

Should we Bend towards Blending? How?

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Abstract

Blended learning that combines face-to-face and online educational delivery can occur at activity, course, program, and institution level. In this study, course-level blending in Critical Discourse Analysis (CDA) course was examined. The students of face-to-face mode were enrolled in Moodle. However, their participation in Moodle was optional (i.e. low level of blending). Data collected from a class test and end-of-semester questionnaire survey suggest that blending does have a positive effect on learning achievement and students do perceive blending positively. Overall, the study shows optimism towards the prospects of blended learning. However, for the successful integration of Moodle, easy access to the Internet and orientation for using Moodle are to be ensured.

Keywords: Blended learning, Educational media, Frameworks for blending, New innovations

Introduction

In blended learning, a course involves more than one mode of delivery, that is, face-to-face mode and online mode (Agosto, Copeland, & Zach, 2013; López-Pérez, López-Pérez, Rodríguez-Ariza, & Argente-Linares, 2013; So & Bonk, 2010). Therefore, a blended course design can also be referred to as a hybrid or mixed modality course design or a flipped classroom (Auster, 2016). With an increasing number of students in higher education, concerns for quality are raised from all sectors of life. Similarly, “limited resources, technological advances, and the shift toward faculty accountability and assessment of student learning requires that institutions of higher education and faculty consider more

attractive and successful models of teaching and learning” (Luna & Winters, 2017, p. 116). At the core of such models is “students’ active involvement in teaching learning activities for finding knowledge, interpreting results and testing hypothesis” (Laurillard, 2002, p.81). As blended learning offers better opportunities for learning in terms of student involvement, it is seen as one of the most important recent advances in education (Grguroviæ, 2011) and has been discussed as a promising alternative to traditional instruction and training (So & Bonk, 2010).

Using technologies in class not only better prepares learners to use technologies in their workplace, but also offers several learning and social benefits such as

acquiring increased domain knowledge, gaining advance critical and problem solving skills, and understanding how people interact in online information environments (Agosto et al., 2013) by bringing traditional physical classes with elements of virtual education together (Akkoyunlu, & Soylu, 2008). In a survey conducted by Center for Digital Education (2012), respondents agreed that blended learning offers alternate learning opportunities, distance learning programs and increased student engagement, increased academic achievement and student retention, better use of classroom capacity, and reduced costs as benefits. In the same survey, students reported that blended learning increased their understanding and retention of content as well as increased their test scores (Center for Digital Education, 2012). Therefore, blending has been a common phenomenon in higher education at present context as many universities and colleges today are using online and/or blended learning in many course offerings (Hilliard, 2015).

While face-to-face classroom discussions are familiar, comfortable, and rich with secondary attributes (like body language, tone, and so on), they can be “fast paced, spontaneous and fleeting” (Garrison et al., 2010, p. 6). Similarly, classroom discussions are more social and less deliberative and the time boundaries of a class often prevent or discourage complete participation. Moreover, some students are reluctant to speak in public spaces like classrooms. In contrast, successful discourse in online environment can be extended over a much longer time, is more nuanced, is supported with sources, and has a much greater permanence as it is in written form. Students can read through a conversation at any time in the discussion schedule.

Participation in asynchronous (i.e. not occurring at the same time) discussion thus tends to be stronger and richer (Warner, 2016).

Framework for blended learning

Different frameworks have been forwarded for implementing blended learning. Blending can occur at *activity*, *course*, *program*, and *institutional* level (Agosto et al., 2013). As Auster (2016) views, there are two models of blending: *replacement* model and *supplemental* model. In the replacement model, the amount of time that students spend in online mode is reduced from face-to-face class time. In contrast, in supplemental model, students are engaged in online activities (e.g. discussion forum, quizzes, etc.) outside the class for supporting their learning with the face-to-face class time remaining the same. For supporting students’ learning in online mode, different educational media can be used. Based on learning experience they provide for learners, Laurillard (2002) has classified educational media into five types: *narrative* for attending and understanding (e.g. printed materials and video), *interactive* for investigating and exploring (e.g., digital library resources and weblinks), *communicative* for discussing and debating (e.g. online discussion forum and video conferencing), *adaptive* for experimenting and practicing (e.g. quiz providing feedback and virtual laboratory), and *productive* for articulating and expressing (e.g. blogs and wikis). Studies have shown that among these different educational media, narrative and interactive media are predominantly used in online mode to offer students access to digital contents (Lameras, Levy, Paraskakis, & Webber, 2012).

Neumeier (2005) has suggested six parameters to define the nature of blended learning especially in language teaching: (a) mode; (b) model of integration; (c) distribution of learning content and objectives, and assignment of purpose; (d) language teaching methods; (e) involvement of learning subjects (i.e. students, tutors, and teachers); and (f) location. As it has already been established, two modes in blended learning are face-to-face and online modes. First, one of the modes in blended learning can be dominant (i.e. lead) while the other non-dominant (i.e. peripheral). Second, two modes can be sequenced alternatively or parallel in manner and there can be high level (both modes obligatory) or low level (one of the modes optional) of blending. Third, learning contents and objectives in blended learning can be parallel (incorporated and practiced in both modes) or isolated. Fourth, the choice and used of teaching methods used in blended learning are influenced by multiple factors such as online materials, the online tutor, and the face-to-face teacher. Fifth, there can be the use of different interaction patterns: human-to-human, human-to-computer, and human-to-human through computer. Similarly, teachers and learners may assume roles that are different from that of face-to-face class (i.e. teachers as tutor and students as autonomous learners). Sixth, unlike in traditional classes, blended mode will allow for learning to take place elsewhere.

This research has been informed by theoretical frameworks reviewed in this section (i.e. Agosto et al., 2013; Auster, 2016; Laurillard, 2002; Neumeier, 2005) for designing blended learning. The research followed a *supplementary* model for introducing blended learning at *course level*

in CDA course and made use of *narrative, interactive, communicative* and *adaptive* media technologies. Similarly, *face-to-face mode* was lead mode as it was dominant and the *integration was of low level* as participation in the Moodle was not mandatory. In the same way, the materials in the Moodle were distributed in *parallel* manner.

Literature review

Though blended learning is quite new in the context of Nepal, it has drawn wider attention worldwide. Previous studies on blended learning have examined experts' perceptions of blended learning (e.g. So & Bonk, 2010), students' perceptions of blended learning (e.g. Auster, 2016; Warner, 2016), and effects of blended learning on students' performance (e.g. Luna & Winters, 2017). These studies have shown that supplementing traditional classes with online activities has positive effects on students' performance.

So and Bonk (2010) examined current practices and the future of blended learning by using a Delphi study (see So & Bonk 2010 for more information about Delphi study) involving a panel of experts from different parts of the world. The research identified three themes in the process: pros and cons of blended learning, blended learning for collaboration in various contexts, and the future of blended learning. The experts viewed that blended learning approaches are useful for communication and knowledge construction; they have the advantages of flexibility and time efficiency when there is correspondence between face-to-face and online courses, and they foster collaboration in different contexts if the course is designed in such a manner. They also claimed that, in the future, there will

be no bipolar distinction between on-line and off-line learning, rather all learning will be blended.

Previous research has shown that students have positive perceptions of blended learning. Waha and Davis's (2014) exploration of students' expectations, perceptions, and satisfaction of appropriate mix of online and face-to-face activities showed that students were positive about blended learning; liked the flexibility as well as personal interactions with peers and teachers for sharing information and collaboration; gave preferences to asynchronous communication (e.g. email) rather than synchronous communication (e.g. Skype); and considered blended mode to be an appropriate mode of study. Similar positive perceptions were observed in Auster's (2016) study as well. Auster (2016) examined students' perceptions of the use of screencasts in an Introduction to Sociology course. The screencasts were designed by the researcher herself and were used to introduce concepts and theories so as to provide students more time to review concepts and theories outside class and more time for discussion in class. To make the screencasts more interesting, as per students' suggestions, music, videos and images were also incorporated. The students' perception of screencasts was examined by using an end of class survey in which students (more than 80%) viewed that screencasts provided them with enhanced learning opportunities and better prepared them for final exam. They wanted to have similar blending in subsequent classes as well. Previous research has shown that students' learning styles and students perception of blended learning are related (e.g. Akkoyunlu & Soyulu, 2008).

Further research has investigated if blended learning has any effect on students' learning achievement. In this regard, Lim and Morris (2009) observed a direct influence of blended instruction and learner variables on learning outcomes, and similar positive influence was reported in Grguroviæ (2011). Grguroviæ's (2011) study showed that all the skills (i.e. listening, speaking, reading and writing) can be practiced in blended modes; students have more control of their learning in such an environment; and even shy students can benefit from online practice. In the same way, Agosto et al.'s (2013) study based Zach and Agosto's (2009) framework for maximizing collaboration through blended learning found that blogs successfully supported collaboration and community building. Similar positive results were reported in two recent studies (i.e. Luna & Winters, 2017; Warner 2016). Warner's (2016) study on blended learning that made use of short recorded lectures followed by online discussion forums showed that such discussions allowed students to take charge of their own learning; made learning easier and more productive through collaboration and discussion; increased students' satisfaction; and brought improvement in students' writing performance as they got exposure to others' ideas and learnt to ask good questions. However, some students who liked being directly told what to do did not like online discussion and considered it to be an extra burden to their already overloaded schedule. In the same way, Luna and Winters' (2017) quasi-experimental study using a flipped classroom using a replacement model (one third of the class time online) did not show statistically significant difference between the performance of two sections. However, in some sections of the test, students in blended mode performed better than the

students in lecture mode, leading the researchers to conclude that blended learning with flipped classroom may produce better results than lecture mode.

Gap in literature

The brief review of research shows that blended learning is taken positively and does influence learning positively. However, it has not yet been established whether blended learning has any significant impact on students' learning. Though digital technologies and their use in education is growing very fast, there is a lack of research on how these technologies support learning (Lameras et al., 2012). Therefore, it is of great interest to the entire university community as well as other stakeholders to be aware of the impact of web-based learning technologies on learning outcomes when used as a complement to face-to-face learning (López-Pérez et al., 2013). As study contexts are always different, findings obtained in one culture and context may not be generalized in other contexts. In the context of Nepal, the research on blended learning is virtually non-existent. This lack of research warrants further research in this area.

Moodle Platform has been established in TU by a project supported by the Norwegian Program for Capacity Development in Higher Education and Research for Development (NORHED). As there are very few students enrolled in online mode, the platform can be better utilized and its sustainability can be ensured if students enrolled in face-to-face mode are provided with the opportunity for blended learning. Therefore, I used a blended learning approach in a CDA course in the Master of English Education program at TU with the

hope that it will increase students' active participation in the course and will have a positive impact on their learning. More specifically, the blending was introduced with the following objectives:

1. To assess students' access to ICT.
2. To compare students' test performance in terms of their participation in Moodle.
3. To identify the status of student use of ICT and Moodle.
4. To explore students' views regarding the integration of Moodle in face-to-face classes.

The study sought to answer the following questions:

1. Do students have access to ICT (computer and the internet)?
2. Do students who access Moodle perform better than those who do not?
3. What is the status of students' use of ICT and Moodle?
4. What are students' views regarding the integration of Moodle in face-to-face classes?

Methodology

This study was based on action research design. The main aim of action research is to bring improvement to a current situation, generating theoretical as well as practical knowledge about the practice and self-development through continuous inquiry (Burns, 2015). Common phases of action research (i.e. planning, action, observation, and reflection) were followed in this research as well.

In the beginning, I felt that students – even in the semester system which has recently been introduced in TU -- are not as engaged in their study as they should be and we teachers could do more to increase their engagement. My plan was to facilitate students' learning by utilizing the recently installed Wi-Fi and Moodle platform in the Faculty of Education.

In the beginning, I collected email addresses from the students in two sections where I was teaching CDA and created a Google group. Then, I shared course plan, assignments, PowerPoint slides of presentation and other supporting materials through the group mail. I also enrolled the students to Moodle platform. I informed them about the Moodle and instructed them how they can log on and participate in one of my face-to-face classes. I provided all prescribed materials, presentation slides, some links to useful videos, and questions for discussion in the Moodle. I uploaded five quizzes (Week 1, Week 2, Week 3, Week 7, and Week 10) for the duration of the 16-week semester. Time and again, I encouraged the students to log on the Moodle and participate in it. Quizzes in first, second, third, seventh and tenth week were attempted by 30, 37, 24, 22 students respectively. During the semester, students submitted two written assignments, took one class test and made one group presentation. For reflection, students were provided with a questionnaire survey at the end of semester.

Tools for data collection

Class test

For the collection of data regarding students' performance, a class test was administered at the end of the semester. The

test contained 20 objective questions covering the whole course of CDA.

Questionnaire survey

For collecting their reflections about the course, students were asked to fill out a questionnaire which included demographic information and close-ended questions, as well as one open-ended question. Questions in the questionnaire were divided into different categories: access to ICT, overall impression of the class, assignments, class test, presentation, feedback, and ICT support and Moodle for learning. However, in this paper only two aspects, access to ICT and ICT support and Moodle for learning, have been discussed. Students also had an opportunity to express their views about Moodle through an open-ended question included at the end of the questionnaire. The students filled out the survey questionnaire anonymously at the end of the semester.

Setting and participants

I introduced blended learning in CDA course in two sections that I taught at the Department of English Education, TU in 2016-2017. Altogether there were 93 students in two sections. All the students took part in the class test. However, only 64 students (i.e. 68.08%) responded to the questionnaire survey.

Data preparation and analysis

To prepare the data collected from objective test and questionnaire for analysis, three main steps were taken. First the data was entered in SPSS version 22 for PC. Second, the reliability of the research instruments (i.e. objective test and questionnaire) was calculated by using Cronbach's alpha

coefficient. Third, the descriptive statistics of data set was computed to examine central tendencies, variability, and distribution of raw data scores.

To address research question 1 (i.e. to find out students' access to ICT), frequency and percentage were

calculated. Similarly, to answer research question 2 (the differences between students' performance in terms of their participation in Moodle), a one-way analysis of variance (hereafter, one-way ANOVA) was used as it is more robust than an independent sample t-test (Field, 2009; Phakiti, 2014). In the same way, to answer the third research question (i.e. the status of students' use of ICT and Moodle), percentage was calculated. Finally, to answer the fourth question, students' answers to an open-ended question were analyzed thematically.

	Min.%	Max%	Mean%	Std. Deviation	Skewness	Kurtosis
Test performance	35.00	90.00	68.91	11.04	-0.39	0.31

Results and Discussion

Preliminary analysis of research instruments

First the preliminary analysis of the research instruments (i.e. the class test and the questionnaire) was calculated. The reliability of the questionnaire was good (i.e. $\alpha = 0.71$). However, the reliability of the class test was not so satisfactory (i.e. $\alpha = 0.34$). The low reliability of the test might have been caused by the lack of homogeneity of items in the test as they were testing quite different concepts related to CDA. Table 1 presents the descriptive statistics of the class test. The skewness and kurtosis statistics for test were within the range of ± 1 indicating that the data were normally distributed. After

the analysis of instruments, data were analyzed to answer the research questions raised in the study.

Table 1: Descriptive statistics of test performance (N = 93)

Research question 1: Do students have access to ICT (computer and Internet)?

The first research question was raised to find out students' access to ICT. For this purpose, there were four questions that asked students whether they have an email identification (id), access to a computer (a desktop or laptop) and access to the Internet. Altogether 64 students answered the questions, Figure 1 and 2 show the status of students' email id in the beginning and at the end of the course respectively.

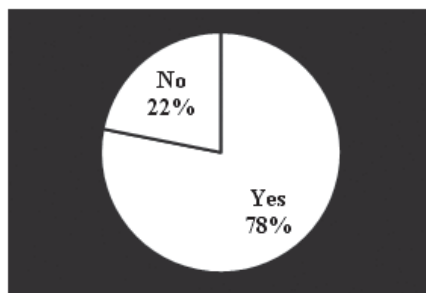


Figure 1. Email id before starting the course

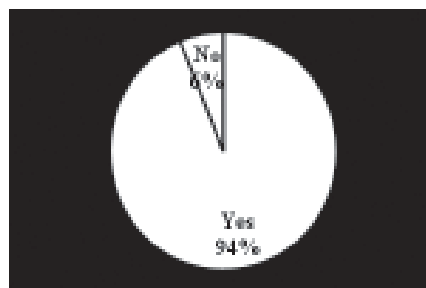


Figure 2. Email id at the end of course

As indicated in Figure 1 and 2, 50 (i.e. 78%) students had an email id before joining the course while at the end of the course, the number reached 60 (i.e. 94%). However, it is interesting to note that few students (i.e. 6%) still did not have an email id. We can assume that those who did not have an email id did not have access to Moodle. It points out that the use of ICT, even in its simplest form like email, cannot be taken for granted with students in Master level in the context of Nepal.

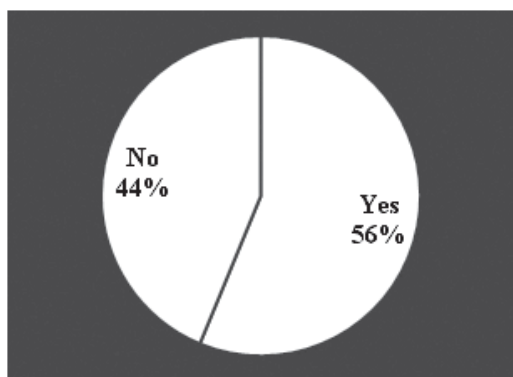


Figure 3. Students' access to computer

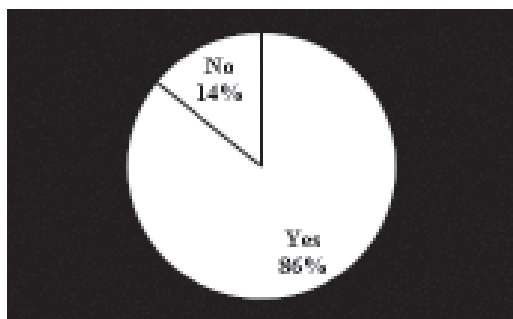


Figure 4. Students' access to the Internet

As indicated in Figure 3 and 4, 28 (i.e. 56%) students had access to a computer while 54 (i.e. 86%) students had access to the Internet. It shows that students have mobile subscription for accessing the Internet, a common and growing

phenomenon especially in the context of developing (or underdeveloped) countries like Nepal.

Research question 2: Do students who accessed Moodle perform better than those who did not?

Accessing Moodle	N	Mean	Std. Deviation	Minimum	Maximum
Yes	26	73.85	9.52	50	90
No	67	67.31	11.33	35	90
Total	93	69.14	11.20	35	90

The second research question examined if there was any difference between the students who accessed the Moodle and those who did not. Table 2 shows the results.

Table 2: Descriptive statistics of group differences in test performance

Table 2 shows that out of 93 students who were involved in the study 26 students accessed the Moodle while the remaining 67 did not. As indicated in Table 2, those who accessed Moodle performed better on tests (mean score 73.85%) than those who did not access the Moodle (mean score 67.31%). To find out whether the differences among groups were significant, a one-way ANOVA was conducted. Table 3 shows the result of one-way ANOVA.

Table 3: ANOVA of group differences

	Sum of Squares	Df	Mean Square	F	Sig.	Eta squared (η ²)
Between Groups	31.98	1.00	31.98	6.78	0.01	0.06
Within Groups	429.27	91.00	4.72			
Total	461.25	92.00				

Table 3 displays that there were statistically significant differences between two groups of learners in terms of test performance ($F [1, 91] = 6.78, p < 0.01, \eta^2 = 0.06$). The eta squared (η^2) of 0.06 shows that only 6% of differences in test performance can be explained by students' access to Moodle. However, this research does not make it clear whether the students who were better at their study accessed Moodle or whether they performed better because they were accessing Moodle. However, this finding is in consonance with previous literature, which has shown that blending Moodle in face-to-face learning engenders better results (e.g. Luna & Winters, 2017; Warner, 2016).

Research question 3: What is the status of students' use of ICT and Moodle?

To answer the third research question, a questionnaire survey was used. The students were asked about their use of ICT and Moodle. The analysis of questionnaire in percent terms is shown in Table 4.

Table 4: Students use ICT and Moodle

ICT Support and Moodle for Learning	Yes%	No%
1. I got PowerPoints and other reading materials through group mail.	89.1	10.9
2. Email helped me to communicate with my teacher even outside the class.	81.2	18.7
3. I attempted the quizzes uploaded in the Moodle.	50	50
4. I made use of reading materials uploaded in the Moodle.	53.2	46.9
5. I took part in the discussion forums in the Moodle.	26.5	73.5
6. I watched the videos provided in the Moodle.	26.5	73.5
7. I could not access Moodle because I do not have access to the Internet.	20.3	79.7

As shown in Table 4, a great majority of the students (i.e. 89.1%) agreed that they got PowerPoint slides of class delivery and other reading materials through group mail. Similarly, for a majority (i.e.81.2%), email was useful for communicating with their instructor without the limitation of

time and space. In the same way, 50% of the students said they attempted quizzes uploaded in the Moodle. However, their participation in the discussion forum was not encouraging as very few of them (i.e.26.25%) took part in the discussion. The majority of students (i.e. 79.7%) denied that the lack of access to the Internet barred them from participating in the Moodle.

Research question 4: What are students' views regarding the integration of Moodle in face-to-face classes?

To get students' views regarding the integration of Moodle in face-to-face class, students were asked an open-ended question. Two different themes emerged while analyzing their views.

Moodle is useful for learning and should be used in other subjects. Students shared their views that Moodle was useful for them. They used positive words like *beneficial*, *useful* and *satisfied* to describe their experience of using Moodle. Following examples illustrate their views:

I used it with my group and enjoyed it a lot. All the things there in the Moodle are beneficial for students/us.

Moodle was very useful for me especially in dealing with objective questions. It also provided me good

reflection of different topics related to course. I would like to suggest to provide more quizzes and make the forum more interactive among the learners where queries and their answers can be provided.

I am very satisfied with your Moodle however sometimes error occur due to technical problem.

They viewed that it would be better if Moodle was integrated in other subjects and other semesters as well. Following examples illustrate their views:

All the students of all sections should have access in Moodle in all subjects.

It would be very good if you enroll us in the Moodle in the coming semester as well.

Moodle should be made easily accessible. For some students, Moodle was not accessible as they did not have Internet connection that was strong enough to access the Moodle while for others the instruction for using the Moodle was not clear.

I could not access Moodle because I have no computer or laptop and mobile connection is very slow in my mobile.

Better orientation should be given to join the Moodle.

The views expressed by students show better prospects for blended learning if the access is ensured.

Pedagogical Implications

I used blended learning enrolling the students of face-to-face mode to Moodle platform and sharing materials through a

Google group in two sections of CDA course. Overall, the result of the assessment based on students' class test performance shows optimism towards the prospects of blended learning. Students did view materials uploaded in the Moodle, took part in quizzes and found them useful. They expressed increased enthusiasm for blended learning as they said they want to get enrolled in Moodle in other subjects and other semesters as well. More importantly, students' access to Moodle was associated with positive gains in learning.

Therefore, it can be suggested that TU should create an environment for blended learning, a new innovation in teaching. Rogers (2003) underscores that adaption of an innovation is a slow and time-taking process. Adaption of innovation, according to Rogers (2003), goes through five different processes: agenda-setting (gathering required information for planning); matching (selecting appropriate innovation); redefining/restructuring (modifying innovation to fit the organizational need); clarifying (making widespread use of innovation in gradual basis with proper framing for generating common understanding for avoiding abrupt rejection), and routinizing (incorporating innovation in regular activities and making it sustainable through wider participation of different stakeholders). None of these stages can be escaped and earlier stages are prerequisite for the latter ones. Therefore, use of blended learning requires solid policy framework on the part of TU to start with.

Graham, Woodfield, and Harrison (2013) divide institutional policy for blended learning into three categories related to strategy, structure, and support. Policy should specify the reasons for adopting

blended learning: “(1) enhanced pedagogy, (2) increased access and flexibility, and (3) improved cost effectiveness and resource use” (Porter, Graham, Spring, & Welch, 2014). This research is in line with previous research (e.g. Luna & Winters, 2017; Warner, 2016) in showing that blended learning can contribute to enhanced pedagogy. The concerned stakeholders such as administrators, faculty members, or student representative should advocate the benefits of adopting blended learning. Without such advocacy innovations are unlikely to be introduced.

Structural support for infrastructure development required for the effective delivery of blended learning, budget allocation is a must (Graham et al., 2013). Though installing infrastructure is expensive in the beginning, it proves to be cost-effective in the long run. Similarly, plan and schedule should be in place to decide which courses are to be offered in blended mode and what are the prerequisites for students to get enrolled in such course. There should be a body to approve the courses that are designed and delivered using blended mode. Frequent evaluation of such courses to monitor effectiveness is also of great importance to ensure institutional learning. At the same time, professional development of the faculties for effective handling of such courses should also be in place (Porter et al., 2014).

Once the system is in place, regular technical as well as pedagogical support for faculties, staff and students should be in place for effective implementation and sustainability. Without such support, faculties may give up their motivation for using blended learning and the students who are not good at using such technologies

may be disadvantaged. Similarly, because it requires extra time and effort for faculties to design courses in virtual environment and deliver them, certain incentives can be provided to motivate them. Such incentives may be *non-monetary* (such as apportioning release time, increasing the weight of blended learning courses in workload calculations, allowing faculty to hire teaching assistants, or considering these matters in promotion) or *monetary* (such as workload compensation, blended learning implementation stipends, or financing for technological equipment) (Graham et al., 2013).

In this research, students most actively took part in quizzes in the Moodle and expressed their desire for quizzes on a weekly basis. Perhaps quizzes received most attention because they provided additional opportunity to students to review the materials discussed in class and did not require them to type anything; they could attempt quizzes through their mobile and receive immediate feedback. This suggests that for students who are still learning to make use of technology for learning purposes, tasks that are less demanding in terms of use of technology seem to be appropriate. As discussed under research question 1, a significant percentage of students (i.e. 44%) did not have access to a computer, though a greater majority (86%) had access to the Internet through mobile connection. Therefore, the tasks that were interactive like quizzes but did not require typing and creation of a word file were more accessible to them. Other examples of such activities include games and puzzles (Antonoglou et al., 2011; Gedik et al., 2013; McKenzie et al., 2013). They might also be asked to present thought-provoking questions regarding reading materials which can then be

discussed in class. In the same way, to build in variation, we can provide students with multiple forms of resources or learning materials, allowing them to select and utilize the materials that are most suitable to them and to work at their own pace (Boelens et al., 2017). Slowly and gradually when students become habituated to the system and have access to typing facilities, they can be asked to take part in discussion forums which require more elaborated writing.

However, for making blended learning effective, students suggested that they should have easy access to technology and better orientation should be provided to them. Access is a great issue regarding blended learning, especially in least developed countries like Nepal. Gunga and Ricketts (2007) rightly observe “connectivity, capacity and content” to be the “three pillars of ICT revolution” (p. 898). However, such a revolution is nascent if not non-existent in the context of TU. One of the ways of addressing these issues can be collaboration or partnership among like-minded institutions (Tossy, 2017) because “[p]artnerships bring together innovative minds including experts from governments, business, civil society, academia and the international organisations” (Gunga & Ricketts, 2007, p. 902). There can be collaboration for funding for developing infrastructure and for human capacity building and research. One example of such collaboration is a NORHED project for enhancing access and quality of teacher professional development using ICTs and distance delivery modes. The project is in progress (2014-2019) and involves TU, Nepal; Kathmandu University, Nepal; and Oslo and Akershus University College of Applied Sciences, Norway. This collaboration has supported connectivity,

human capacity development, and development of gender-friendly learning content in the partner institutions. Virtual learning platform in TU is example of this collaboration. There should be other collaboration of a similar nature. Furthermore, universities should keep ICT access and blended learning as a priority for producing career ready graduates.

However, access alone does not ensure students’ use of blended learning. For better utilization, students need orientation regarding information about blended learning (e.g., learning outcomes, attendance, assessment of performance, etc.), expectations in blended learning (e.g. reading materials, watching videos, taking part in discussion forum, attempting quizzes, etc.), and use of technology (e.g., registering for the course, navigating Moodle learning environment, using available tools, etc.) (Boelens, De Wever, & Voet, 2017; Stubbs, Martin, & Endlar, 2006). Such orientation can be provided with a guidebook (printed and/or online) containing an overview of the program and a step-by-step guide with instruction, and exercises with clear objectives, directions and deadlines (Cooner, 2010, p. 276). However, face-to-face meetings and hands-on experience can be better for orienting students because students can raise questions and ask for clarification in such meetings (Antonoglou, Charistos, & Sigalas, 2011: Cooner, 2010, p. 276).

Limitations and suggestions for further research

This research had some limitations in terms of design and delivery of blended learning. It was applied in only two sections of CDA course, and students’ participation in the Moodle was optional. As their participation

in the Moodle did not make any difference in their grades, only self-motivated students actively participated in the Moodle. Therefore, further research on blended learning should use different modes of blending involving more students to better understand its effect on students' performance. Similarly, as blended learning is new in the context of TU, it is necessary to identify familiarity as well as perceptions of stakeholders including policy makers, administrators and faculties regarding blended learning. Furthermore, research on experiences of stakeholders in institutions that have used blended learning in the context of Nepal might be useful for formulating policy as well as designing blended learning in TU.

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