

(RESEARCH ARTICLE)



Blended learning programs in hearing health care in developing countries during a pandemic: Opportunity or disaster?

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Abstract

Introduction: With COVID-19, tertiary education was mostly transferred to online instead of face-to-face learning, as this was the only way to go forward during the pandemic. Blended learning refers to teaching that combine face-to-face instruction with online learning. It has the advantages that students can learn at their own pace through the convenience of online learning and can interact with peers and tutors in face-to-face sessions. For blended learning, the challenges during COVID-19 were even more. The Eduplex Training Institute (ETI) in South Africa, presents blended learning programs in hearing health care for students. Completion of these programs during COVID-19 were specifically challenged since students completed an online theoretical component and had to travel to South Africa to attend face-to-face practical workshops. In Africa, travel restrictions were set in many countries and specific travel to South Africa was prohibited by many governments. This prohibited students from attending face-to-face practical sessions and additional plans had to be made for students to successfully complete programs.

Methodology: The purpose of this study was to determine whether students and tutors from developing countries, found blended learning during COVID-19 as a possible way to continue studies. A survey research design was implemented to determine students' and tutors' perceptions regarding blended learning during the COVID-19 pandemic, challenges faced and adaptations that had to be made to complete programs successfully.

Results: Results indicated that students and tutors felt that it was possible to complete blended learning programs successful during the COVID-19 pandemic but there were several challenges that required adaptations to current programs. Students considered the lack of availability and affordability of internet connectivity as the biggest challenge, followed by the lack of access to personal equipment, unsuitable learning environments and insufficient time for learning as many of the students were working while studying. For tutors the main challenges were that they had to be adaptable – programs could not continue as initially planned. This had specific influence on the timeline of the program as it took students longer to complete programs than the initial time that was allocated. Other challenges included lack of appropriate learning material for the original planned face-to-face sessions that had to be presented in a different manner, lack of appropriate training to design and manage learning management programs, lack of personal equipment and software programs at their home environment and keeping students motivated. Changes that were required to the programs included: use of programs that required little data, ensuring Word documents, PowerPoint presentations and PDF files were downloadable, restricted use of images and graphics, use of pre-recorded lectures and allowing additional contact sessions.

Conclusion: Although blended learning in general composes many challenges to students in developing countries, these challenges were even more during the COVID-19 pandemic. Blended learning is however often the only way in which these students can acquire new knowledge and therefore strategies should be implemented to ensure the success thereof. With the combination of dedicated tutors and motivated students many challenges can be overcome, and new plans can be made to result in the successful completion of training programs.

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Keywords: Blended learning; Hearing health; Developing countries; Pandemic; Hearing aid acoustician; Pediatric audiology.

1 Introduction

With COVID-19, tertiary education was mostly transferred to online instead of face-to-face learning, as this was the only way to go forward during the pandemic (Mahyoob, 2020; Mukuna & Aloka, 2000). Online learning refers to education that is delivered electronically through various multimedia and internet platforms while face-to-face learning is the more traditional teaching method where course content and learning material are taught in person to an individual or a group of students (Chisadza *et al.*, 2021). Blended learning is a form of online education and refers to teaching that combine face-to-face instruction with online learning. Blended learning has several advantages over online learning which includes the higher opportunity of getting connected with peers and instructors during face-to-face sessions, better understanding of course content due to the support of social interactions but students can still learn at their own pace (Zalat, Hamed & Bolbol, 2021; Heng & Sol, 2020; Mukuna & Aloka, 2020).

Some of the reported benefits of e-learning include a reduction in costs, the provision of convenient and flexible learning, less environmental impact, as well as access to quality education (Heng & Sol, 2020). With many resource-constrained African countries struggling with limited infrastructure that cannot accommodate all prospective higher education students, the promised benefits of e-learning may explain the widespread enthusiasm around e-learning in Africa and other developing countries.

Although online and blended learning was a way to continue education during COVID-19 – these learning approaches face several challenges in developing countries. Some of the main challenges faced include poor and unstable internet access, insufficient personal equipment, lack of learning devices and technical problems (Pokhrel & Chhetri, 2021; Mukuna & Aloka, 2020; Zalat *et al.*, 2020). For blended learning, the challenges during the COVID-19 pandemic were even more than with online learning.

The Eduplex Training Institute (ETI) in South Africa, presents blended learning programs in hearing health care for students in Africa. Completion of these programs during COVID-19 were specifically challenged since students completed an online theoretical component and had to travel to South Africa to attend face-to-face practical workshops. In Africa, travel restrictions were set in many countries and specific travel to South Africa was prohibited by many governments. This prohibited students from attending face-to-face practical sessions and additional plans had to be made for students to successfully complete programs.

Aim

The aim of this study was to determine whether students from developing countries and their tutor, found blended learning during a pandemic – like the COVID-19 pandemic – a possible means to continue studies.

2 Material and methods

2.1 Study design

A survey research design was implemented to determine students' and the tutor's perceptions regarding blended learning during a pandemic. This included information about the challenges they faced and adaptations that had to be made to successfully complete study programs.

Within the survey research design, two self-developed questionnaires were distributed in order to collect data and to describe participants' opinions and beliefs – one questionnaire for students, and one questionnaire for the tutor.

2.2 Participants

A purposive sampling method was implemented where participants (n=25) were chosen because they were representative to the topic of interest (McMillan & Schumacher, 2014). Participants included 24 students and 1 tutor. Students that participated in the study met the following criteria:

- Completed a blended learning program through Eduplex Training Institute (ETI)
- Being situated in a developing country
- English language proficiency and literacy

The tutor that participated in the study, met the following criteria:

- Had more than 3 years' experience in online and/or blended teaching
- English language proficiency and literacy

Students that participated in the study completed the Hearing Aid Acoustician (n=18) and the Pediatric Audiology (n=8) programs at ETI and included 13 males and 11 females. Both these programs are delivered as blended learning programs where students have online access to the content but must attend face-to-face practical sessions.

Students' ages ranged between 18 and 60 years with most of them (50%) being between 25-34 years of age. All the students were already employed and did the blended learning programs to further their knowledge and skills. The students had the following occupations:

- Nurse (9)
- Hearing aid assistant (4)
- ENT (4)
- Speech therapist (1)
- Assistant speech therapist (1)
- Optometrist (1)
- Project facilitator for women with disabilities (1)
- Hearing aid acoustician (1)
- Senior public health professional (1)
- Management (1)

50% of the students were from Ethiopia. Students from other countries included Kenya; Zambia; Uganda; Nigeria; Malaysia; Gambia; Croatia and Bahrain.

The tutor that participated in the study is a qualified Audiologist with experience in pediatric audiology and online teaching. She tutored students that enrolled for both the Hearing aid acoustician and Pediatric audiology programs, was in South Africa and has 5 years' experience in online teaching.

2.3 Material

Students were asked to complete a questionnaire in order to obtain background information and information about their perceptions of blended learning during the COVID-19 pandemic, challenges they faced and adaptations that had to be made to the learning programs for them to continue with their studies.

A questionnaire was given to the tutor to obtain information about her experience of blended learning during the pandemic as well as challenges faced by her and adaptations that she had to make to ensure that students were able to complete their studies successful.

2.4 Procedure

An email was sent to all the participants that completed a blended learning program with ETI before and made the selection criteria to ask if they would participate in the study. The purpose of the study was explained, and participants were provided with a letter of informed consent. Participants who agreed to take part in the study were provided with the questionnaire via SurveyMonkey and were asked to complete the questionnaire before a certain date. Participation in the study was entirely voluntarily and participants could withdraw from the study at any time if they chose to do so.

2.5 Data recording

Data from the questionnaires were coded into a Microsoft Excel worksheet.

3 Results and discussion

All the students (100%) believed it is possible to successfully complete blended learning programs in their country of residence. From the 24 students that participated in the study, 19 did not complete any other blended or online learning programs before while 5 students completed other online learning programs before, which included:

- MSC Advanced Audiology Studies (1)
- Leadership and Management program (1)
- Certificate on Speech Therapy (1)
- Network Administration (1)
- Hearing aid Acoustics Basic (1)

A total of 75% of students indicated that they have affordable and reliable internet at their home or workplace with 25% of students who did not have this luxury. Most students indicated that they access the internet from their workplace (58%) or cell phone (50%) with 38% of students who mostly accessed the internet from their home and one student who made use of internet access at public places like restaurants. It is not uncommon for students from a lower socio-economic status to rely on free internet to complete their studies (Adedoyin & Soykan, 2020).

The biggest challenges experienced by students to complete blended learning programs in developing countries were a lack of reliable and affordable internet (67%); electricity fluctuations in their country (25%); sufficient time to allocate to studies (13%); inadequate computer knowledge (8%), poverty (4%) and political unrest in their country (4%). Unreliable and/or expensive internet is named in various studies as the single factor that contribute most to disruptions in studies (Chisadza *et al.*, 2021; Kaisara & Bwalya, 2021; Adedoyin & Soykan, 2020; Heng & Sol, 2020). In many developing countries, the internet bandwidth is relatively low with lesser access points and the data packages are costly in comparison to the income of the people (Pokhrel & Chhetri, 2021). Although electricity fluctuations were indicated as the second biggest challenge – this contributes to a lack of internet access as the power failure cause periods of no internet availability for students.

When asked if students knew the difference between online learning and blended learning only 21% of students could explain the difference correctly. The other 79% of students were not aware of a difference between the two modes of education.

Students were asked to indicate which components of the blended learning program they thought added the most value to the program. These results are displayed in Figure 1.

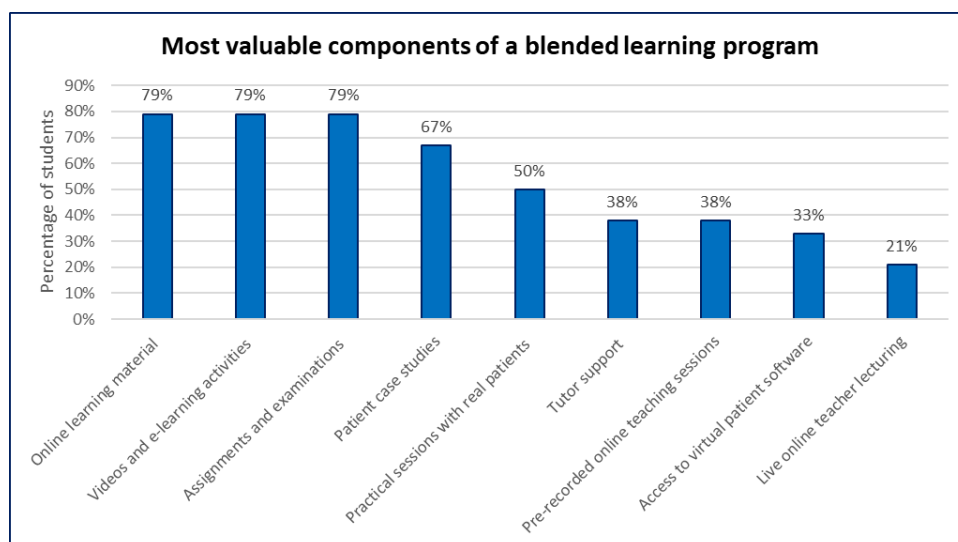


Figure 1 Most valuable components of a blended learning program

Figure 1 displays that students found online learning material (79%); videos and interactive e-learning activities (79%) as well as assignments and examinations (79%) as the most valuable components of a blended learning program. Other valuable components included patient case studies that provide a clearer understanding of content (67%) and practical sessions where you get the opportunity to encounter with real patients (50%).

According to the tutor, well-designed course material, quizzes and assignments as well as webinars are the most beneficial components of a program to the students.

Figure 2 displays the aspects of the blended learning program with which students experienced the most difficulties during the COVID-19 pandemic.

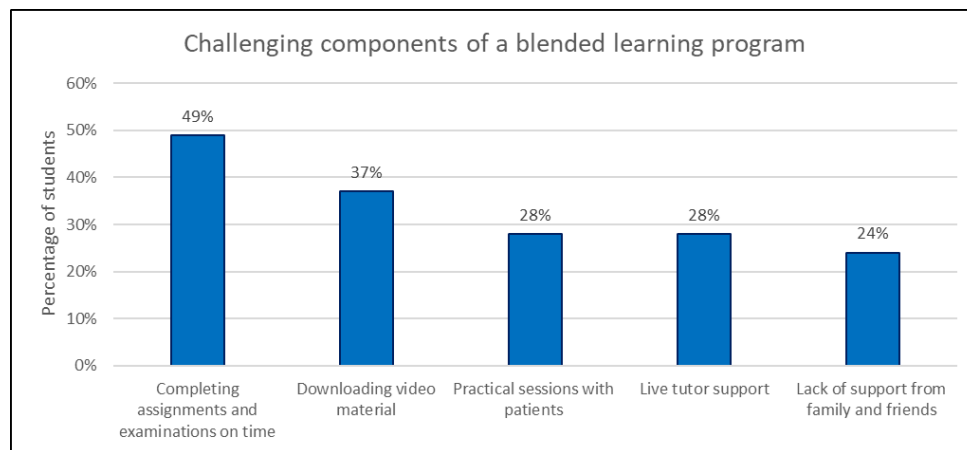


Figure 2 Challenging components of a blended learning program

From the above-mentioned figure, it is evident that during the COVID-19 pandemic, students experienced the most difficulty to complete assignments and examinations on time (49%) and downloading video material (37%) followed by practical sessions with patients (28%), live tutor support because they could not manage to consult (28%) and a lack of support from family and friends (24%). The inability to complete assignments and examinations on time, difficulty with downloading video material and a decrease in consultation time with the tutor were all to some extent caused by internet difficulties that students experienced. Due to social distancing measures, travel restrictions to South Africa and laws in many countries that only essential or life-threatening consultations could be performed during certain periods of COVID-19, students could not attend practical sessions to consult with real patients.

The tutor identified the ability to access interactive learning components due to internet issues in the different countries as the single factor that caused the most problems for students during their training.

Students indicated that the COVID-19 pandemic, affected them in the following ways:

- Extended working hours (79%) - As many students were qualified medical professionals, they were required to work longer hours at the hospitals where they were employed to lessen the patient load caused by COVID-19.
- Financially (71%) - In many cases people were not paid if they did not work during the lockdown periods enforced by the authorities.
- Psychological well-being and level of motivation (63%)
- Responsibility towards other family members (63%)
- Own health (46%)

This was similar for the tutor as she also indicated that she was affected by COVID-19 in the following ways:

- Different working hours - The tutor had to adjust her working hours to times that the students were available.
- Financially - In South Africa, many companies only paid employers a certain percentage of their salary during the restricted lockdown periods. Because of the lockdown, many businesses also permanently closed which caused high numbers of people to lose their work.
- Psychological well-being and level of motivation.
- Responsibility towards family members - During the lockdown period South African schools were either completely closed or only allowed a limited number of learners to attend school each day. Parents therefore had to continue working from home but also had their children at home.

Students' and the tutor's psychological well-being was negatively affected by the COVID-19 pandemic. This is caused by several stressors including frustration, fear to get sick, concern for friends and family that were ill, social isolation and lost opportunities for peer interaction (Heng & Sol, 2020). Social isolation could be an obstacle to academic performance as social isolation could lead to increased anxiety, depression and feelings of sadness (Mukuna & Aloka, 2020).

Students were asked how their blended learning experience changed during COVID-19. 33% of students indicated that they did not experience any changes in their learning process due to COVID-19. The other students highlighted the following answers which are displayed in Figure 3.

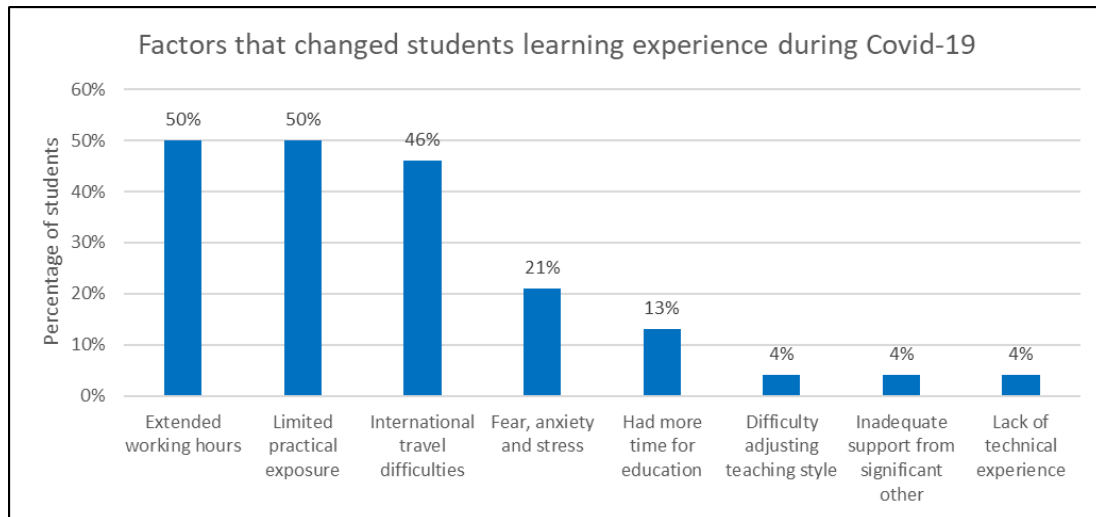


Figure 3 Factors that changed students learning experience during COVID-19

As can be seen from the figure above, students were challenged with extended working hours (50%), limited practical exposure opportunities (50%) and international travel difficulties accompanied by additionally undergoing COVID-19 tests (46%). Students also indicated fear, anxiety, stress and the aspect of having more time to study as factors. Although a benefit of blended learning is the time flexibility of learning content online, many students in the current study were employed in the health sector which implicated additional workload due to the COVID-19 pandemic in their place of employment – this resulted in less time for their studies. Students that were not employed in the health sector indicated that they had more time to study as they were forced to stay at home due to government lockdown restrictions.

Challenges faced by the tutor included:

- Changes of timelines – deadlines for assignments and examination dates had to be postponed numerous times.
- Lack of appropriate training to design and manage learning management programs - the tutor had to learn how to use Zoom and Teams on her own, in a very short time.
- Lack of personal equipment and software programs at home.
- Keep students motivated.
- Accepting the changes in the learning environment.
- Lack of knowledge of different teaching domains.
- Communication skills: clarity of expression, emotionally connecting with students and other necessary skills to deal with the demands on the online platform and the disability to resolve small issues during training.

When students were asked what aspects demotivated them during their studies, lack of contact with the tutor, being sick with COVID-19, stress and frustration about their families, job security and not being able to meet friends, longer working hours, less possibility of practical training and rescheduling of examinations were mentioned.

What the tutor found demotivating was the difficulty of keeping students motivated and on par with the course while having to keep her own family sorted out at home as working from home has unique challenges such as teaching children at home while they can not attend school and to keep them happy and occupied at home while having to work and connect with students. The unexpected appearance or interruption of family members during online learning or dogs barking in the background was a common factor that led to disruption of students' attention during online sessions during COVID-19 (Adedoyin & Soykan, 2020).

Students were asked what training institutions and/or tutors could do to improve online and/or blended learning during a challenging time like a world pandemic. Their answers are displayed in figure 4:

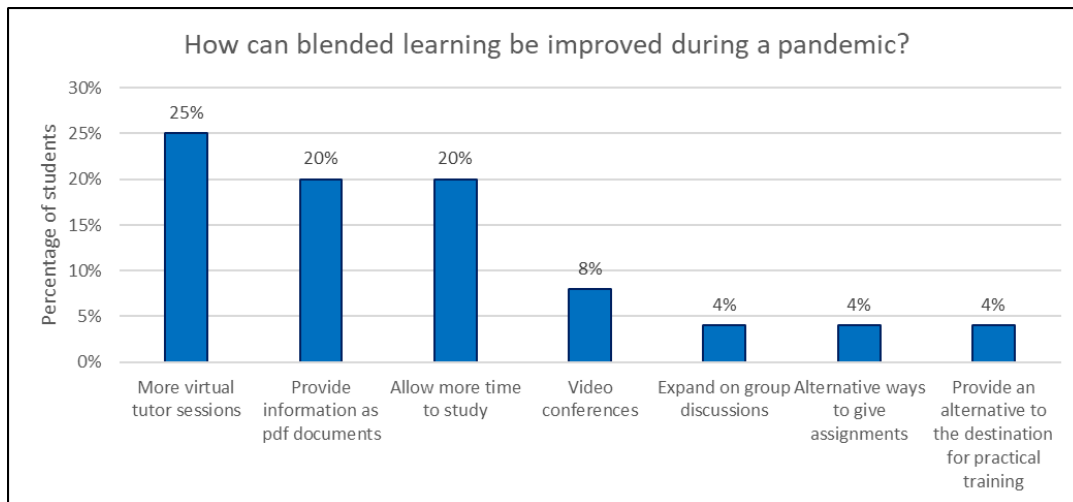


Figure 4 How blended learning can be improved during a pandemic

From Figure 4 the most prominent suggestions from students to improve blended learning during a pandemic is to provide more virtual contact sessions with the tutor (25%), make learning material and documents available in pdf format to be more accessible (20%) and to allow students more time to study (20%).

The single factor that was mentioned by the tutor to improve blended learning in developing countries, is to offer all teaching material of a lower data loading as this will enable students to access the information easier. Making online education better accessible among students with techniques like flipped classrooms, case studies and gamification is also suggested by Chakraborty and colleagues (2020). These strategies were implemented by the tutor to enable students to participate in group discussions and webinars and to empower them by leading the session in a flipped classroom setup.

All the students that participated in this study, successfully completed their studies. The tutor indicated that one of the main reasons she felt that students were successful was due to adaptations made in the program and if these adaptations were not made, many students would not have been able to successfully complete their studies.

The use of various online educational platforms and video conferencing software such as Google Classroom, Zoom, virtual learning environments as well as social media forums like Telegram, Messenger, WhatsApp and WeChat were explored for teaching and learning for the first time ever during the COVID-19 pandemic and used with great success (Pokhrel & Chhetri, 2021; Chakraborty *et al.*, 2020). These online platforms allow tutors to share notes and multi-media resources related to their courses with students, allow students to hand in assignments, enable tutors to keep track of students' progress, organising online lectures and discussion groups.

Adaptations made by ETI to programs are in line with suggestions from the literature to enhance the effectiveness of online and/or blended learning during a pandemic and included (Heng & Sol, 2020):

- To create accessible learning material - PDF's and pre-recorded videos were provided to students.
- To choose adequate digital technologies - each student's country and internet was considered to determine if Zoom or Teams or another platform would be the most useful.
- Record lectures, caption videos and audio content - new videos were made with recording software and PowerPoint.
- Adopt culturally inclusive teaching - different countries had different public holidays that had to be considered and the COVID-19 levels of restriction differed from country to country.
- Adopt a flexible approach to student participation and timelines - the tutor had to enquire on student's progress, emotional needs and workload and adjusted timelines accordingly.
- Understand student needs - emotional support was given to each student via email, zoom or WhatsApp messenger.
- Ensure that content is of high quality and appropriate to a student's level - difficult concepts were explained via zoom session or videos were made and discussion groups were used to ensure understanding and grasp of the content.

- Building interpersonal relationships through various communication channels - Zoom, email, WhatsApp and Telegram were used to regularly keep in touch with students.
- Mental health – reaching out to students who may need help. Regular check-ins with all students to determine if they are coping and managing, talking about issues and concerns.

When asked what enabled them to continue with their studies during such a difficult time and with many challenges experienced, students provided the following answers:

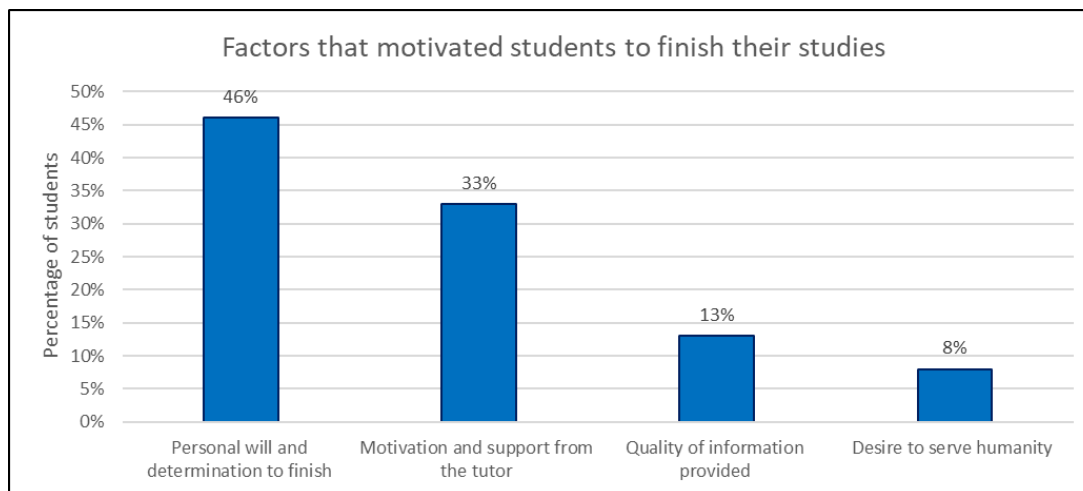


Figure 5 Factors that motivated students to finish their studies

Figure 5 displays that the most motivating factors that drove students to finish their studies, included their personal will and determination to successfully finish (46%); the motivation and support received from the tutor (33%); the quality of the information provided (13%) and a strong desire to serve humanity (8%).

For the tutor, the most important factors that enabled students to keep on going with their studies, was the personal connection between the tutor and the students as this kept the students' moral high and constantly motivated and encouraged them to not give up. Pokhrel and Chhetri (2021) also confirm that a pandemic, like the COVID-19 pandemic, forged a stronger connection between teachers and students than ever before.

96% of students from developing countries will recommend a blended or online learning program to others with only one student who will not recommend this way of learning. Unfortunately, the student did not expand on this. The tutor will also recommend this way of learning to students from developing countries as she feels that it is a reliable way to still connect students and having them focused to work on studies amidst a pandemic. Valuable study time will be lost if this can not be done.

4 Conclusion

Results of this study indicate that although students and tutors experienced many challenges during blended learning, they do feel that this is a viable way of continuing studies during a pandemic. Blended learning is often the only way in which students from developing countries can acquire new knowledge and therefore strategies should be implemented to ensure the success thereof. With the combination of dedicated tutors and motivated students many challenges can be overcome, and new plans can be made to result in the successful completion of training programs.

To ensure that these approaches are widely adopted in post-pandemic times in developing countries, more government support and investment from local governments are needed. The current time should also be used by educational institutions to improve existing online learning platforms, expanding the provision of internet access and online library resources. Training and orientation programs about online learning need to be offered on a regular basis to students and staff to advance their knowledge and skills in different aspects of blended learning.

Compliance with ethical standards

Disclosure of conflict of interest

The authors alone are responsible for the content and writing of the paper.

Statement of ethical approval

Ethical clearance for this study was obtained from the relevant ethical committee.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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