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"The internet is slow!": building a context-oriented learning management system

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ABSTRACT

In this study, researchers analyzed the current distance learning situation in the Philippines as part of a four-phase project to create a Filipinized learning management system (LMS) for nursing students and educators. A mixed-methods approach was utilized by conducting 17 online focus group discussions (FGDs) in selected nursing universities from the Philippines and disseminating an online survey with a sample size of 80 nursing educators and student participants. Results revealed that both nursing students and educators faced barriers in their online learning and teaching experiences and in using LMS. Educators showed how slow internet connections and power outages, lack of training with the use of technology and LMS, lack of technology resources, and lower student engagement hampered the delivery of learning. Students also shared problems with instability of internet connection, teacher-student and student-student communication, and learning environment. Both teachers and students also recognized time efficiency, cost-effectiveness, the accessibility of learning materials, and flexibility in learning as benefits of online learning. The study provided an in-depth understanding of the situation of Filipino online nursing students and educators that may be used in developing the Filipinized LMS and in building educational policies and programs for online learning.

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1. INTRODUCTION

The COVID-19 pandemic has posed several global health, social, and economic issues. As of April 2021, the Philippines' Department of Health COVID-19 case tracker indicates that over 900,000 Filipinos have been infected with the virus. To prevent the spread of the virus, the Philippine government has implemented quarantine and health regulations, resulting in the temporary closure of schools and academic institutions [1] and an abrupt shift to remote learning. Such a quick adaptation to an online learning environment (OLE) has presented educators, students, and academic institutions with yet another obstacle.

One of the many benefits of utilizing learning management systems (LMS) compared to the usual printed modules is an enriched learning material that caters to audio-visual resources to facilitate an engaging environment for students [2]. However, many teachers and students reported a host of challenges upon using existing LMS that reveal the technical, socio-economical, and cultural challenges. As mentioned by Salac and Kim [3], the status of internet connectivity in the Philippines is behind compared to other developing countries in Asia. In 2015, the Philippines had an average internet speed of 2.8 Mbps compared to Thailand and Malaysia which attained 7.4 Mbps and 4.3 Mbps respectively [3]. Thus, the inefficiency and high cost of

internet connection in the country could hinder users such as teachers and students in achieving to continue their learning virtually.

The problem of internet connectivity is also related to the deep-seated socio-economic concerns of Filipino learners and educators. According to Stanford University, the digital divide can be defined as a growing gap in accessing computers and the internet between marginalized groups and privileged communities of society. In the country, some students and teachers live in far-flung areas, mostly with no electricity and no opportunity to establish a stable internet connection. There are narratives that students are climbing mountains or trees just to sustain a signal for their online class [4]. Moreover, those who have a 'better' signal may have no means to support their online learning due to financial challenges in paying for data charges and technological resources like computers, tablets or smartphones.

Most LMS are designed for the general public taking for granted the significance of understanding the context of its users. Context, a word derived from Latin meaning "to weave", has transformed its purpose from "composing meaningful stretches of languages to the conditions for understanding a stretch of language and of the possibility of determining its meanings" [5]. This progress to the meanings of context has been furthered by anthropologists wherein functions of contexts may have varying aspects such as cultural, social, economic, and political.

In developing technologies such as LMSs, considering the contexts of users is a principle guide of a user-centered design [6]. Contexts are determined by the patterns of users' tasks, technical, physical and social organizational environments in which the system is utilized [6]. The approach offers a potential collaboration with the users and designers to align innovations in users' goals and usability to users [7].

For instance, understanding the context in developing LMSs may be apparent in the language of the technology [8]. Learners and educators who have no basic knowledge of the commands and protocols of technology could find themselves confused in using online platforms. In addition, the choice of learning environment also raises issues on online learning. For example, curriculums that utilize videoconferencing as an effective learning approach could not be as effective in those areas, like the Philippines, which has a slow internet connection or frequent power interruptions. In another scenario, the curriculum of medical students in the Philippines is associated with providing handouts and PowerPoint files without voice narration has been difficult for students especially visual and auditory learners [9].

Relatively, problems of technological infrastructures, slow internet access, digital literacy and limited technological skills are more apparent in developing countries such as the Philippines. Rajeb *et. al* [10] emphasized how such challenges were critical in the acceptance of students in online learning through the use of the acceptance of online learning (AOL) scale in Bangladesh. The study found a striking result wherein an absence of an appropriate LMS may lead to challenges in providing quality resources to students, making instructors inefficient. Moreover, technological sufficiency and digital literacy are correlated and acceptance in online learning. Hence, to provide an effective and appropriate learning environment for learners and educators, there is a need to understand the technical, socio-economic, and cultural context that the study aims to address. This research is focused in exploring users' perspectives, challenges, and context from the nursing education sector to better understand their challenges in online learning. Results from this study will be useful in establishing a Filipinized LMS, a context-driven LMS for nursing students and educators in the Philippines.

2. THEORETICAL BASIS

The successive approximation model (SAM) was developed by Allen and Sites [11] in pursuit of achieving an ideal process for designing and developing effective learning products, which they characterized as iterative, collaborative, efficient, effective, and manageable. It enables all team members to communicate with one another, contribute, and collaborate [11]. SAM consists of three phases, namely, preparation, iterative design, and iterative development. As previously mentioned, this study focused on the needs assessment and situational analysis of remote learning in the Philippines as part of a four-phase research project aimed at developing a Filipinized LMS for nursing students and instructors; hence, only the first phase of SAM was used in this study.

SAM starts with the preparation phase which is a collection of readily available information to get background knowledge relevant to the project, as seen in Figure 1. The needs assessment and situational analysis of remote learning in the Philippines sought to establish a baseline for the development of a Filipinized LMS. This includes understanding the current teaching and learning needs, preferences, and challenges faced by educators and learners who have adapted to remote learning/and/or blended learning styles through a series of focus group discussions (FGDs) and online surveys for students and teachers.

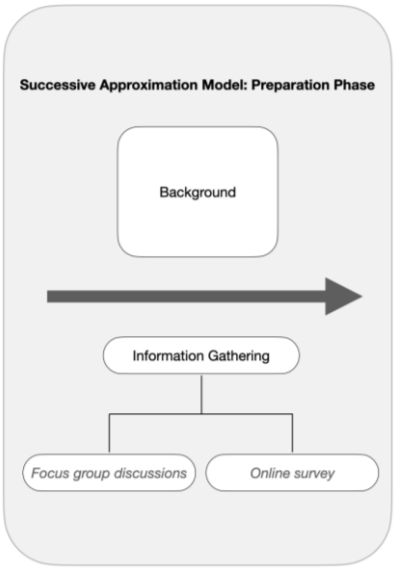

Figure 1. Preparation phase of the SAM

3. METHOD

The study employed a mixed-methods approach to gathering data through online FGDs and online surveys. FGDs is one of the most used qualitative approaches to gather in-depth understanding about social issues [12]. Compared to one-on-one interviews, FGDs are cost effective and generate deeper discourse between participants. FGDs effectively generated participants' views, sentiments, and perspectives that helped understand the situation of nursing students and educators in remote learning environments. Similarly, online surveys have been useful in research in the 21st century because of its reach, flexibility, convenience, timeliness and technological innovations [13]. Such a method was useful to both researchers and users as the study required participants from all over the Philippines and was conducted during the pandemic where face-to-face interactions were limited.

Data analysis used for the qualitative data involved transcription and thematic analysis using the NVIVO software. Quantitative data were analyzed using descriptive statistics in Jamovi. Both data helped the researchers to visualize and gather deeper information on the use of technology, material, human, and pedagogical resources of the sample.

3.1. Focus group discussions

Participants were composed of various nursing universities that represented each island of Luzon, Visayas, and Mindanao. Each participating institution had two sets of FGDs: educators and students. The informants were contacted through email and voluntarily participated in the data-gathering process. The online discussions depended on the schedules of the participants and were facilitated through the video conferencing application or the Zoom Meeting. In assessing the current online learning situation of educators and students in nursing schools, the research team conducted 17 FGDs across the country. A two-stage cluster design was utilized and sets of inclusion and exclusion criteria were implemented to narrow down the selection for the participants.

The conversation guide for the FGDs is composed of 24-item questions divided into four categories: i) student/teacher profile, ii) remote-learning/teaching experiences, iii) use of LMS, and iv) future plans. These questions aimed to further relate personal and professional encounters to the existing challenges to online learning in the country, specifically on the problem of internet connection and lack of technological resources.

There were eight FGDs have been conducted among the faculty and student representatives from the Luzon region, five FGDs in the Visayas region universities, and four FGDs among the students in the Mindanao region universities. Data gathered from the interviews were recorded and transcribed using the Inqscribe application. After transcribing, thematic analysis was conducted using the NVIVO software. Arising themes and patterns were identified along the process.

3.2. Online surveys

After the group discussions, each participant was tasked to answer an online questionnaire via Google Forms. Similar to the FGDs, there were two sets of surveys given to the participants – faculty and student

surveys. The online survey for teachers consisted of 25 items, while the questionnaire for students consisted of 27 items. The questionnaire contained the following subsets: profiling, online teaching/learning and LMS.

All participants to share the questionnaire with their friends, classmates and colleagues to be able to attain the set sample size. Data gathered from the online survey were treated using a statistical analysis tool named Jamovi. The researchers utilized a sample calculator or the G-Power software to compute the sample size of the online survey. The sample was analyzed using the power at 0.05, effect size (large), and power at 0.80. Eighty (80) students and faculty participants were computed as the sample size.

4. RESULTS AND DISCUSSION

4.1. Nursing faculty and students

Transitioning from face-to-face to online or remote teaching and learning has not been easy for nursing educators, particularly during the first few months of the COVID-19 pandemic, when a dramatic shift in teaching instruction occurred. Various challenges arose, and countermeasures were made to overcome them. Even so, benefits were also realized in online learning during the pandemic period.

There were 25 students and 12 faculty members participated in the FGDs. Students were composed of first to fourth-year students, while faculty members have experience of more than 10 years of teaching at their respective universities. On the other hand, a total of 40 nursing faculty members and 40 nursing students were the respondents for the online survey. 60% (Table 1) and 70% (Table 2) of the faculty and student respondents were affiliated with state universities, whereas 40% and 30% of were from private institutions respectively.

Table 1. Frequency of classification of university of faculty members

Classification of university	Frequency
Private university or college	16
State university or college	24

Table 2. Frequency of classification of university per year level

Classification of university	1st year	2nd year	3rd year	4th year	5th year/graduate students
Private university or college	0	0	2	10	0
State university or college	4	2	4	12	6

4.2. Difficulties in online learning and teaching

4.2.1. Poor internet connection and occasional brownouts

Poor internet connection was identified as the major problem for both teachers and students. Despite the high demand for stable and faster connectivity, internet connectivity in the Philippines remains slow and costly as internet infrastructures remain outdated and lacking [3]. Internet connectivity difficulties have a negative impact on online learning [14]. The majority of the participating faculty members in the focus groups have a satisfactory to good internet connection on most days. However, they all voiced concern about their students' weak internet connections, particularly those who use mobile data for synchronous and asynchronous sessions.

> "*Many of our students were unprepared, especially when they went back to their houses, and towns. So Antique, being a highly rural province, many of our towns are upland. So, a lot of students find it difficult to even access their Google Classroom for the submissions.*"

In fact, most students from the Visayas and Mindanao Region were the ones severely affected by the slow internet connection in their area especially after Typhoon Odette happened. During the discussion, one student shared how she wakes up early in the morning to go to her classmate's boarding house to connect with the *Piso* Wi-Fi to submit requirements. In addition to this, there are also occasional brown-outs in the area so most of the students experience a loss of charge in their gadgets, and class discussions are commonly interrupted. Despite the situation, students who continued to study were forced to travel to risky areas to gain a strong mobile data signal. Some students and teachers located in areas where broadband internet is serviceable were compelled to spend a higher amount to acquire an acceptable internet service.

4.2.2. Less interactive and delayed feedback

Online learning is also perceived to be less interactive and engaging. Not all students can open their cameras during synchronous sessions due to connectivity issues. As a result, faculty members do not receive

immediate feedback on whether students understood the lesson. The same was observed in the research from Mukhtar *et al.* [14] stating that due to lack of immediate feedback, teachers were unable to assess students' understanding during online lecturing. Just the same, there is also less interaction in asynchronous sessions, as students will simply listen to and watch pre-recorded videos and complete activities independently. Receiving passive instructions from learning materials creates an imbalance between instructor-learner interaction and learner-learner interaction leading to unsatisfactory online learning [15]. This is consistent with the survey results which reveal online education as less effective, according to 60% of the survey respondents.

4.2.3. Student-teacher communication

According to the students, they find it difficult to communicate their concerns with their teachers because there is no assigned communication tool for them to coordinate with their professors. Since their professors are not that technologically inclined, one student shared that they usually choose different ways of communicating such as emails, Facebook messenger, or Google Class that the students do not know what to use anymore. Additionally, communication with their classmates was also challenging especially when it came to group work. Some of the students did not have a stable connection thus, they couldn't finish their discussions and their group's members were not complete.

4.2.4. Online learning environment

The physical learning environment has a direct impact on the learning and performance of an individual through cognitive, physiological, and affective means [16]. This is specifically crucial to those students who do not have an appropriate physical setting for learning. In the context of Filipino nursing students, some were forced to leave out of their houses and find a strong signal for online classes. One instance is when their classmate went to a bus terminal just to participate in their online session which could be very dangerous. Some students go near the river during synchronous sessions with which boats can be heard by other students.

On the other hand, those students who have a stable internet connection still experience learning distractions inside their homes. It was difficult for them to have quiet surroundings, especially during the filming of their return demonstration activities. Students recall how there are times when they have to answer knocks on their doors or attend to some household chores while studying, making it not conducive to focus on online learning.

Additionally, it is observed to be difficult to teach the nursing program entirely online or without a clinical setting. This was also the observation of Mukhtar *et al.* [14] wherein faculty members and students said that through online learning modalities, they were unable to teach and learn practical and clinical work. Therefore, instructors struggled with teaching skill-based courses and return demonstrations, especially since skills training is the primary concept for equipping nursing students at higher levels. Without a skills laboratory and adequate resources, they cannot effectively demonstrate the practical skills they are teaching, such as what occurs in delivery room areas, and students cannot effectively perform return demonstrations. Hence, both teachers and students must be resourceful and put more effort into demonstrating correct nursing methods online. These elements have an impact on the quality of the course material provided to pupils.

> *"We had been used to full face-to-face lectures on our students and it was so at the start very hard for us to transfer everything online as well as our students and we find it very difficult to train our students and enhance particularly the hard skills which is primarily the core component for training for our nursing students especially on the higher level."*

Sutadji *et al.* [17] defined authentic assessment as a "validity test" that simulates the real world and involves unstructured challenges that help students practice seeing the complicated, as opposed to traditional assessment, which matches items with curriculum content and only reveals whether students can recognize, remember, or match what has been learned. Gauging authentic learning has been a challenge for some instructors in online learning. Faculty members believed that while students may have learned the theories in face-to-face classes, the skills acquired in the classroom and their application in real-world situations are not comparable to those acquired through online learning. This instructor expressed his concern about assessing students' authentic learning of theories if they were not put into action and skills if they were not practiced in an actual clinical setting. He further added that giving quizzes is insufficient in this regard. While it has been noticed that students achieve higher grades, the evaluation of authentic learning continues to be a problem for some educators.

4.2.5. Teachers' digital literacy

Table 3 shows 97.5% of the survey respondents use computers/laptops for teaching during the pandemic. The research of Vidosavljevic and Vidosavljevic [18] on the importance of teachers' digital

literacy revealed a high degree of interest in employing technology in the classroom, but a low level of digital literacy among instructors. Likewise, teachers expressed worry over their lack of understanding of devices and applications that affected their instruction. One instructor was not able to provide her learning materials to students on time because of a misconfiguration in the LMS. Another instructor encountered difficulties setting up synchronous Zoom sessions and creating recorded lectures. Instructors, therefore, take time out of their hectic schedules to familiarize themselves with the technological devices and various LMSs and applications through training and self-study. Faculty members were also forced to spend money to maintain an appropriate and conducive teaching environment. Several of them had to purchase additional teaching devices such as good quality headphones and webcams, or a ring light, and additional routers, while one had already noticed the wear and tear on his laptop.

Table 3. Materials commonly used by teachers in online learning

Equipment or materials used in online learning	n	% of respondents (n=40)
Computer/Laptop	38	97.5%
Smartphone	30	75%
Paper-based materials	14	35%
Tablet	11	27.5%
TV	4	10%
Internet and social media links	1	2.5%

4.3. Coping strategies

4.3.1. Prepaid allowances for teachers

The participating universities and faculty members have implemented specific measures to address the issues and concerns related to online teaching and learning. As to connectivity issues, certain universities provided prepaid allowances to instructors experiencing internet problems or allowed them to conduct their classes in the university's facilities. While some students' internet connectivity problems have remained consistent, almost all professors have adjusted by utilizing an LMS and applications that demand less internet or mobile data consumption. Universities located in regions with few to no COVID-19 cases permitted students to participate in restricted face-to-face classes and laboratories, subject to the Philippine's Inter-Agency Task Force (IATF) for the management of emerging infectious diseases' regulatory requirements, to address students' internet-related issues and engagement concerns.

4.3.2. Promoting social connections

An OLE that epitomizes the interaction between learners and other learners can make a course engaging and enjoyable; the absence of this interaction can create feelings of isolation, ultimately causing students to become disenchanted with online courses. To be successful in an OLE, both instructors and students must adjust their approaches [19]. This is why faculty members also went above and beyond by identifying ways to make learning more interactive and engaging for students. Some instructors in the focused groups used breakout rooms and discussion forums to allow students to interact with one another, thereby retaining their interest in learning. A professor introduced peer assessment, in which students evaluate their work as well as that of their peers. Not only does this promote interaction, but it also encourages pupils to enhance their work.

Similarly, students also developed coping strategies during online learning. Social connection is the main coping mechanism of students in times of stress [20]. These connections serve as a support system for them which they usually get from communicating with friends through group chats. They usually gossip online when online lectures are getting boring just to energize themselves. Eventually, they find themselves inspired to go back and listen to their professors after a brief conversation with their friends. Such instances reflect how connecting with peers become a coping mechanism despite isolation [21]. Moreover, talking to friends also helps them understand their class lessons. They arrange group calls through Zoom, Discord, or Facebook Messenger and brainstorm their questions about the lesson.

4.4. Perceived advantages of online learning

4.4.1. Time flexibility and cost-efficiency

Both teachers and students acknowledged convenience in terms of time efficiency and cost-effectiveness, primarily due to the opportunity to effectively manage one's own time for a personal and professional transformation, and due to fewer commutes/travels as well. Mukhtar *et al.* [14] also observed such a phenomenon that online learning helped reduce the use of travel resources and other expenses.

One participating university believed that the online mode was exceptionally cost-effective, particularly for students who were compelled to pay 35,000 pesos for clinical exposure in a public hospital

during face-to-face education. The online setup enabled these students to engage in clinical exposure through online therapy sessions with children with special needs through an affiliated child care center entirely online and at no cost.

For students, they do not have to wake up early unlike before. Now, they can wake up 10 minutes before class. They can also multi-task when learning online. Some students eat their meals while attending classes, while others use the time to accomplish tasks from their extracurricular activities. Other students also shared that online learning lessened their expenses in transportation, meals, and allowances.

In times of stress, remote and online learning allows them to be in places where they can relax. Some students admitted how they go out while attending classes which helps them to cope with their current situation. Having this flexibility was also reflected in the results of the online survey where 82.5% of students recognize learning anytime and anywhere as one of the benefits of online learning.

4.4.2. Safety and security from the COVID-19 pandemic

Faculty members also recognize the benefits of online education for both teachers and students. Online education has allowed education to continue despite the pandemic and has ensured the safety of both professors and students during the pandemic. Furthermore, instructors observed that some students acquire knowledge independently and make use of available resources to produce high-quality results.

4.4.3. Borderless classrooms

Synchronous sessions proved beneficial in accommodating more students without regard to the physical space of the classroom and the geographic location of both teachers and students. In addition, since sessions are held online, instructors save time and energy because they do not have to repeat lectures per class/section, as is the case with the traditional face-to-face teaching technique.

4.4.4. Self-regulated learning

The study of Mukhtar *et al.* [14] which explored the advantages, limitations, and recommendations for online learning during the COVID-19 pandemic era, shared the same sentiments, stating that students had become self-directed learners and they learned asynchronously at any time during the day. The students, for example, were able to develop their strategies for absorbing and retaining information from their classes. For example, if they have questions regarding a topic, they make sure to search for credible resources such as published articles, YouTube, and TikTok tutorials to supplement their needs. Recorded lectures also enabled them to access them at their leisure, allowing them to fully comprehend the material.

4.4.5. Professional growth for teachers

Teachers have acknowledged convenience, in terms of time efficiency and cost-effectiveness, primarily due to the opportunity to effectively manage one's own time for a personal and professional transformation, and due to fewer commutes/travels as well. Asynchronous sessions enable professors to upload instructional materials and lesson plans in advance, freeing up time for professional or personal activities. One faculty member was able to complete his Ph.D. degree entirely online, and another one observed an increase in productivity, particularly in research engagements and publications. Others stated that they were able to spend more time with their families.

4.4.6. Focusing on the important aspects of nursing education

One of the most important predictors of a child's success in school is parental involvement in their education [22]. Remote teaching paved the way for realizations and evaluation of one's teaching style. One instructor recalled that due to online learning, he was also able to highlight that nursing education is a shared obligation between the institution and teachers, as well as the community and family. The family's presence and involvement in the student's learning environment enables parents to gain a better understanding of their child's competency. According to a study by Roy *et al.* [22] many parents reported that the pandemic gave them a better understanding of their child's learning style, needs, or curriculum.

4.5. Use of commercialized LMSs

4.5.1. Multi-platform utilization

A variety of technologies, such as LMS, video conferencing, messaging, and other tools, were used to deliver courses and communicate with students via online means. Google Classroom was the most popular LMS used by both educators and students. Users of Google Classroom all expressed appreciation for its straightforward and simple-to-use features and the fact that it does not require a lot of bandwidth or mobile data. This remains true to the study of Okmawati [23] which concluded that the use of Google Classroom has enabled students to be enthusiastic in their learning process and perceived it to be one useful tool that fulfilled their curriculum. Hence, Google Classroom has also been very useful for the students because they

are already familiar with navigating the system and experience less inconvenience when using it compared to other LMS. However, the use of a LMS varies upon their examinations. Sometimes they shift to another LMS such as Moodle, Brightspace, or school-owned systems depending on their professors.

4.5.2. Confusion in navigating the LMSs

Faculty participants, particularly those approaching their senior years, voiced their confusion over their LMS's features. Even after training sessions, they struggle to navigate the system due to its unfriendly interface, overwhelming features, and confusing settings. On the other hand, students from remote places who were not exposed to technology struggled to use and connect to the LMS. Instructors had trouble orienting them over the phone, so they had to invite these students to one-on-one and in-person sessions.

There are also problems with navigating into the LMS specifically for the school-owned LMS and Brightspace. Due to the drastic shift to online learning, students were not able to be formally introduced and trained to use the LMS. Thus, they find themselves still in transition into using different kinds of LMS during online learning.

4.5.3. Problems in examinations

While the exam feature was commonly used, problems caused by inconsistent configurations and cheating were observed. Instructors' irregular settings for submitting exams (i.e. some teachers require confirmation before submitting the exam while others do not) result in some students failing to submit their tests after completing them. Cheating was also observed, particularly on multiple-choice questions and in essays. As a measure to minimize cheating in multiple-choice exams, instructors shuffle the questions and use a countdown timer for each question. For essays, some would use Turnitin to check plagiarism, and some would give situational tests rather than simple essays to minimize copying and pasting of content from learning materials. The use of Turnitin and the acquisition of premium software and other proctoring software were also recommended in the study by Mukhtar *et al.* [14] to help detect cheating and plagiarism.

On the other hand, the students highlighted their frustrations during examinations on their LMS. Frustrations in using LMSs are commonly caused by a low perceived use of users due to failure of the system in user actions, intent to use, and comfort to use [24]. Since most of them are directed to use other LMSs like Moodle or school-owned LMS, they experience sudden crashes of servers during the exams. As an alternative method, students were advised by their professors to take the exam at night to avoid getting disconnected. This only made them mentally drained.

There are also instances in Moodle where the time limitation set during examinations is inadequate. Time limitations in online exams serve as a method of testing the abilities and performance of students [25]. However, in the context of having a slow internet connection, it is perceived as unfair to the students. For example, one student can get disconnected from the examination but the time limit continues. They have no choice but to either appeal or fail their tests.

4.5.4. Need for high bandwidth

One of the most frequently mentioned issues throughout the discussion of the LMS was the high bandwidth requirement and mobile data consumption required to successfully load the LMS, including uploading/downloading large-sized learning materials. Students with limited internet connection are unable to access the LMS and learning resources, or take exams, affecting their learning [26]. This was reported by Moodle, Brightspace, MS Teams, and Zoom users. Even with the tremendous improvement in the Philippines' fixed broadband download based on median performance from 3.6 Mbps in April 2014 to 50.26Mbps in December 2021, and the big leap in the Philippines' worldwide ranking of fixed broadband based on median download from no. 72 in December 2020 to no. 63 in December 2021 [27], internet connection was still identified as a problem when using LMS. In connection with the uploading of large-sized learning content, the lack of sufficient storage space proved to be an issue with the LMS. As a result, some instructors just transfer the files to Google Drive and embed the source link in the LMS, but others experience similar issues sending the files over Facebook Messenger.

4.5.5. Security and password

Although it has not yet occurred, at least in the participating universities in this research, some have expressed concern about the LMS's exam bank being hacked. In a systematic review of online LMS, Xin *et al.* [28] elaborated on the issue of hacking due to weak security and asserted that layers of defense and user privacy protection are crucial LMS security components. The study from Alhazmi and Rahman [29] briefly referred to problems associated with LMSs and suggested that the causes of these problems are theoretical, pedagogical, and technological, and most of the problems reported concerning LMS centered on underutilization of interactive features and the low level of student engagement of the system.

Some problems also involve the forgetfulness of passwords and accounts which happened once or twice. As a result, students ensured that the passwords were saved in their accounts. The forgetfulness of passwords was also apparent in distance learners of the Karadeniz Technical University in Turkey [30].

5. CONCLUSION

Faculty members perceived online learning as passive and less engaging. While the positive nature of the asynchronous session allows independent learning, it lacks teacher-learner and learner-learner interaction, which makes a course less engaging and enjoyable. Moreover, access to course content and exams in the LMS is also affected by weak internet connection. Teachers also struggled with teaching skill-based courses entirely online and without the skills laboratory and appropriate materials/equipment. This leads to ascertaining the adequacy of authentic learning and assessment among students. Teachers' lack of understanding and experience with gadgets and applications, was also reported as one of the concerns. Google Classroom was also the preferred LMS among educators because it is easy to use and requires less internet and mobile data consumption. On the other hand, faculty members also acknowledged convenience in terms of time efficiency, cost-effectiveness, and the ability to conduct classes without regard to the physical space and geographic location of both teachers and students.

Findings also indicate that the experiences of students in online learning vary between the positives and negatives of their current learning environment. Students were stressed and tired due to the extended hours in online learning brought by attending to the requirements of online classes and exposure to laptops or mobile screens. In addition, most of them have internet connection problems, which also affect their online learning experience. As a result, Google Classroom has become the most used LMS as it only consumes minimal bandwidth and data usage. Despite the challenges faced by the students, they also recognize the flexibility in time and setting that online learning offers to them.

The hurdles stated above only reveal that remote learning in the Philippines remains to be inaccessible to nursing students. The drastic shift to remote learning brought about by the COVID-19 pandemic forced the education sector to produce alternative ways to bring quality education to their students. Furthermore, the study serves as evidence of the need to develop a context-driven LMS that may effectively alleviate major challenges faced by users.

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