

Original Article

Nursing and Midwifery Students' Perceptions and Experiences of Using Blended Learning in Rwanda: A Qualitative Study

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Abstract

Background

Although blended learning (BL) is being adopted in public and private higher learning institutions (HLIs) in Rwanda, little is known about students' use of BL in their learning activities. This article describes a qualitative descriptive study of students' perceptions and experiences of BL in Rwanda's post-secondary nursing and midwifery programs in public and private HLIs.

Methods

Thirty-three nursing and midwifery students from all public and private HLIs in Rwanda exposed to BL were invited to participate in three online focus group discussions (FGDs) conducted using a developed FGD guide with open-ended questions. Inductive content analysis was used to analyze the transcripts.

Results

Three main themes emerged from the data analysis:(1) BL perceived as a new and effective teaching and learning approach, (2) Contextual challenges to the BL method, and (3) Recommendations to improve the BL method. From students' experiences, the benefits included but were not limited to the flexibility of the approach, time, and cost-saving. However, several challenges were identified, including technological issues such as lack of ICT skills and poor internet connectivity.

Conclusion

This study provides insights into the usefulness of BL in HLIs and offers recommendations on how BL teaching and learning can be improved to strengthen nursing and midwifery pre-service education quality.

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Introduction

Like other higher teaching and learning programs, nursing and midwifery education in Rwanda continues employing useful teaching methodologies that promote a conducive learning environment.[1–4] For example, to promote effective teaching and learning environment for their students and to reduce some challenges like continuing education during Covid-19 pandemic or continuing education while maintaining your working status and costs related to some other traditional teaching methods including money to travel to school and limited access to teaching and learning materials, both Rwandan private and public higher learning institutions (HLIs) initiated a blended learning (BL) approach in pre-service nursing and midwifery education. [5] A BL approach combines the benefits of face-to-face and E-learning and minimizes the drawbacks of each method.

Staker and Horn [6] define BL as “a formal education program in which a student learns at least in part through online delivery of content and instruction with some element of student control over time, place, path and or pace; and at least in part at a supervised brick-and-mortar location away from home” (p. 3). BL is emerging in nursing and midwifery education as a popular approach and has many benefits for nursing and midwifery students than the traditional face-to-face mode. For example, during the COVID-19 pandemic, BL offered several teaching and learning opportunities in HLIs that enabled them to support an effective teaching and learning environment.[5,7] BL improved teaching in nursing and midwifery pre-service programs in theoretical classes and practice sessions.[8-9] Students instructed in the BL approach have demonstrated a higher level of knowledge for medication administration than nurses and midwives who experienced face-to-face learning.[5] Another study found that students who were instructed using BL were able to perform blood transfusion procedures more effectively than those with face-to-face only.[10]

BL, when implemented in nursing and midwifery professional courses, has been shown to improve nursing and midwifery skills, mostly Objective Structured Clinical Examination (OSCE),[11] and helped in the achievement of learning outcomes.[12]

As the implementation of BL in educational programs increases, it is imperative to assess how students perceive this new and advanced way of teaching. Various students including those who are enrolled in nursing and midwifery programs have reported being satisfied with BL;[5,13,14,16] others expressed the flexibility of the BL approach as a particular benefit.[5,16,17] In some studies, students have appreciated that BL is convenient and enables studying at their schedule.[13,15] Other benefits that have been highlighted include increased metacognitive skills, critical reflection, critical thinking, and decision making. [10,13]

Although BL has many advantages, it also has several challenges. Technological barriers, such as the internet and other technology-related infrastructures, have been identified as key challenges [5,18-22] that lead to technical difficulties.[17] Using e-learning platforms without prior orientation sessions was another challenge. [21,23] The literature has reported associated psychological problems with BL implementation, which hinders a student’s success.[18,24,25] Students reported feeling less valued when communicating with their educators and colleagues has to be done online.[25] Thus, it is imperative to offer support to students when the BL model is first introduced.

Transitioning from a traditional model to BL might be challenging to nursing and midwifery programs;[26] thus, it requires a well-designed program to avoid some challenges before adopting it.[27] In addition, it is important to understand students’ motivational regulation and factors that contribute to the development of curriculum that best suits the BL model. [29]

Students have shown that they do not feel confident enough about the BL model because, sometimes, it is introduced without prior knowledge of this model, and consequently, they become uncomfortable with its components.[28] Even though they perceive a BL model as satisfactory, in order to succeed, students should be engaged in their learning process actively.

In low- and middle-income countries (LMICs) such as South Africa and Uganda, BL is being adopted by many HLIs, especially those institutions teaching nursing and midwifery programs.[30] For instance, in South Africa, BL was used to deliver occupational health nursing specialty, which was not possible due to travel costs and time constraints. [30] Likewise, in Iran, the students who were taught using BL improved in Grade Point Average (GPA) compared to those who went for the traditional teaching and learning approaches.[22] Although, BL has been implemented for some years in Rwanda, during the COVID-19 pandemic, all Higher Learning Institutions (HLIs) in the country strengthened the BL method to support and reinforce their students' learning process. However, there are several challenges encountered by HLIs in low-resource countries, such as internet connectivity and computers to be used for BL.[5,31,32,34] Since BL was new to some HLIs and others have encountered several challenges, there was a need to conduct a study that documents the students' perceptions about BL in Rwanda. Therefore, this study explored the nursing and midwifery students' perceptions and experiences of using BL in HLIs in Rwanda. The findings from this study will be useful to mitigate the challenges identified and find some strategies to improve the learning environment in pre-service nursing education in Rwanda and other similar settings.

Methodology

Study Design

A qualitative descriptive design [34] was used to explore the current status of Rwandan nurse and midwife students' perceptions and experiences of using blended teaching and learning approach. The use of qualitative descriptive methodology [35] helped the research team present the findings of this study in a straightforward language that clearly describes the phenomena of interest.

Study Setting and Population

This study involved nursing and midwifery students from three campuses of one Public HLI and five campuses of five private HLIs to understand BL methods users' experiences from different perspectives and gain a detailed description. Those nursing and midwifery teaching institutions were considered in this study because they reinforced blended teaching and learning during this COVID-19 pandemic period without interrupting the nursing and midwifery program of their enrolled students. The rationale of involving those teaching institutions was to capture the experiences of blended teaching and learning methods users from students' perspectives.

Sampling

Purposive sampling was used to identify nursing and midwifery students from both the public and private HLIs mentioned above, which helped to obtain information-rich cases to the phenomenon of interest. [36]

Inclusion criteria

Participants met the following inclusion criteria to be selected into this study: be a nursing or midwifery student enrolled in undergraduate or graduate programs at one of the Rwandan public or private nursing and midwifery HLIs, exposed to BL method at least one year, and fluent in English. These who were not exposed to BL methods or with less than one using BL methods and these with limited abilities of sharing their ideas in English were not included in this study.

Data collection

Due to the COVID-19 pandemic situation and government mandated public health measures, all correspondences with potential participants, recruitment, and data collection activities including FGDs, were conducted remotely. All participants were assisted in joining the online FGDs via video call, and the moderator led the focus group discussion using the zoom platform, taking into account the online confidentiality agreement. Each potential participant received internet connection fees equivalent to the airtime to have the strong internet connectivity that enabled them to join the focus group discussion.

A field FGD guide consisting of open-ended questions was used to conduct online FGDs with nursing and midwifery students from both public and private Rwandan teaching institutions. As all nursing and midwifery teaching institutions use English as an academic language and have both national and international students and educators, all correspondence and FGDs were in English.

Probing questions were used to elicit more in-depth information. Demographic information was also gathered using a demographic questionnaire sent to participants via an online survey prior to the online FGDs. The researcher audio recorded the online FGDs with all participants' permission to avoid any distraction that could result from taking notes during their conversation. At the end of each interview, the researcher reminded the participants about the need for a second contact via telephone calls to discuss the study findings and make sure that the study findings reflected their experiences. Three FGDs of ten to twelve nursing and midwifery students made up the sample. The final sample size of this study was determined after data saturation was reached. Data saturation was determined by the research team after conducting three FGDs lasting between 60 to 90 minutes and that was determined after confirming that there was no new information being reported

by subsequent participants.[37] This study was conducted from September 13 to November 16, 2021.

Data analysis

Immediately, after conducting the first focus group discussion with participants, the audio-recorded interviews were transcribed verbatim by a hired research assistant under the principal investigator's supervision, and that helped to speed up the process to ensure data integrity. The NVivo software was used to assist in organizing transcribed data from the participants. For the data analysis, inductive content analysis as described by Hsieh and Shannon [38] was used. According to Hsieh and Shannon [38] and Noble and Smith,[39] the inductive content analysis is used in qualitative research when there is not enough existing knowledge about the phenomenon of interest. In addition, the inductive content analysis includes open coding, creation of qualitative data categories, and abstraction to use and to identify themes from collected data.[39]

The data analysis process began by listening to the audio recordings while comparing them to the transcribed data to ensure the completeness and accuracy of the data. The research team read the transcripts multiple times to be familiarized and immersed in the data. Line-by-line coding was used to identify the initial codes. The research team examined and reviewed initial codes, and categories were formed by identifying the similarities and differences in participants' viewpoints. The research team reviewed the identified categories and revised them in an iterative process whereby the research team went back and forth from the coded categories to the transcripts to capture participants' perceptions and experiences, and the in-depth analysis of the identified categories by the research team allowed for the identification of themes. Member checking was conducted before confirming the final themes; by contacting some participants to inquire if the identified themes reflected their perspectives.

New insights from participants were added to the emerging themes as relevant.

Ethical Considerations

Prior to the conduct of this study, ethical approval from the University of Rwanda Institutional Review Board (Approval Notice: No 239/CMH) was obtained. Participation in this study was voluntary, and a detailed explanation about this study was provided to the participants before online FGDs interviews were conducted.

The anonymity of all participants was reassured and observed. All interviewees' written transcripts and digital recordings of FGDs were assigned alpha-numeric codes to preserve anonymity. For confidentiality reasons, all information collected in this study was used for the purpose of this study, and the accessibility to this information was reserved only to the research team members of this study. Participants who accepted participating in this study completed and signed the online informed consent form before being involved in the online FGDs.

Results

Table 1. Participants' Demographic Characteristics

Variables	Frequency n=29	%
Gender		
Male	17	58.6
Female	12	41.4
Department		
General Nursing	17	58.6
Midwifery	10	34.5
Mental Health	2	6.9
Program of Study		
Advanced diploma	12	41.4
Bachelor's Degree	9	31.0
Master's Degree	7	24.1
Doctorate	1	3.4
Registration Status		
Year one	5	17.2
Year Two	6	20.7
Year Three	9	31.0
Year Four	4	13.8
Year Five	3	10.3
Masters	1	3.4
Doctorate	1	3.4
Years of experiences with BL		
Less than one Year	10	34.5
1 Year	4	13.8
2 Years	5	17.2
3 Years	4	13.8
4 Years	0	0
More than 4 Years	1	3.4

Of the 29 respondents, 58.6% were males, and 31% were in their third year of study. Most students in this study (58.6%) were from the General Nursing department, while 34.5% were from the Midwifery department. The Advanced Diploma was the most represented (41.4%), while the doctoral program was the least represented (3.4%). The Bachelors degree and Masters degree programs were represented at 31% and 24.1%, respectively.

Themes

Three themes and subthemes (Table 2) describing nursing and midwifery students’ perceptions and experiences of using BL in Rwanda emerged from qualitative data analysis: (1) BL perceived as a new and effective approach to teaching and learning, (2) Contextual challenges to BL method, and (3) Recommendations to improve BL method in pre-service education from participants perspectives.

Table 2. Themes and Sub-themes

Themes	Sub-themes
BL perceived as a new and effective approach to teaching and learning	Flexible and engaging teaching and learning method BL as financial cost-effective and time savings Offline Moodle and encouragement from teaching staff as contextual facilitators
Contextual challenges to BL method	Limited technological skills and poor internet connectivity Difficulties in delivering courses with practical components Lack of training as a barrier to successful BL
Recommendations to improve BL method in pre-service education from participants’ perspectives	More training on the use of BL Improve internet coverage BL to be sustained even after COVID-19 pandemic

BL perceived as a new and effective approach to teaching and learning

This theme covered several benefits and facilitators associated with the BL approach described by participants. Four subthemes emerged from this theme: flexible and engaging teaching and learning method, BL as financial cost and time saving, and Offline Moodle and encouragement from teaching staff as contextual facilitators.

Flexible and engaging teaching and learning method

Most of the study participants described

BL as a new flexible and effective approach to them than only face-to-face learning methods.

Most of the study participants described BL as a new flexible and effective approach to them than only face-to-face learning methods.

“...it (BL) is still a new learning method to some of us, but it (BL) is an excellent and flexible learning method because I could be sitting at home and do my quizzes,

or exams and I can contact my lecturer as soon as he/she got my message, he/she can reply to me immediately. So, studying using BL is better than only the face-to-face teaching and learning” (FGD1P1).

Additionally, participants reported that BL offered an alternative safe solution for teaching and learning during the COVID-19 pandemic period.

“...the use of BL in this time of COVID-19 pandemic is more helpful in our learning and helped to prevent spreading of the pandemic, as we are following our course online” FGD3P2.

Other participants appreciated how using the BL approach in their daily learning activities increased their academic performance, resulting in increased grades in some courses. One participant said:

“... this learning method helps me to work hard, to go through many online reading materials and books....and my grade was increased as I am scoring between 70-80 in different courses” FGD2P3.

BL as financial cost-effective and time saving

All participants reported how BL had helped them to save money and reduce costs for transport to and from home to schools. Many participants also expressed how the BL approach saves time and allows them to study while keeping their job.

"...it is good because it saves my learning time as you can study while you are doing even other things, it does not require transport and associated cost so that you can study at home. This method is good for us, especially in terms of financial and time-saving for us" FGD 3 P1

Offline Moodle and encouragement from teaching staff as contextual facilitators

When asked about factors enabling the smooth and effective running of BL, participants expressed that existing online learning platforms like Moodle and eLearning are significant facilitators to the BL since they offer the possibility and flexibility to complete assignments offline and submit them once one gets connected back to the internet.

"...we are having like offline Moodle desktop. It facilitates us because even if we cannot have an internet connection, we can continue to access materials offline; we can also try to do the assignment and submit it when we get access to the network" FGD1 P2.

The availability of faculty staff to teach and encourage students how to use BL and supporting them in the process was identified by participants as enabling them to have an effective and conducive BL teaching and learning environment.

"...in our school, they encourage us to use e-learning, and there is Wi-Fi, and there are some educators who are in charge of teaching us using that method" FGD2 P8.

Contextual challenges to BL method

Participants reported several challenges, including related technological barriers, lack of training on the use of BL, financial constraints, and difficulties related to the nature of their programs' courses. Each of these challenges is described below in detail.

Limited technological skills and poor internet connectivity

While participants perceived BL as an effective approach to teaching and learning, the problem of internet connectivity constitutes a significant hindrance to their ability to use the BL method. Additionally, many participants expressed a lack of technical skills to use ICT as another barrier to BL.

"... most of the challenges to the use of BL are poor knowledge of students and lecturers on using technology, poor training on the BL system and ineffective network" FGD1P5.

Furthermore, many participants reported the financial constraints of purchasing the required materials and resources such as laptops, smartphones, and internet bundles as a major barrier to the BL method's success.

"...we have some colleagues who don't own laptops, or smartphones, which can help them to access course materials online regularly, ... Also, internet connection is poor or not available in some places of the countryside ..." FGD1 P3.

Challenge related to difficulties to deliver courses with practical components

Many participants expressed the challenges related to the nature of courses where some content, such as those with practical demonstration components, are difficult to deliver using the BL method.

"...here is a challenge with modules that have hands-on or practical parts..., students get challenged in this situation as it is difficult for us to express our concern especially for practical activities and procedures as part of using this BL method..." FGD 1P2

Another concern reported by students was in relation to modules with clinical and practical components. Participants expressed their concerns that clinical skills are difficult to teach using the BL approach.

“Modules with clinical components I don’t think this BL method can be applied for clinical practice or in simulation lab if we used this BL. I don’t know what will happen on the side of clinical practice”. FGD1P3

Lack of training as a barrier to successful BL

Participants reported a challenge related to lack of training about the BL method, which made them struggle to learn with the approach.

“... some of us (students) and lecturers have limited competencies as most of us are not trained on the use of this BL, ... another problem is related to economic and financial issues for some of us (students) with limited ability to afford all required materials to use the BL” FGD1P2.

Few students who appreciated the traditional teaching mode considered the BL as a method that complicated their learning, and they gave it less value since they did not see educators in front of them to guide and mentor them in all learning activities.

“Another challenge that we faced during BL is that we are not giving it the same value as a face-to-face model of teaching and learning; sometimes with BL, I thought that I am not doing well as I don’t have anyone to push and guide me” FGD2P 8.

Lastly, few students tended to see lecturers leaving course materials and content unexplained as a consequence of using the BL approach.

“... some lecturers tend to leave some course content unexplained saying that students shall go to e-learning to get some other knowledge and skills.... While they give us some notes with detailed explanations when face-to-face approach is used” FGD2P7.

Suggestions to improve BL method from participants’ perspectives

Participants provided recommendations to improve the BL approach in their respective HLIs. Most participants suggested that training on the use of BL is needed, and they were concerned about the sustainability of the approach since it was reinforced with COVID 19. Two subthemes emerged from this third theme, including more training on the use of BL and BL to be sustained even after the COVID-19 pandemic.

More training on the use of BL

All participants recommended more training for both educators and students on the use of online platforms that are being used in the BL methods.

“... there can be some advocacy through this research to put more effort into training us (students) and our lecturers about the use of existing online platforms or give us some link of the video that provides us more guidelines on how to use BL...” FGD1P3.

In relation to the financial constraints associated with lack of internet connectivity, participants suggested that the internet coverage over the whole country be improved and provided with a financial scholarship for students in higher learning institutions.

“...it (BL) requires internet connection and internet in this country is a problem across different areas. So, it would be better to improve internet coverage and provide some financial support to students....” FGD 2P3.

BL to be sustained even after COVID-19 pandemic

In some higher learning institutions, the BL approach was newly introduced and encouraged during the COVID-19 pandemic period. Participants suggested continuing and sustaining the use of the BL approach post-pandemic. One student stated:

“...I would recommend this BL method be used and reinforced even after the COVID-19 pandemic because it helps me save my time and reduce the cost for me to travel.” FGD3P1

Discussion

This study focused on nurse and midwife students' perceptions and experiences with the BL approach. Participants of this study were mainly from advanced diploma programs while bachelors and master's programs were equally represented. The PhD programs were less represented. This difference in representation might be because, traditionally, the student enrollment tends to be greater in the Advanced Diploma programs. Likewise, the doctoral programs in Nursing and midwifery started a few years ago, and the enrollment is still very limited.

The results of this study show the transformative potential of BL in the context of the challenges facing higher education. Our findings from the study indicated several benefits of BL, such as time and cost savings as well as flexibility and increased student academic performance. From students' perspective, BL was shown to be an effective teaching approach in the context of Rwandan HLIs. However, the use of the BL approach in pre-service health education programs poses major challenges, such as lack of knowledge and skills among educators as well learners, hard and soft infrastructure facilities including internet connections and computers in most universities.[31-33] The BL approach became an important alternative to the traditional teaching when the COVID-19 pandemic started in Rwanda. BL enabled the continuity of teaching while respecting preventive measures against the pandemic. However, despite the many benefits of the approach, several challenges, including limited internet connectivity, financial constraints, limited technology skills, and lack of training, constitute barriers to the successful BL method. The literature demonstrates that BL is not a new method in the context of high-income countries.[25,43]

However, participants in this study perceive BL as a new approach to teaching,

and its use has increasingly been more reinforced during the COVID-19 pandemic in some HLICs to allow continuity of teaching during the pandemic. Likewise, a study conducted in Egypt to assess obstacles faced by nursing students while applying the BL method indicated that the nursing students considered BL as new and started with the COVID-19 pandemic. The students reported possessing limited computer skills and facing the challenge of poor internet accessibility.[41] This could be related to the fact that traditionally, teaching nurses and midwives has been essentially face-to-face before internet connectivity started to be used as an alternative to teaching in the context of Low- and middle-income countries.[5]

The present study indicates several benefits of the BL method, such as the effective use of time, reducing transportation cost, flexibility, and improving students' engagement in their learning. The findings concur with what other literature reports on the BL method. For instance, in the study to assess the effectiveness of BL in undergraduate nursing programs, demonstrated a positive experience with the BL approach to teaching. They reported that the students were able to engage in their courses with more flexibility when doing their assignments and accomplishing other related course activities at their convenient time.[39] Furthermore, in relation to cost-effectiveness, Harerimana and colleagues [43] in a mixed-method study conducted in Rwanda to explore challenges and benefits of online teaching in Rwanda demonstrated the effectiveness of the BL approach in saving money to travel from home to campus and vice versa expressing a need to encourage BL approach to teaching where it may be applicable.

The increased performance as reported by our study's participants is consistent with the findings from a narrative review on the impact of BL versus face-to-face teaching. In the review, BL was identified as an approach that increases students' performances.[45]

However, participants in the study by Zolfaghari and colleagues [22] asserted that lack of skills to use a computer and poor internet connectivity were barriers to the BL method. Considering that the internet is a valuable resource in BL teaching, it was suggested to improve internet connectivity, especially in low- and middle-income countries, for the successful implementation of the BL method.

Lack of face-to-face interactions between students and educators was considered to be a challenge by many participants of this study, corroborating findings from several other studies.[5,10,46,47] However, the finding that with BL, students may experience difficulties in courses that have practical or hands-on components is unique to this study as no other study reported this previously from the accessed literature. Despite the challenges experienced by students with the BL approach, participants in this study were more positive with the approach than with traditional face-to-face teaching. This finding confirms what Dang and colleagues [47] reported, that students enjoyed BL and female students appreciated more BL method than male students.

Students favoured the continuing BL approach to learning post-COVID-19 pandemic period but expressed the need for improvement. Suggestions to improve the BL approach include improving internet connectivity and enhancing students' knowledge of BL platforms. Surprisingly, students who participated in the study reported that their educators were also not familiar with the BL approach; therefore, they suggested the need for training both the students and the educators. These suggestions are in line with a recent study conducted in Egypt to assess challenges faced by nursing students while implementing BL during COVID-19.[43] The study reported a need to improve internet accessibility and finding a more systematic way to improve electronic learning by providing training to nursing faculty and students since the approach was new.

Limitations

This study had some limitations that need a mention. Some students who participated in the online focus group discussions used the term BL interchangeably with E-learning. However, with probing questions, data collectors were able to capture useful data in relation to students' experiences with BL.

Conclusion

Overall, despite the challenges related to the BL approach, this study indicated that BL is an effective method of teaching and learning in nursing and midwifery programs. There is a need to address barriers to the successful implementation of the BL method to further facilitate nursing and midwifery students' learning. Some students reported that their performance has increased with the BL method. However, further research is needed to assess the overall impact of the BL method on students' performance in a more quantifiable way.

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Conflicts of interest

Authors declare that there is no conflict of interest.

Authors' Contributions

Coordinated by the leading author: JPN, all co-authors contributed to the development of a research proposal that was submitted to the ethical review board at the University of Rwanda. JPN, OT, JM, JB, and AM performed the online FGDs. JPN, AY, YBM, AN, YK, contributed to the analysis and the interpretation of the data. All authors drafted the manuscript together.

ME, JPN, and AY reviewed, and copy edited the final version of this manuscript. All authors critically revised the content of this manuscript for its intellectual content and have accepted responsibilities for the entire content for this manuscript and approved its submission.

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