ASSESSMENT OF THE USE OF MOODLE AMONG STUDENTS AND ACADEMIC STAFF IN THE SCHOOL OF MEDICINE AND HEALTH SCIENCES, UNIVERSITY OF PAPUA NEW GUINEA

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ABSTRACT

In recent years, the learning environment has been gradually transforming from traditional in-person teaching to a hybrid educational approach, driven by the need to fulfill diverse educational demands. One of the major developments in the educational system worldwide includes the use of Learning Management Systems (LMSs). The Moodle Learning Management System (LMS) is widely used in online teaching and learning. The Moodle is the major e-learning platform used in the University of Papua New Guinea (UPNG). It is freely available to all staff and registered students.

The aims of this rapid assessment survey were to determine the awareness and use of Moodle by students and academic staff in the School of Medicine and Health Sciences (SMHS), UPNG. The target population for this institution-based quantitative study were registered students and academic staff in the SMHS. Two separate Self-designed, self-administered questionnaires, one for the students and the other for academic staff members, were used for collection of data. A total of 450 questionnaires were distributed randomly to the students, and 50 to the academic staff members. A total of 405 and 41 completed questionnaires were collected from students and academic staff, respectively.

The result shows that 90.1% of the students have personal computers and smart phones. Although 77.5% of the students said that they know about Moodle, only 41.1% use Moodle regularly.

Over 90% of the academic staff have both computers and smart phones or tablets. However, only 43.9% of the academic staff use Moodle regularly. These results indicate the need for increased awareness and advocacy for the use of Moodle by students and academic staff members in the SMHS UPNG. These findings can be used to justify the need for a more comprehensive assessment among students and academic staff, after the completion of an enhanced Moodle awareness campaign, emphasizing the positive impact of the Moodle platform as a robust learning tool. The potential of Moodle in enhancing the academic performance of students cannot be overemphasized.

Keywords: MOODLE, Students, Academic staff, School of Medicine and Health Sciences, UPNG

INTRODUCTION:

Over the recent two decades, the learning environment has been gradually transforming from traditional in-person teaching to a hybrid educational approach, driven by the need to fulfill diverse educational demands [1, 2]. One of the major developments in the educational system worldwide includes the use of Learning Management Systems (LMSs). These E-learning systems, often called the "Content Management System" (CMS) or the Virtual Learning Environment (VLE), have the fundamental purpose of keeping the student records and instructing students in regards to both learning and assessment [1 – 3]. They play a pivotal role in modern education by providing a structured platform for the delivery, management, and assessment of educational content. They are designed to facilitate both teaching and learning processes through various integrated tools that enhance educational experiences.

Common features of an LMS include course management capabilities, which allow educators to create and organize course materials; communication tools, such as forums and messaging systems that foster interaction between students and instructors; assessment functionalities that enable the creation and administration of quizzes and assignments, and tracking mechanisms that monitor student progress and engagement [4]. Additionally, many LMS platforms support multimedia content integration, enabling the incorporation of videos, interactive simulations, and other resources that cater to diverse learning styles. By centralizing these functions, an

LMS not only streamlines administrative tasks but also enhances accessibility and flexibility in learning environments, making it an essential component in both traditional and blended educational settings [4].

Recent findings indicate that the major LMSs (e-learning platforms) in the educational sector include Moodle, Blackboard Learn, Canvas, Desire-2-Learn and others [1, 2].

MOODLE (acronym for Modular Object-Oriented Dynamic Learning Environment), an open source LMS, has emerged as a preferred choice, because of its remarkable functionality, cost-effectiveness, flexibility and user-friendliness [1 – 6].
Various research studies analyzing the usability of Moodle have demonstrated its effectiveness in addressing issues related to adaptive learning, collaborative learning, and blended learning, among others. Moodle has been shown to be a valuable solution for educators seeking a versatile and robust platform to enhance their teaching methodologies. Pedagogically, Moodle contains a suite of tools that helps build learning activities and resources into sequenced learning pathways, promoting collaborative and active learning experiences [4 -7].

According to recent findings, the Moodle interface is easy to use because it is without the steep learning curve of earlier systems and is more efficient at administering course activities and assessment. It helps teachers improve learning and teaching based on a learner-focused pedagogical model and a variety of system-generated analytical information. It also provides a good communication tool, discussion area, group space, workspace, and makes learning more interesting [4 – 7].

Moodle is the major e-learning platform used in the University of Papua New Guinea (UPNG). It is freely available to all registered students in all the five schools in the university: School of Medicine and Health Sciences (SMHS), School of Natural and Physical Sciences (SNPS), School of Humanities and Social Sciences (SHSS), School of Law (SOL) and School of Business and Public Policy (SBPP).

In the UPNG, the popularity of Moodle increased significantly during the COVID-19 pandemic. However, in recent years the popularity of Moodle has waned. The need to assess the popularity of Moodle among students in the SMHS cannot be over emphasized.

This rapid assessment survey aimed to determine the awareness and use of Moodle by both students and academic staff in the School of Medicine and Health Sciences, UPNG.

METHODOLOGY:

The rapid assessment survey was carried out in the School of Medicine and Health Sciences (SMHS), which is located in the Taurama campus of the University of Papua New Guinea (UPNG). It was conducted between March and April 2024. The study subjects included students that are currently registered in Taurama campus for the 2024 academic session and academic staff in the SMHS.

Study design and Sampling:

This was an institution-based quantitative study. The target population consists of registered students, both residential in the UPNG Taurama campus and non-residential. All registered students were eligible to participate in the study. All academic staff members in the SMHS were also eligible to participate in the study. Convenience sampling was used in the selection of participants.

Calculation of sample size:

The sample size was calculated based on the assumption that the probability of using the MOODLE was about 50% at confidence level of 95%, with 5% precision and predicted non-response rate of 15%. The calculated sample size obtained was 450 students and 50 academic staff members. These sample sizes were considered adequate for a rapid survey with limited resources.

Data collection using questionnaires:

Two separate self-designed, self-administered questionnaires, one for the students and the other for academic staff members, were used for collection of information. The design of the questionnaire for the students was different from the design of the questionnaire for the academic staff (Tables 1 & 2).

A total of 450 questionnaires were distributed randomly to the students, and 50 to the academic staff members.

Data analysis:

The information in each of the completed questionnaires submitted by the students and academic staff was checked for completeness. The information in each of the questionnaires was entered into separate Excel spreadsheets. The MS Excel data pack software was used for analysis of the data.

Exclusion criteria:

No exclusion criteria were indicated; however, participation was completely voluntary.

RESULTS AND DISCUSSION:

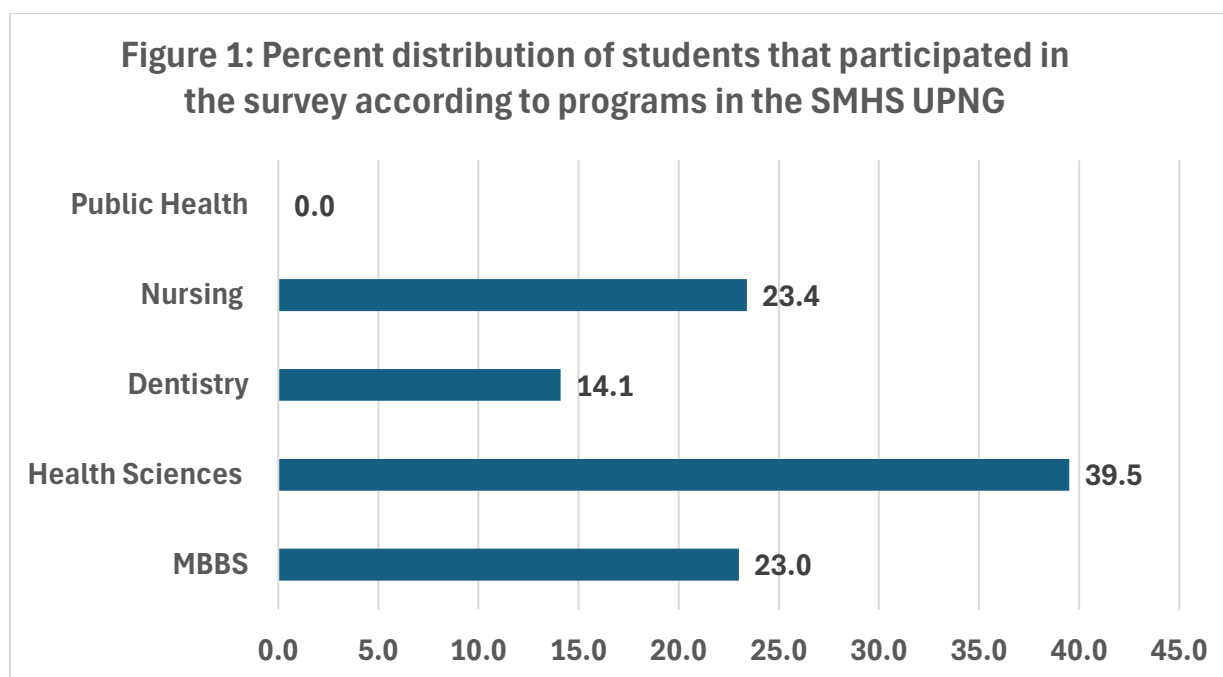**ASSESSMENT OF THE QUESTIONNAIRES COMPLETED BY STUDENTS**:

In the present survey to assess student awareness and use of Moodle, a total of 450 questionnaires were prepared and distributed to SMHS students in various programs.

Four hundred and five (405) completed questionnaires were used for analysis (response rate of 90.0%). The non-response rate of 10.0% (45/450) was lower than the predicted non-response rate of 15.0% used in the calculation of the sample size. Thus, the sample size was considered adequate for this study.

The gender distribution of the participants was 50.6% (205/405) males and 49.4% (200/405) females. As to their residential status, 67.9% (275/405) of the students were resident on SMHS campus, compared to 32.1% (130/405) who lived off campus.

The 405 questionnaires were separated, according to the programs of the respondents. Figure 1 shows the percent distribution of the student survey participants according to their programs.

It is important to note that the values in Figure 1 are not proportional to the number of students enrolled in the programs in the SMHS. They are a reflection of the willingness of students to participate in the study. This indicates the need for a more detailed study to be carried out among the students. The number of students that participated is presented in Table 1. The result shows that the frequency of use of Moodle is highest among the students in the Health Sciences, compared to students in each of the other programs in the SMHS.

Figure 1: Percent distribution of students that participated in the survey according to programs in the SMHS UPNG

Program	Percent
Public Health	0.0
Nursing	23.4
Dentistry	14.1
Health Sciences	39.5
MBBS	23.0

For a more detailed analysis of the data, the students were separated into programs; the results obtained are presented in Table 1.

The summary of the results:

In response to Question (Q 5): "*Do you have a personal computer (table top or laptop)*?"; 90.1% (365/405) of all the students answered in the affirmative. The next Q 6 was: "*Do you have a smart phone or tablet?";* in response a total of 96.5% (391/405) of all the students said "Yes". When the students were asked Q 7: "*Do you know about Moodle?*", the answer was "Yes" by 77.5% (314/405) of all the students.

In response to Q 8: "*Do you have a Moodle registration in SMHS?",* a total of 61.2% (248/405) of all the students said "Yes", 23.0% (93/405) said "No" and 15.8% (64/405) said "Don't know".

The students were then asked Q 9: "*If you answered "Yes" to Q 7, do you use Moodle regularly?*" In response to this question, 41.1% (129/314) of the students said that they use Moodle regularly, 56.7% (178/314) do not use Moodle regularly and 2.2% (7/314) don't know if they use Moodle regularly.

According to the results obtained in the present study, 90.1% of the students in the SMHS have personal computers. This is a positive indicator of the way students approach their studies. It is also a positive indicator of the family support that the students are receiving. Less than 5.0%

of the students don't have a smart phone or tablet. These findings support the current trend among university students worldwide. Smart phones or tablets are the most common tools that most university students are using.

Moodle awareness among the students in the present study is just above 75%, which suggests the need for increased advocacy of the advantages of Moodle use among SMHS students. The need for better advocacy and awareness is supported by the fact that only 61.2% of the students responded positively to Question 8 about Moodle registration in SMHS. Although 77.5% of the students said that they know about Moodle, only 41.1% said that they use Moodle regularly. Thus, the need to increase the "Moodle awareness" amongst the students, emphasizing this platform's importance as a robust learning tool. The Moodle's potential in enhancing the students' academic performance cannot be overemphasized.

Table 1: RESULTS OF QUESTIONNAIRE ON MOODLE USE BY STUDENTS IN SMHS					
	Total number of students that participated in the study: N = 405				
Q 1	**Gender (Total):**	**Males**		**Females**	
	N (%)	**205 (50.6%)**		**200 (49.4%)**	
Q 2.	**Residence:**	**SMHS campus**		**Off-campus**	
	N (%)	**275 (67.9%)**		**130 (32.1%)**	
Q 3	**Programs**	MBBS	Health Sciences	Dentistry	Nursing	**SUMMARY**
	N (%)	93 (23.0%)	160 (39.5%)	57 (14.1%)	95 (23.4%)	**405 (100%)**
Q 4	**Year of Study**: (N %)					
	First	--	--	--	82 (86.3%)	**82 (20.2%)**
	Second	55 (59.1%)	41 (25.6%)	23 (40.4%)	-	**119 (29.4%)**
	Third	38 (40.9%)	58 (36.2%)	13 (22.8%)	-	**109 (26.9%)**
	Fourth	--	31 (19.4%)	6 (10.5%)	4 (4.2%)	**41 (10.1%)**
	Fifth (Final year)	--	30 (18.8%)	15 (26.3%)	9 (9.5%)	**54 (13.3%)**
Q5	**Do you have a personal computer (table top or laptop)?**					
	YES	86 (92.5%)	145 (90.6%)	50 (87.7%)	84 (88.4%)	**365 (90.1%)**
	No	7 (7.5%)	15 (9.4%)	7 (12.3%)	11 (11.6%)	**40 (9.9%)**
	Don't know	--	--	--	--	**--**

Q 6	Do you have a smart phone or tablet?				
	Yes	88 (94.6%)	155 (96.9%)	56 (98.2%)	92 (96.8%)	**391 (96.5%)**
	No	5 (5.4%)	5 (3.1%)	1 (1.8%)	3 (3.2%)	**14 (3.5%)**
	Don't know	--	--	--	--	**--**
Q 7	Do you know about MOODLE?				
	Yes	82 (88.2%)	155 (96.9%)	54 (94.7%)	23 (24.2%)	**314 (77.5%)**
	No	8 (8.6%)	4 (2.5%)	3 (5.3%)	59 (62.1%)	**74 (18.3%)**
	Don't know	3 (3.2%)	1 (0.6%)		13 (13.7%)	**17 (4.2%)**
Q 8	Do you have a MOODLE registration in SMHS?				
	Yes	39 (41.9%)	140 (87.5%)	46 (80.7%)	23 (24.2%)	**248 (61.2%)**
	No	28 (30.1%)	14 (8.7%)	9 (15.8%)	42 (44.2%)	**93 (23.0%)**
	Don't know	26 (28.0%)	6 (3.8%)	2 (3.5%)	30 (31.6%)	**64 (15.8%)**
Q 9	If you answered *yes* to Q 7, do you use MOODLE regularly? (N = 314)				
	Yes	8 (9.7%)	95 (61.3%)	19 (35.2%)	7 (30.4%)	**129 (41.1%)**
	No	71 (86.6%)	58 (37.4%)	33 (61.1%)	16 (69.6%)	**178 (56.7%)**
	Don't know	3 (3.7%)	2 (1.3%)	2 (3.7%)	--	**7 (2.2%)**
	Total: N (%)	82 (100%)	155 (100%)	54 (100%)	23 (100%)	**314 (100%)**
Q 10	What do you think about Moodle?				

In Q 10, the students were requested to state what they think about Moodle. Of the 405 students, 35.5% (144/405) provided responses. The results in Figure 2 capture the general perception of students toward Moodle. 45% (65/144) were positive, but at the same time had concerns; 27% (39/144) were positive;16% (23/144) were neutral; and 12% (17/144) expressed concerns.

The results indicate that while 16% were neutral, most students were generally positive but indicated concerns. Overall, 72% of all respondents were positive; of these, 45% had concerns. In addition, 57% of all respondents shared concerns, with 45% of these also having a positive perspective. This suggests that while Moodle is perceived positively, there are areas of concern that need to be considered.

Figure 2: Percent distribution of students perceptions of Moodle
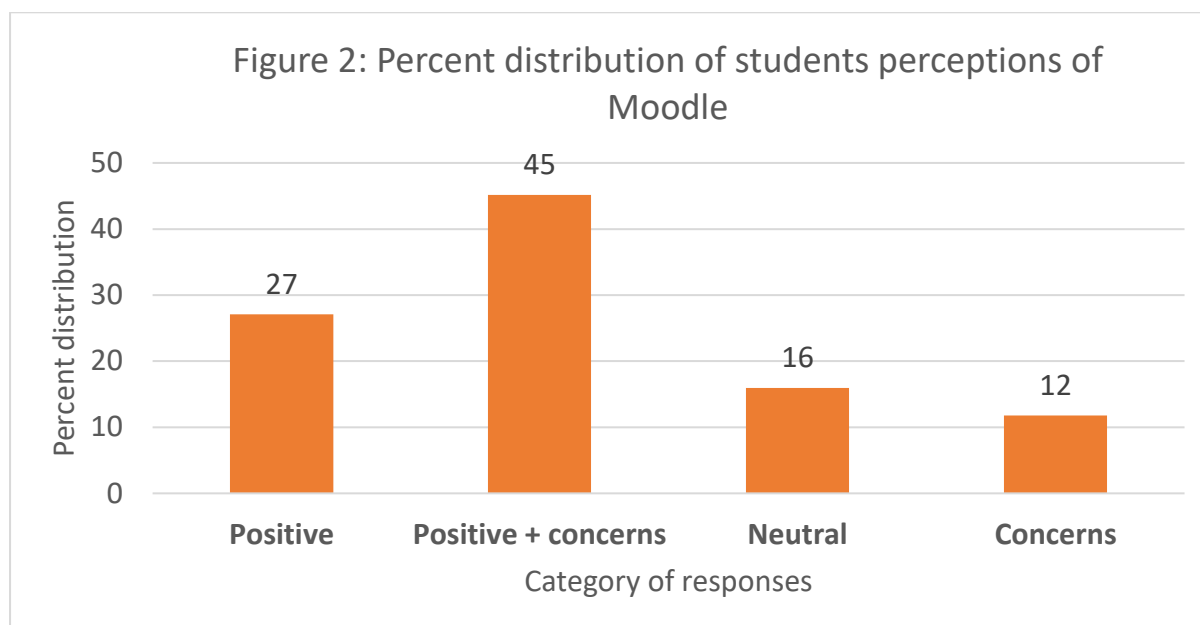
The students' responses based on the categories of perception were further analyzed to identify themes. Of the 16% (23/144) that were neutral, 87% (20/23) were unaware of Moodle, and 13% (3/23) provided definition responses of Moodle rather than provide their thoughts on Moodle. These results suggest the need for Moodle awareness among students. It would be deemed appropriate to have a well-designed student orientation to blended and online learning and to the MOODLE platform.

The responses of the 57% (82/144) respondents that expressed concerns about Moodle were analyzed. A total of 99 concern areas were identified because some of the 82 respondents indicated more than one concern area.

The main concern was related to faculty input with a total of 35%. This includes: courses not available on Moodle raised by 19% of respondents; academics' limited familiarity with affordances of Moodle raised by 8%; 5% raised concerns about online courses not being updated regularly; and 3% expressed concerns regarding limited online interaction. These results indicate the need for necessary faculty support to ensure that learner expectations are met. There have to be guiding standards in the design, development, delivery, and review of online and blended courses on MOODLE [4]. Academic staff competencies with technology

and pedagogy for online learning on Moodle have to be gauged and relevant workshops provided to support staff [9].

Another key concern from 32% of responses was internet related: of these, 16% indicated Wi-Fi connectivity issues; 9% specifically indicated that the internet was slow; 4% indicated that data was costly to purchase, and 3% indicated concerns with limited Wi-Fi coverage. The results reflect similar findings as reported in the 2019 Baseline Study of Technology-Enabled Learning at the University of Papua New Guinea [10] where students raised great concerns with the slow Wi-Fi and Wi-Fi restriction to certain areas on campus. For students to access Moodle, internet connectivity is crucial. Ongoing internet access issues can negatively impact student motivation to use the MOODLE platform. Hence, access to adequate bandwidth would demonstrate an institution's degree of preparedness for technology enabled learning [11].

Additionally, 9% of respondents highlighted there were no introduction to Moodle, 8% expressed concerns with Moodle registration, and 2% mentioned technical issues. These concerns highlight the need for essential learner support.

Finally, other areas of concern worthy of noting were: risks associated with online assessments, learner preferences for print resources, and ensuring students without suitable digital devices are catered for.

The final analysis of student perspectives focused on those who had positive perceptions. Of the 72% (104/144) responses, some indicated more than one positive feedback resulting in a total of 196 positive feedback counts. Of these, 22% appreciate the access to learning resources on Moodle; 16% consider it to be a good platform; 11% appreciate it as a communication platform; 10% acknowledge its flexibility; 9% consider it as an effective approach to teaching and learning; 8% highlight its convenience, and others comment on Moodle as a platform that: is okay, is reliable, a new approach to teaching and learning, minimizes student costs, caters for assessment submissions, enhances learning, has ease of use, aids and enhances learning, provides a platform for learning.

The results obtained reveal students' positivity and optimism for Moodle. This should encourage the institution to pursue its efforts in ensuring a positive learning experience for better learning outcomes with Moodle.

ASSESSMENT OF THE QUESTIONNAIRES COMPLETED BY ACADEMIC STAFF MEMBERS:

Of the 50 questionnaires distributed to academic staff, 41 were completed and used for analysis (response rate of 82.0%). This was considered adequate for a rapid assessment survey. The 41 questionnaires received were separated according to divisions in the SMHS. The results are presented in Table 2. The results are not proportional to the number of staff members in the various divisions in the SMHS. The results rather reflect the willingness of academic staff members to participate in the study. This can be considered as a baseline study that justifies the need for a more detailed study to be carried out among staff members in all the five schools in the UPNG.

Table 2 also shows the academic positions of the 41 staff members that completed the questionnaires. Most (48.8%) of the academic staff members that participated in the study were lecturers.

In question 3 (Q 3), the participants were asked, "*Do you have a personal computer (table top or laptop)?*" The overwhelming majority (97.6%) said, "Yes". In response to Q 4, "*Do you have a smart phone or tablet?"* only 7.3% of the respondents said "No". The results indicate that over 90% of the academic staff members that participated in this study have both computers and smart phones or tablets. Possession of computer and smart phone is standard practice among academic staff in most universities worldwide.

In order to assess their awareness of Moodle, the respondents were asked (Q 5), "*Do you know about Moodle?"*; 80.5% said, "Yes". The next question (Q 6) was, "*Do you have a Moodle registration in SMHS?"* In response, only 68.3% (28/41) said, "Yes". The 28 respondents that answered "Yes" were asked (Q 7) *if they used Moodle regularly*. The response was positive for 64.3% (18/28) of them. This implies that only 43.9% (18/41) of the academic staff that participated in this study use Moodle regularly. This is an indication of poor awareness about the importance of Moodle as a platform for effective communication between academic staff and students.

The 10 respondents that answered "No" to Q 7 were asked (Q 8), if they know how to register for Moodle in the SMHS. In response, 8 of the 10 respondents answered in the negative. This implies that 19.5% (8/41) of the academic staff that participated in this study do not know how

to register for Moodle in the SMHS. This indicates the need for increased awareness and advocacy for the use of Moodle among academic staff members in the SMHS.

Table 2: RESULTS OF QUESTIONNAIRE ON MOODLE USE BY ACADEMIC STAFF MEMBERS IN SMHS		
Q 1	DIVISIONS	N (%)
	BMS	8 (19.5%)
	Clinical Sciences	11 (26.8%)
	Dentistry	1 (2.4%
	Health Sciences	12 (29.3%)
	Nursing	4 (9.8%)
	Public Health	5 (12.25)
	TOTAL	41 (100%)
Q 2	ACADEMIC POSITIONS	N (%)
	Professors	4 (9.8%)
	Associate Professors	4 (9.8%)
	Senior Lecturers	7 (17.0%)
	Lecturers	20 (48.8%)
	Tutors	6 (14.6%)
	TOTAL	41 (100%)
Q 3	Do you have a personal computer (table top or laptop)? (N = 41)	N (%)
	Yes	40 (97.6%)
	No	1 (2.4%)
Q 4	Do you have a smart phone or tablet? (N = 41)	
	Yes	38 (92.7%)
	No	3 (7.3%)
Q 5	Do you know about MOODLE? (N = 41)	
	Yes	33 (80.5%)
	No	8 (19.5%)
Q 6	Do you have a MOODLE registration in SMHS? (N = 41)	
	Yes	28 (68.3%)
	No	10 (24.4%)
	Don't know	3 (7.3%)
Q 7	If you answered *yes* to Q 6, do you use MOODLE regularly? (N = 28)	
	Yes	18 (64.3%)
	No	10 (35.7%)
Q 8	If you answer No to Q 7, do you know how to register for MOODLE in SMHS? (N = 10)	
	Yes	2 (20.0%)
	No	8 (80.0%)
Q 9	What do you think about MOODLE?	

In Q 9, all the respondents were requested to briefly state what they think about Moodle. Of the 41 respondents only 29 (70%) provided responses. Results indicate that most of the respondents, 66% (19/29) were positive, but also raised concerns. 21% (6/29) had concerns to express; 10% (3/29) had only positive feedback; and 3% (1/29) was neutral.

The results obtained indicate a general positive attitude towards Moodle, albeit with some concerns. The positives, concerns, and neutral responses were further analyzed to better understand the respondents' feedback.

The results show a total of 76% (66% + 10%) of respondents with positive responses, some indicated more than one positive feedback which resulted in a total of 44 positive responses. Of these, 18% were positive on account of Moodle being a platform where learners could access learning resources; 14% generally approved of the platform; 9% considered it to be a good platform for teaching and learning; 9% considered it to be a platform for communication; 6% considered it as a good platform for online assessment; 7% considered it convenient; 6% of responses viewed Moodle as an efficient approach to teaching and learning; another 7% of responses appreciated its potential in enhancing learning.

Other responses valued the promotion of: a variety of teaching strategies, collaboration; interaction; an effective teaching approach; convenience in planning for those who team teach; an enrichment of the teaching experience; designing explicit learning outcomes; the ability to monitor student engagement; minimizing the need for the printing of teaching materials.

The results indicate that academic staff see a lot of value in Moodle and can use the platform to enhance their teaching practices as well to promote improved outcomes for learners.

A total of 87% of respondents (25/29) expressed some concerns. Of the 25 respondents, some indicated more than one concern, resulting in a total of 41 counts for concerns. In the area of faculty support, the following concerns were expressed: 22% stated the need for both technological and pedagogical support; 15% for learning management system (LMS) support; the other series of responses indicated the need for both LMS and Information & Communication Technology (ICT) support, the need for pedagogical support and the need for faculty support on the affordances of Moodle. In addition, concerns highlighted by academic staff also captured student support, which includes the need for LMS and ICT support, including LMS and ICT support for Moodle registration for students, the need for students' orientation to Moodle, and the need for support to improve student typing proficiency.

Other concerns raised included an update of Moodle and potential online assessment risks. Poor internet connectivity was a concern for academic staff as well as the need for the institution to provide devices for staff to use.

Results overwhelmingly indicate the need for faculty support and also student support [4,9,10,11]. For academic staff, ongoing pedagogical and technological support would be highly beneficial. Furthermore, readily available ICT support and an online helpdesk systems must be provided for students.

Finally, for the neutral category, 3% (1/29), with not prior use of Moodle, the academic staff had no comments to make.

CONCLUSION:

The major objective of this rapid assessment survey was to determine the awareness and use of Moodle by both students and academic staff in the SMHS UPNG. The result shows that although 77.5% of all the students said that they know about Moodle, only 41.1% said that they use Moodle regularly. The result also shows that only 43.9% of the academic staff who participated in this study use Moodle regularly. These results indicate the need for increased awareness and advocacy for the use of Moodle by students and academic staff members in the SMHS. Furthermore, the responses to the open-ended questions to both students and academic staff indicate an overwhelming positive outlook on Moodle, but also reveal concerns regarding some important and immediate focus areas. The findings can be used to justify the need for a more comprehensive assessment among students and academic staff, after the completion of an enhanced Moodle awareness campaign, emphasizing the positive impact of the Moodle platform as a robust learning tool. The potential of Moodle in enhancing the academic performance of students cannot be overemphasized.

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