University Students' Techno-Panic: What Learning Support is Available?

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ABSTRACT: *The current study sought to identify the level of support provided for first year university students during the novel COVID-19 pandemic online classes with the Moodle learning management system (LMS). The researchers surveyed 1416 first year university students in the second semester of the 2019/2020 academic year, who were all supposed to be part of the web-based courses to logically bring the semester to an end. In an attempt to make students become familiar with the use of the Moodle LMS, the university introduced measures like online orientation, creation of instructional videos, provision of hot phone contact lines as well as IT centre support. Out of these interventions rolled-out by the university, the researchers found that the students did not gain the required benefits as envisaged by the University and for that matter affected the students adversely. From an instructional standpoint, the measures put in place to familiarize students with the Moodle system were laudable. However, the support services provided had issues of implementation. A need exists for a more comprehensive and coordinated support services to adequately equip university students to participate meaningfully in web-based learning.*

KEYWORDS: moodle, learning management system, university students, COVID-19, Interventions

INTRODUCTION

The outbreak of the novel Corona virus (COVID-19) and its world-wide spread created an untold panic and shock to the core of people and places. The speed by which the virus spread to different countries around the world necessitated the World Health Organization to declare the situation as a pandemic (WHO, 2020). This outbreak was an unprecedented in terms of how fast it caught up with national borders and making the entire world to be on its knees to look for solutions of survival

to the neglect of other aspects of developing and developed economies around the world. As the infection rate escalated within the few weeks of different countries recording their first cases, it became evident that developed as well as developing nations could not contain the spread amidst the scary number of deaths that kept on rising day after day. In spite of the death toll around countries, various governments continued with serious interventions like bans on public gatherings, closure of educational institutions, ban on contact sports, closure of national borders, dawn to dusk curfew, among others (Hale et al., 2020).

In Ghana, the first two cases were recorded on March 12, 2020 according to the Ghana Health Services (2020). And just after nine days, the nation had already seen cases of 21 patients. Since all these cases were imported into the country, the President of Ghana had to announce the closure of the air, land and sea borders in order to guide against the importation of further cases into the country (KPMG, 2020). As the rate of infection began to manifest across regional borders, it called for the need to be vigilant on the part of the Ghana Government to rollout strategies to contain the spread of the pandemic in the country. Among some of the key measures rolled-out were testing, contact tracing, quarantine and treatment as social and economic packages were made available to the vulnerable as well as the average Ghanaian to help make it the pandemic.

Among the sectors of the world economy that was hard hit by the COVID-19 pandemic was education. As the sector with the largest number of stakeholders, all educational institutions have to be closed down in order to reduce the spread of the pandemic as well as give adequate time for educational policy-makers to come out with home grown interventions to guard against the spread when re-opened. For example, the Republic of China rolled out an unprecedented large web-based learning mode for her students (Yao, et al., 2020). Ghouname (2020) explored the various social networking sites that Algerian students at the graduate level used in the teaching and learning process. The researchers reported, among other things, that the Algerian Educational Ministry has set up social networking platforms like Facebook, Twitter, Instagram, WhatsApp, YouTube and other platforms like Moodle to augment the activities of the face-to-face learning environment. In spite of the numerous tools that students could interact, especially with Facebook and Moodle as the preferred sites, the researchers reported that the students were more comfortable with the face-to-face learning as compared with or to a web-based one during the COVID-19 pandemic.

Since it was deadly to allow learners to mingle within the same geographical space in the face-to-face mode, countries invested so much in the online space with the view of accommodating as many students as possible at the higher education level (Hasnan, 2020). He further brought to the fore that there was the need for studies on students' perceived learning outcomes and satisfactions in order to be able to tailor the teaching and learning experiences along that line. He reported that

factors as interaction in the classroom, student motivation, course structure, instructor knowledge, and facilitation–are positively influencing students' perceived learning outcome and student satisfaction. Another factor that many institutions of higher learning lost sight of was the technological competencies of the students in respect to the various roles that they were required to perform when interacting with the learning management system and other web-based applications. The situation in Ghana, especially, at the institutions of higher learning was not different from what other countries did. The universities and colleges in Ghana had to resort to the use of their various learning management systems to help bring the school year to an end. The modular object-oriented dynamic learning environment (Moodle) was the commonest learning management system used by institutions of higher learning.

The Modular Object-Oriented Dynamic Learning Environment (Moodle)

The Modular Object-Oriented Dynamic Learning Environment (Moodle) is one of the numerous online learning management systems that are available to users around the world. The first version of the Moodle LMS was released on 20th August, 2002 and has since been updating the users with newer versions as and when needed. The Moodle is an open-source learning management system. For that reason, institutions do not have to necessarily spend money before accessing it. World-wide, there are 249 countries that are currently using the Moodle learning management system. From these number of countries, there are over 185,000 sites created with 243, 000,000 users (Moodle, 2020). Remarkably, the total enrollment in the learning management system as of October, 2020 stood at 1,303,000,000 with over 250,000,000 useful resources according to the Moodle official statistics. The Moodle learning management is used world-wide and has been tried and tested to be one of the most dependable systems for managing student learning (Aikina & Bolsunovskaya, 2020; Mineeva et al., 2018)

The learning management system required the students to login, enroll in the various required courses, as well as to visit the site as frequent as possible to review the learning materials in the form of announcements, documents, presentations, audios and videos. Again, students were supposed to respond to all sorts of assignments (chats, fora, quizzes, examinations, etc.), send and receive messages, check grades, among others in a secured environment. Naddabi (2007) identified four major functions of the Moodle as "enhancing interaction between students and teachers, promoting students' independence, helping them in their research and finally changing the learning environment from the traditional one to e-learning" (as cited in Ghouname, 2020, p. 28).

Looking at the various important aspects of the teaching and learning process that take place in the Moodle, Jeong (2017) indicated that the learning management system acts as a one-stop-shop for

users and as a result makes the teaching and learning process less stressful. Hung, Flom, Manu and Mahmoud (2015) reviewed literature on some of the instructional practices adopted by online learning teachers to promote community of learning or social presence. Interestingly, the Moodle has the required tools that allow users to create the needed social presence during such interactions. Evgenievich et al., (2021) in a study to identify the positive and negative aspects of using the Moodle platform during the COVID-19 indicated that the mindset of students and lecturers as well, changed. These participants recommended the need for the university to adopt blended learning mode since the Moodle have learner-friendly resources.

Orientation carried out on Moodle for Students in the Study Area

To equip the students better in order to be able to perform the technological tasks related to the use of the Moodle LMS, the university rolled-out different kinds of interventions to prepare them for the online task ahead of them. The training component of the interventions was needful since the directive to transplant the rest of the semester work online was abrupt and time-bound. Koçoğlu and Tekdal (2020) reported that "the most important feature of this education method is the easy access of the student to several web-based resources at the same time" (p. 539). For this reason, several technology-literacy measures in the form of training were provided for all students to have access to the resources.

As part of the general orientation of the university students to be familiar with the interface of the learning management system (LMS), the Information Technology Centre (IT) organised series of video-conferencing meetings via Zoom. This initiative allowed many of the students, who had access to internet, to connect to the programme through the link shared at the website of the university. During the orientation, students were taken through the various features of the LMS and how students could access different tools within the system. As a follower-up on this Zoom meetings, the sessions were recorded and shared with students at the website for students who could not access the live broadcast.

Second, the IT Centre screen-recorded videos of the LMS that sought to walk students through the major things they were required to do in the course of the teaching and learning process online. The videos were usually short and straight to the point. These videos were all uploaded onto a YouTube channel for students and lecturers to access at their own convenience. To make it easier on students to locate the training videos on YouTube, the links to the videos were shared at the university website so that a click on the link takes the person right away to the video.

Again, there were departmental WhatsApp platforms as well as WhatsApp lines that students could easily send their concerns for just-in-time answers. In this direction, the IT centre, in collaboration

with heads of department, facilitated the process by making sure that students with issues were given immediate feedback to troubleshoot the technological problems they encountered. In addition, the lecturers were equipped with knowledge of the LMS interface so that they could still continue to provide the required support to their students.

In order to make sure students on the Moodle learning management system did not incur any cost in using the system, the university had agreement with the major mobile phone network companies in Ghana to whitelist the Moodle learning management system so that users would not have to spend money when using the online facility. This arrangement was well-articulated to the students so that students would not have to entertain fears of having to incur higher cost in the use of the Moodle learning management system.

Prerequisites in Using the Learning Management System

At a time when institutions of higher learning had to embrace a web-based learning mode to continue the rest of the academic activities for the second semester of the 2019/2020 academic year, two digital devices that would serve as the vehicle to make this dream a reality were the personal computer and a smartphone. Students needed to either own a computer or a smartphone. Otherwise, the students should have made arrangement to have access to one of these devices in order to prepare them for the online learning experience. In a study conducted by Manu, Akyina, Yeboah-Appiagyei and Opoku (2018) on the use of phones among university first year students, the researchers reported that over 74% of the students owned a smartphone. After two years down the line, the number of students using smartphone is more likely to increase. Again, Akyina, Manu and Dzamesi (2019) reported a positive correlation between phone use in class and meaningful student learning. Their finding implied that the more students were allowed to use their phones in the teaching and learning process, the more they were likely to improve upon their learning.

For students to use the learning management system effectively, there were four major things students needed to be abreast with in order to help use the architecture. These were knowledge in management of files, emailing, Microsoft Word and Power Point applications. To have rough knowledge of how much students knew before the rolling out of the online mode, Manu, Owusu-Ansah and Dzamesi (2019) conducted a study to identify the technology proficiency of fresh university students in three different areas. These areas were Windows management, emailing, and Power Point. At the end of the study, the researchers reported that the students studied "revealed an overall mean rating of less than 4.0, which is interpreted as respondents' competence in the applications" (p. 13) on a five-point Likert scale. The researchers further added that a closer look

indicated that many of the students expressed their inability to perform certain tasks associated with the areas investigated.

In a related study to identify the differences in the use of three applications (Windows management, emailing and Power Point) by university students in terms of gender, age and programme of study, Manu (2020) reported that about 96.3% of the 1000 participants had interest in learning modern technology tools and applications. Also, there was a significant difference between males and females in using these applications. Again, the researchers found evidence that the university students did not have the same level of fluency across the three areas under investigation. The implication of this study on the use of the learning management system by the university students was that those students who did not have the required proficiency in using the tools would be disadvantaged and thereby not create the level playing field for all students to learn meaningfully.

University Students and Technology Support

In the 21st century world, it has gradually become an undeniable claim that the students of today have the required fluency needed for them to navigate through the technological terrain with less difficulty. Such an assertion can make sense when it comes to the use of social media. However, the same cannot be said when dealing with technological tools for learning. Margaryan, Littlejohn and Vogt (2011) reported that university students use limited technologies related to teaching and learning and have conformed to the traditional style of teaching with little technology add-ons. They further indicated that the call for lecturers to change how they teach should not be based on the premise of a change in students' learning patterns. But rather, paying attention to strategic technologies that are used on daily basis to perform daily tasks at the personal and professional levels. Barak (2018) in a study on digital natives of university students found that students, who were fluent in technology use were more likely to be flexible in their thinking as compared to those who struggled using technology. Again, the researchers revealed that those who collaborated with others were more flexible than their peers who did not. In a study by Teo and Zhao (2014) to identify the factors that influence university students' use of technology reported that the perceived usefulness of the technology and the attitude of the students towards computer use determined the extent to which university students used technology. Again, they reported that ease of using that particular technology influenced the intention to use the technology. The findings from these researchers seem to indicate that the best way to motivate university students in using a particular technology tool is to help these students to see its usefulness as well as the less-stressful ways to use the technology especially at a time when students had to move away from the default face-to-face learning environment to a web-based environment.

Purpose

The purpose of the current study was to identify the level of support that university students in one of the public universities in Ghana received on the use of the Moodle learning management system during the unprecedented period of the COVID-19 pandemic. The use of the Moodle became necessary due to the idea of social distancing as a measure to contain the spread and still situate the students within the teaching and learning environment.

Research Questions

1. What was the level of knowledge of university students before the introduction of the Moodle learning management system?
2. How well were students prepared before switching to the use of the LMS?
3. Were the videos adequate to help learners become comfortable in using the LMS?
4. What was the extent of technical support provided to the students by the lecturers and IT Centre?

METHODOLOGY

The researchers used a survey research design to collect data from the first-year students, who were in their second semester. The population was carefully chosen due to the reason that they had just taken a course in Information and Communication Technology (ICT) in the first semester. Due to the protocol that needed to be followed during the COVID-19 pandemic, the researchers collected the data through the Google Forms web-based application. This allowed all students the opportunity to take part in the study. The total number of students was 1416.

The researchers designed the instrument themselves. The focus of the instrument was to identify the extent to which the university students were comfortable and fluent with the use of the Moodle learning management system for the first time. There were thirteen items divided into two sections. The first three items centred (demographics) on gender, age and ownership of smart. The second section had ten items that focused on students' interaction with the learning management system. The ten item questions had a Cronbach alpha of 0.81, which made them appropriate to be used as a construct in the analysis. However, the focus of the study was on the individual items. Data collected from the students were screened with the Microsoft Excel application and exported to the SPSS for analysis.

Demographics

As indicated earlier, the researchers had questions on gender, age and ownership of smartphone of the respondents. Out of the total of 1416 respondents, 841 were males whereas 575 were females. The ratio of female respondents to their male counterparts was almost 2:3. This finding is not typical of the ratio of males to females at the university level. In many cases, for every four males, there would be one female. The increase in the number of the female students was due to the introduction of the Early Grade programme that attracted about 90% females in the class. Table 1 has details.

Table 1. Gender of Respondents

Gender	Frequency	Percentages
Male	841	59.4
Female	**575**	40.6
Total	**1416**	**100**

The age difference among the university students was one of the things the researchers were interested in collecting data. Out of the total of 1416 participants, 463 (32.7%) were aged 18-23, 621 (43.9%) were 24-28 years whereas 332 (23.6%) were 28 years or more. From this finding, just almost a third of the participants could be in the traditional university student bracket. The mean age was 25.5 years as against an average entry age of 19 years, based on the age distribution of the Ghana education system. By comparison, there was a difference of over six years. One of the reasons for this higher average age is the opportunity for prospective students to come in through the matured application mode. It will be a subject of interest to have a comparative study with other public institutions in the country that have majority of their admissions based on direct application instead of the matured entrance. Table 2 has details of participants' age.

Table 2. Age of Respondents

Age	Frequency	Percentages
18-23	463	32.7
24-27	621	43.9
28 and above	332	23.6
Total	**1416**	**100**

Smartphones and personal computers were the main devices that students could use to be part of the web-based teaching and learning process. For this reason, it was important that the researchers identify the percentage of students who use smartphones. As displayed in Table 3, ninety-three percent of the participants had some sort of smartphone, whereas just seven percent did not have a smartphone. This finding seemed to mean that majority of the students could be part of the online learning management system without any excuse. However, since the online web-based learning should have been available to all students, students could have been encouraged to rent or borrow smartphones for the purposes of the period.

Table 3. Smartphone Ownership of Respondents

Ownership of phones	Frequency	Percentages
Yes	1318	93.0
No	98	7.0
Total	**1416**	**100**

RESULTS

The researchers wanted to know the level of knowledge of university students on the Moodle learning management system since the university had used it for more than seven years. To answer this question, there were three items on the awareness of the students: the existence of a learning management system, awareness of the university's Moodle LMS and the use of the university's Moodle LMS. From the Table 4, it could be deduced that a little over an average of the students were aware of the availability of the learning management system (*3.42 and 3.21*). However, in terms of whether the students had used a learning management before, the mean score was 1.95. This implied that the students did not have any exposure with the use of the learning management system in spite of having used by the university for quite a longer period of time.

Table 4. Use of the Moodle Learning Management System

No.	Items	Mean	SD
Know_1	I am aware of the use of learning management system (LMS) for online learning	3.46	1.68
Know_2	I was aware of the availability of the UEW learning management system (LMS).	3.21	1.72
Know_3	I have used a learning management system before.	1.95	1.54

Since the announcement to use the university's learning management system came as an intervention to make sure that the semester's activities were not disrupted, the researchers wanted to know the level of preparation that the students received before the rolling-out of the online system. With this, two items were used to collect data on it. From Table 5, the preparation of students before the use of the LMS was just about neutral. The participants seemed to indicate that there was not adequate preparation of students before the use of the LMS. Adnan and Anwar (2020) reported that there was the need for "sound computer and technological skills" by university students in order to benefit fully from the online learning mode that many institutions around the world resorted to replace the face-to-face mode.

Table 5. Training of Students in Using the Moodle LMS

No.	Items	Mean	SD
Know_4	I watched several videos on the LMS before using the LMS.	2.91	1.65
Know_5	I was given adequate knowledge on the LMS before I enrolled in it	3.15	1.64

The researchers wanted to know the extent to which the contact numbers provided at the university website for assisting students in a form of troubleshooting specific issues they might have had helped them. From the Table 6, a mean score of 3.16 with standard deviation of 1.59 was not appropriate to help students answer their questions. Since the mean score falls below even 3.5, it can be implied that the idea of students calling the lines for technical support was not executed in the best interest of these students. As a result, it was more likely that students, who could not get their issues addressed, were affected adversely in their performance on the LMS.

The next two questions bothered on the quality of videos that were uploaded through the YouTube website for prospective users of the Moodle LMS to access. In all, the mean score of the two items was about 3.31 with 1.58 as the standard deviation. These videos were supposed to play an important role in equipping the students with the technology knowledge gaps that they might have had before the rolling-out of the web-based learning mode. Once again, the figures recorded here seemed to suggest that students did not get the most benefit from these instructional videos. Two things might, possibly, explain why the students could not get the most from the videos. First, the number of videos provided was not adequate to prepare the students for the various tasks that they were supposed to perform in the LMS. And second, since the videos were accessed through the YouTube website, students were paying more on the cost of using the internet since the YouTube was not whitelisted like the Moodle LMS as indicated above.

Table 6. Use of Videos by the Students in the LMS

No.	Items	Mean	SD
Know_6	The contact numbers provided at the University website for assistance were always reliable	3.16	1.59
Know_7	There were adequate videos that centred on the things students needed to know about the LMS.	3.21	1.58
Know_8	The videos provided at the UEW LMS page were helpful to me.	3.40	1.58

Since the lecturers were required to spend time with the students to make sure they are able to learn meaningfully online, the researchers wanted to find the level of support that was provided to students by these lecturers. To answer this question, one item on the questionnaire solicited for that data. The descriptive analysis indicated a mean score of 3.18 with a standard deviation of 1.60. With this mean score, it could be implied that the students could not agree that the needed support was provided to them by the respective lecturers. Apart from the support from the lecturers during the online sessions with the university students, the researchers wanted to find also the overall technical support that the Information Technology (IT) Centre of the university provided for the students. There was a mean score of 2.93 with a standard deviation of 1.55. From the mean average, it seemed to suggest that the technical support provided by the IT centre was not adequate. In comparison to the support that the lecturers provided, the lecturers scored better on the scale than the IT centre. Adnan and Anwar (2020), among other things, listed poor technical support to students at the online space as one of the reasons for poor performance among students in developing countries. Külekçi Akyavuz and Yıldırım (2023), studying the opinions of students during the COVID-19 reported that many of the students expressed dissatisfaction with the nature of the teaching and learning experience they went through during the period, and further added that it impacted negatively on their academic performance. These researchers recommended the need to provide distant education technology infrastructure in the various institutions of higher learning, and make sure the students are given training on how to use the resources so as to avoid issues encountered in the future.

Table 7. Extent of Support by Lecturers and IT Centre to Students in Using the LMS

No.	Items	Mean	SD
Know_9	My lecturers were helpful whenever I needed help with the LMS	3.18	1.60
Know_10	The overall technical support of the LMS was adequate	2.93	1.55

DISCUSSION

The purpose of the current study was to identify the level of support that university students in one of the public universities in Ghana received on the use of the Moodle learning management system during the unprecedented period of the COVID-19 pandemic. Out of the six research questions gleaned from the purpose of the study, this discussion further categorizes into three main themes as knowledge of university students before the use of the Moodle LMS, extent of support provided to students and the gender differences among the students in the use of the system.

Based on the review of literature, there was evidence to support the use of the Moodle LMS in the university system for about eight years out of the eighteen years that Moodle has been around. However, the current study found that majority of the university students were not aware of its availability. Probing further into the use of the Moodle LMS indicated that over 80% of the participants had never used the system before. This inadequate knowledge as reported creates a worrying picture as to how students would possibly be able to navigate through the system with the needed confidence.

As indicated above, the next theme looks at the level of support provided to students in the wake of the COVID-19 as it became mandatory to use the Moodle LMS to bring the second semester to an end. In spite of the online orientation, creation of videos, provision of IT centre phone contact lines and lecturer support provided by the university, the seven items that measured the level of support had overall mean score of 3.13 ($SD = 1.58$), indicating that the students were not properly prepared in the use of the Moodle LMS. Though, there are studies to indicate that the students already had some knowledge in certain applications that could have been transferred onto the use of the Moodle (Akyina et al., 2018; Akyina, Manu & Dzamesi, 2019; Manu, Owusu-Ansah & Dzamesi, 2019), it seemed that the students did not receive the required level of support and consequently had issues using the system and as a result would affect their overall performance in the teaching and learning adversely.

The current study also looked at gender and technology use among the university students in the time of the COVID-19. From the findings, the male university students were more comfortable using the Moodle LMS as compared to their female counterparts. This finding is consistent with past studies (Mustafa, 2014; Shashaani, 1997; Vázquez-Cano, Meneses and GarcíaGarzón, 2017). Since the difference between males and females, in terms of the use of computer use, favours the

males more than the females, it robs the female students of having an equal playing field in the teaching and learning process. The female students are more likely to over-burden their cognitive architecture since they have to deal with the difficulties in using the Moodle LMS as well as the difficulty in the various courses for the semester that they have to learn.

CONCLUSION

The unannounced COVID-19 pandemic shook to the core all spheres of human life in general and education in particular. The university students, over the years, though used to the face-to-face mode of instruction, had to make a paradigm shift to embrace the idea of using the Moodle LMS to continue the rest of the semester work. To better prepare these students to use the Moodle LMS, various measures were rolled out by the leadership of the university to make sure students function effectively in using the learning management system. However, the current study has provided evidence to support the inadequacy of the various measures put in place by the university in the form of orientation, creation of instructional videos, phone contact lines, faculty support, and IT centre support services. This finding is more likely to affect the academic performance of the students adversely. Since the COVID-19 pandemic is more likely to be around for some time, as some countries are experiencing the second wave of the pandemic, it is important for leadership of the university to take a second look at the measures they put in place and identify the most meaningful ways to equip their students to be familiar with the Moodle LMS.

Implication for Practice

The current study has provided some evidence to indicate that the university students did not get the needed benefits from the various technology literacy measures lined-up by the university in their attempt to help students to use the Moodle LMS. To better serve the needs of the students, the measures below should be considered.

1. There is the need for design and distribution of a Moodle LMS manual for all students two weeks prior to the start of the semester work so that students will become abreast with the various tasks that they are supposed to perform in the LMS.
2. The IT centre should create easily downloadable short videos and upload them onto the university website and the students' WhatsApp platforms so that all students would have access to the videos and as they watch them over and over on their phones and personal computers, they would become familiar with the interface of the learning resources.

3. A special technology task force should be put in place by the IT centre that would be in charge of providing immediate responses to students who might have issues using the LMS. This would allow the students to address their issues without affecting their performance.

4. Lastly, there is the need to develop frequently asked questions (FAQs) at the home page of the Moodle LMS. This information would reduce the number of calls that students would make since many of their questions would be answered by reading the already created questions and answers.

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