they apply to facilitate the learners both inside and outside the classroom. Among internet users, 41.9 % of teachers always used the internet to find resources, 32.3% of teachers often used it, whereas 25.8 % of teachers used it sometimes. It shows that the majority of internet users use this platform to explore resources frequently and often. This indicates the gradual shift to technology-assisted knowledge exploration. The study showed that community college teachers attempted to take learning beyond the classroom borders through the use of virtual media when face-to-face instruction was obstructed. The majority of teachers (58.1%) were found using Team and 48.4 % of them were found using Zoom to run the virtual classes. The reason behind this might be their convenience and the availability of diverse functions to run the classes. Some teachers were found using social media platforms, namely, Messenger, Viber, Google Classroom, and email to disseminate content to students in difficult circumstances too. This reflects their attempt to move ahead with technology to take the classes beyond the classroom borders in one way or another. It also shows that gradually community college teachers are striving to bridge the knowledge gap of the learners by any means available. Regarding the use of ICT for multiple skill development of the learners, 64.58 % of teachers responded that they focused on the presentation skills of the learners, 41.9 % of teachers focused on problem-solving, 32.3 % of focused on creativity, 29 % of teachers focused on communication skills, 5 % of teachers focused on collaboration and critical thinking. This implies that the majority of the teachers prioritize the presentation and communicative skills while using technology in class. With enough preparation and practice, teachers can engage the students in problem-solving tasks, creative writing, communication skills, critical thinking, project work, and collaborative as well as individual tasks.

The major findings indicate that the status of ICT use in the community college of Chitwan did not seem satisfactory, although teachers were acquainted with the general application of ICT and were attempting to take the learning beyond the classroom barriers. The colleges lacked ICT-based infrastructures. Teachers needed professional development training on ICT-integrated teaching and students needed support for digital literacy and access. They needed enough preparation, practice, and infrastructural support to support the learners in gaining knowledge and skills.

Teachers' Perception of the ICT integrated Pedagogy and its Challenges

Table 1. Teachers' perceptions of ICT integration in community colleges

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
ICT integrated pedagogy brings desired output in teaching.	35.5%	58.1%	6.4	-	-
Digital tools should be used in every class.	25.8%	71%	-	3.2%	-
Digital knowledge and skills are helpful and mandatory in the present context.	54.8%	41.9%	-	3.3%	-
Technology has created a digital divide between and among teachers.	6.5%	77.4%	9.7%	6.5%	-
Digitally literate students are more forward than those who are digitally illiterate.	25.8%	61.3%	9.7%	3.2%	-
Digital competence in teachers is a key to professional development.	41.9%	58.1%	-	-	-
Technology-integrated teaching should be the top priority of community colleges.	22.6%	67.7%	6.5%	3.2%	-
The digital competence of the teachers should be a key component of teacher performance appraisal.	9.7%	77.4%	9.7%	3.2%	-

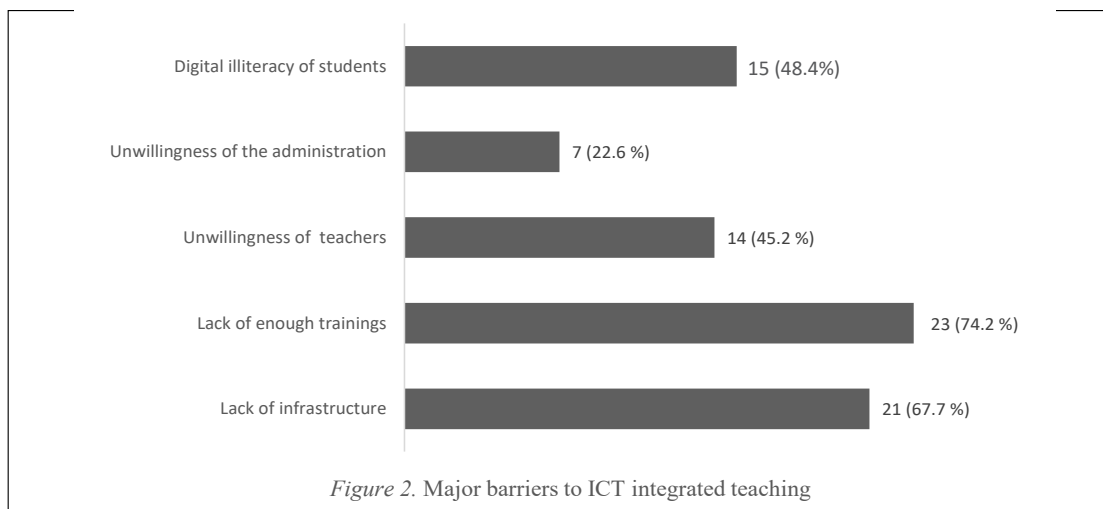
The integration of ICT into classroom pedagogy has become inevitable to strengthen students' learning, enhance the degree of motivation, and contribute to better learning outcomes. The collected data reveals that the community college teachers have admitted the need for ICT for their professional development. As shown in Table 1, 58.1% of teachers agreed that ICT integrated pedagogy brings desired output in teaching and learning. 35.5% of teachers strongly agreed with this statement, whereas 6.5% of teachers were neutral in this regard. Their responses indicate that community college teachers in Chitwan district have positive attitudes toward technology-supported teaching. Although most of them work in an under-resourced environment, they have acknowledged the need for innovation in teaching, and they expect an appropriate atmosphere to transform their potential into practice. In response to the statement, 'Digital tools should be used in every class', 71 % of respondents expressed their agreement, 25.8 % of respondents, expressed strong agreement, whereas only 3.2% of respondents expressed their disagreement. Their desire to increase the frequency of ICT use in their day-to-day classes reveals the increasing level of motivation and positive feeling of the teachers towards non-conventional, and innovative teaching-

learning through ICT tools. The majority of the respondents (54.8 %) strongly agreed that digital knowledge and skills were helpful and mandatory in the present context. Similarly, 41.9 % of respondents agreed with this statement, whereas the least number of respondents (3.3 %) disagreed with it. It means teaching with technology is easier and more useful for them than teaching without technology. They mean to say that the use of ICT contributes to better learning outcomes as digitally supported and competent learners are found more forward than those who lack these facilities.

Regarding the issue of technology and the digital divide, 77.4 % of teachers agreed that it created a digital divide in the classroom among the students and teachers. 9.7 % of teachers remained neutral in this statement. It shows that the majority of the teachers seem to be worried about differentiated opportunities and access as all students do not have equal access and affordability to technology. Especially, the students from non-urban areas and low economic backgrounds might be disadvantaged. It might prevent the students from joining virtual classes and exploring online resources. In the study, the majority of the respondents (61.3 %) agreed that digitally literate students are more forward than those who are digitally illiterate. It unveils their belief that digitally literate and supported learners are more dynamic than the learners instructed through the conventional mode of teaching and learning. It also indicates that community college teachers are motivated to facilitate the learners with an ICT-based instructional process. The teachers are aware of the fact that digitally literate learners get ample learning resources to explore both online and offline. It unveils teachers' belief that learners enhance both knowledge and skills through technology as learning goes beyond the barriers of the physical classroom. In the study, respondents expressed their belief that digital competence in teachers is a key to professional development. 58.1% of teachers agreed, and, 41.9 % of teachers strongly agreed with this statement. It means teachers expect ICT-based training opportunities to sharpen their digital competence, which supports their classroom practices. The respondents also expressed their view that technology-integrated teaching should be the top priority of community colleges. 67.7 % of teachers agreed, and 22.6 % of teachers strongly agreed with this statement. The respondents also stressed that the digital competence of the teachers should be a key component of teachers' performance appraisal. In this regard, 77.4 % of teachers agreed; 9.7 % of teachers strongly agreed; and 9.7 % of them expressed their neutrality, whereas only 3.2 % of teachers expressed their strong disagreement. Their suggestions for prioritizing ICT-supported pedagogy, digital competence of the teachers as a part of teacher evaluation, and considering ICT as a key to teachers' professional development further solidify their commitment to shifting from the conventional mode of teaching.

The majority of the teachers (77.4%) expressed their positive attitude to the integration of

ICT into classroom pedagogy stressing that it has a major impact on learning outcomes. They also showed their concerns about the barriers to its successful integration into community college classrooms. 71 % of teachers responded that there existed barriers to such practice. The following figure reflects the major barriers perceived by the respondents.



As shown in the above figure, the majority of the respondents (74.2 %) said that the lack of enough training in teachers was the major barrier to ICT integrated teaching. Similarly, 67.7 % of teachers said that the lack of ICT-based infrastructure was the major barrier whereas, 48.4 % of teachers responded that the digital illiteracy of the students was the main barrier to such integration. In a similar vein, 45.2% of teachers revealed that it was the lack of willingness that hindered this practice. 22.6 % of teachers showed concern about the unwillingness of the college administration to have ICT friendly environment in the classrooms. The responses of the teachers suggest that the teachers' commitment to change their practice has been challenged by some noticeable barriers as a significant number of the teachers are yet to be trained in ICT-supported teaching. Smart classroom delivery results from well-trained teachers. Not only the teachers but also the students of community colleges lack sufficient skills in the use of digital devices to explore the learning materials both online and offline. Their responses also suggest that the lack of ICT-supported infrastructure, inadequacy of devices and accessories in classrooms, and, the unwillingness of the college administration have deterred the ICT-supported pedagogy and culture in the community colleges.

Overall, community college teachers in Chitwan district showed positive perceptions of technology-supported teaching. They expressed their commitment to a pedagogical shift from conventional modes of classroom delivery to ICT-based instruction. Despite

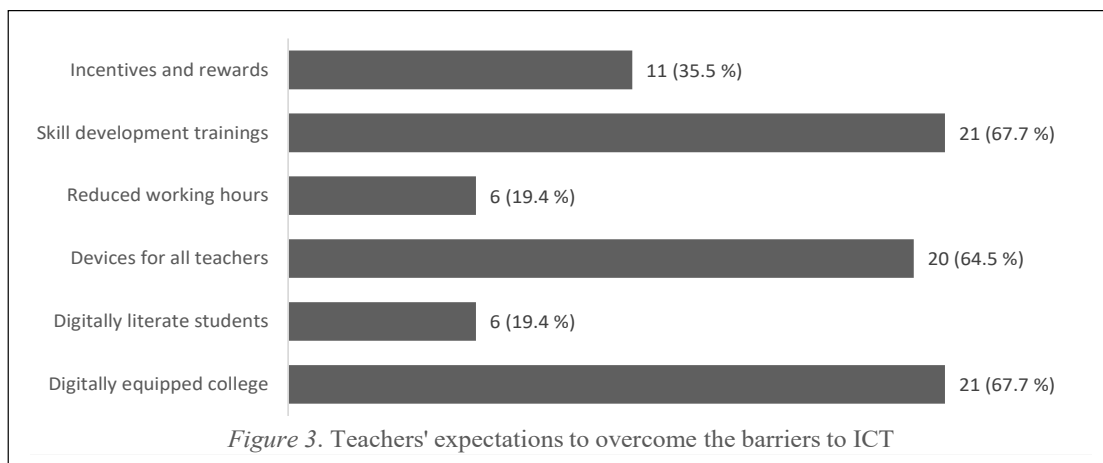
positive attitude of majority of teachers, their classes were not government by the ICT-supported teaching and learning process due to the major barriers related to ICT-based professional development opportunities, infrastructures, resources, digital literacy, and willingness of the stakeholders.

Overcoming the Barriers to ICT Integration in Classroom

During the survey, the respondents expressed their concerns about major obstacles to ICT integration into their classroom and ways to overcome them. Their major concerns while integrating technology were its effectiveness (64.59 %), classroom infrastructure (54.8 %), student's digital literacy (41.9 %), learning outcome (25.8 %), cost (22.6 %), teacher's competence (22.6 %) and ease of use (16.1 %). The responses indicate that most important thing to be dealt with is how to make the ICT-based classrooms effective enough for the learners. The use of ICT should ease the learning process by facilitating the learners to comprehend the content, and apply the knowledge and skills learned in the classroom. Other considerations to be made are equipping the classes with necessary logistics, and enhancing the technological knowledge and competence of both the teachers and the learners. This shows that only the attempts of the teachers will not be enough as it is a collective process.

Overcoming the problem of the digital divide is another major issue for the successful integration of ICT into real classroom pedagogy. The digital divide has created a gap between the learners who can and cannot afford ICT tools and services for exploring knowledge and information. During the survey, the teachers were asked how they attempted to create equal opportunity for all the students in their classrooms. 61.3 % of teachers suggested college administration equip college premises with ICT facilities for all students; 54.8 % of teachers responded that they encouraged the sharing culture in learners; 54.8 % of teachers said that they ran classes both virtually and face-to-face, and 35.5 % of teachers said that they provided materials by considering ease and access of the students. The responses of the teachers suggest that college administration has greater duties to minimize the gap. They are expected to work for creating maximum learning opportunities in the classroom so that students from all aspects of life can be benefitted. The suggestions of the respondents also indicate that the sharing culture among the learners, supporting the students using an alternative mode of teaching, and providing learning materials impartially with special consideration for those who cannot afford these facilities, are keys to addressing this issue.

Moreover, the respondents expressed their expectations from the college administration to address the perceived barriers, and create an ICT-friendly pedagogical ambiance in the classroom. The following figure mirrors their expectations.



Regarding the major expectation from the college administration, the majority (67.7 %) of the respondents expected that they required the skill development training and digitally equipped college for better output. They indicated that community college teachers lacked enough professional development opportunities, especially ICT-based pedagogical skill enhancement opportunities. They believed that the teachers who were trained in integrating technology and innovation could perform better than the untrained teachers. Similarly, a digitally equipped academia could provide good ICT-friendly learning ambience for the students. The respondents were also asked open-ended questions to extract their views on technology-supported teaching and creating ICT friendly environment in community colleges. One of the respondents said, "In this modern world, technology makes teaching and learning activities easier and more effective. Thus, there must be technology-supported teaching pedagogy at least at higher classes/standards". This reveals the respondents' the enthusiasm and motivation. The teachers' responses to open-ended questions also reinforced the need for idea-sharing culture among faculties, motivation for teaching, ample practice before classroom delivery, sufficient allocation of budget, and support from college to equip the teachers with ICT knowledge and skills.

Discussion

This study examined the community college teachers' practices and perceptions of integrating ICT into classroom pedagogy, their perceived barriers, and ways of overcoming them. The analysis of the survey results revealed that the status of ICT in the community colleges in Chitwan did not seem satisfactory. ICT-integrated pedagogy was yet to be a part of their regular pedagogy, although the teachers showed a positive orientation to technology-supported teaching. The major perceived obstacles encountered by teachers were the lack of enough ICT-based infrastructures, inadequate resources, and the lack of ICT-based training opportunities for the teachers.

The results of the study suggest that the majority of community college teachers in Chitwan lack ICT-based pedagogical training and orientation, although they are familiar with the general application of ICT tools. This general familiarity does not guarantee their perfectness in technology-integrated pedagogy unless they are trained and accustomed to using the same technology in the real classroom. Meaningful integration of ICT by all teachers is desirable for better learning outcomes. ICT is expected to be a part of classroom teaching and learning practices, and evaluation systems. Teachers who are pedagogically trained in this practice can contribute to better learning output. The trained teachers possess updated knowledge and skills in handling modern ICT tools to be used in the class; they regularly acquaint themselves with innovations in teaching methods, approaches and techniques; and they run the classes using technology rationally, and encouraging learners to inculcate the habit of using technology to explore knowledge and enhance skills. These findings resonate with the findings of Rana and Rana (2020) which revealed that ICT training for teachers was pivotal for the teachers who were responsible for transforming the conventional pedagogy into the modern one. Moreover, the motivation, readiness, and enthusiasm of the teachers for this pedagogical shift can be cornerstones to enhance ICT-supported pedagogy.

The study unfolded that the lack of professional development programs on the use of ICT deters teachers' thirst for innovation and classroom practice. Without teachers' competence and availability of essential support from the stakeholders, ICT-supported classroom practice becomes a far cry for the academia of a country like Nepal. These findings align with the prior studies of Bhandary (2020), Adhikari (2020), and Adhikari (2021) in the sense that the lack of pedagogy-based ICT training, and the deficiency of well-equipped ICT infrastructure and resources were found to have hindered the smooth integration of ICT into Nepalese classroom activities.

The findings of the study imply that community college teachers in Chitwan district show positive attitudes toward technology-supported teaching. They have admitted the need for innovation in teaching. This reflects the positive sign for innovation and change. It is considered that motivated teachers tend to make their performance more learner-centered and output oriented. They not only attempt to update themselves but also encourage other stakeholders to work for a positive outcome. They need teacher development opportunities and ICT-based resources to materialize their potential. An appropriate atmosphere is desirable to bring their potential into practice. Their desire to increase the frequency of ICT use in their day-to-day classes reveals the increasing level of readiness, motivation, and positive feeling toward non-conventional and innovative teaching and learning practices.

Although community college teachers are positive toward technology-supported teaching, their performance has been hampered by noticeable barriers. The major barriers include the lack of ICT-based infrastructure, resources, and professional development opportunities. The colleges lack ICT infrastructures that incorporate the installation of multi-media projectors, the sufficiency of laptops/ computers for all teachers, uninterrupted power and internet signals, smart classes for the flip model of teaching, and so on. In an under-resource environment, even the teachers who are eager to use technology cannot run ICT-supported classroom activities effectively. These findings align with the previous studies of Robertson and Ai-Zahrani (2012), Rabah (2015), and Ahmed, Qasem and Pauer (2020) which revealed similar circumstances, where effective ICT practices had been obstructed due to the lack of enough logistics and teacher development opportunities. In addition to these, most of community colleges run conventional programs at low-fee structures. They can only improve their infrastructures with enough financial assistance from UGC and other government agencies. Besides infrastructural aspects, the lack of specific training on technology-pedagogical integration also hampers the effective use of technology in regular classroom activities. Thus, colleges are expected to organize training and workshops to enhance the competence level of the teachers and encourage them to embrace ICT for better teaching and learning outcomes.

Conclusion and Recommendations

The community college teachers in Chitwan district are acquainted with the increasing use of technology-integrated teaching. A few teachers have embraced ICT as an ingredient of their regular classroom activities, whereas the majority of them run ICT-supported classes occasionally, although they have positive perceptions of technology-supported pedagogy. The teachers intend to integrate innovative technology into their classrooms as an integrated component of their pedagogy. They reinforce the inevitability of ICT integration to strengthen students' learning, enhance the degree of motivation, and contribute to better learning outcomes. They admit the need for ICT for their professional development as well. Despite the readiness for digital integration, conventional pedagogy still dominates the regular classroom activities. Community college teachers have encountered noticeable barriers to its effective execution. The lack of ICT-friendly infrastructures, inadequacy of regular training and workshops on technology-supported pedagogy, insufficiency of budget, habit formation in conventional pedagogy, and the lack of ICT-based pedagogical culture are the hindrances. The concerned stakeholders, namely, the college administration, the university, the government agencies, and the University Grants Commission (UGC) can play crucial roles in addressing these issues for better teaching and learning outcomes.

Limitation of the Study and Suggestions for Further Research

The present study was limited to teachers' perceptions and practices of ICT-integrated teaching in the community colleges in Chitwan district, Nepal. Further research can be conducted on English Language Teaching (ELT) practitioners' perceptions and practices of ICT-integrated teaching in both public and private colleges in Chitwan district, the policy-practice gaps in ICT integration in higher studies, and so on. An experimental research can be conducted to observe the effectiveness of ICT integrated teaching in higher classes. Additional research can also be carried out on similar issues by exploring the discipline-specific issues, and adopting qualitative or mixed-method designs and tools.

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