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Original Article

Level of knowledge towards virtual learning among clinical officer students at Mildmay Institute of Health Sciences in Wakiso district. A cross-sectional study.

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Mildmay Institute of Health Sciences

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Abstract

Background:

The level of knowledge towards virtual learning refers to students' understanding and awareness of e-learning platforms, digital tools, and their academic use in online education. This study aims to determine the Level of knowledge towards virtual learning among clinical officer students at Mildmay Institute of Health Sciences in Wakiso district.

Methodology:

A descriptive cross-sectional study with a quantitative approach was conducted among 75 randomly selected clinical officer students from Year 3.1, Year 2.1, and Year 3.2. Data were collected using electronic questionnaires distributed to students to capture information on their knowledge related to virtual learning. Analysis was done using Microsoft Excel, and results were presented in frequency distribution tables, bar graphs, and pie charts.

Results:

The majority of the participants were female students (66.7%), and male students were 33.3%. Most participants were aged 25–29 years (65.3%), followed by those aged 20–24 years (32.0%), with a small proportion aged 30 years and above (2.7%). 57 (76%) found their devices reliable for attending virtual learning classes regularly, whereas 18(24%) found them unreliable. 60(80%) reported that they were aware of virtual learning platforms and tools, and 15(20%) reported that they were not aware of them. 58(96.7%) reported having ever used any of the platforms for academic purposes, whereas 2(3.3%) reported having never. 69(92%) had ever used medical applications on their phones for learning purposes, whereas 6(8%) had never used the medical applications on their phones for learning purposes. Knowledge gaps included limited access to e-learning tools, low awareness, and inadequate prior experience.

Conclusions:

Students showed moderate knowledge of virtual learning, being aware of platforms and using medical apps, but most had no prior experience before joining the institute.

Recommendations:

Provide orientation, digital skills training, and guided practice to enhance students' competence and confidence in virtual learning.

Keywords: Knowledge, Virtual Learning, E-Learning Platforms, Digital Tools, Online Learning Readiness, Clinical Officer Students, Mildmay Institute of Health Sciences.

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Background of the study

Globally, higher education institutions have increasingly adopted virtual learning to expand access to education and improve learning flexibility. Studies show that the effectiveness of e-learning largely depends on students' awareness and understanding of how online systems operate, including familiarity with digital platforms, login procedures, online communication etiquette, and submission of assignments (Avci, 2024). Students who

possess higher digital literacy and technological awareness demonstrate better engagement and performance in online courses compared to those with limited knowledge.

During the COVID-19 pandemic, universities rapidly transitioned to online learning, revealing gaps in students' knowledge of e-learning technologies. A global survey reported that although many students participated in online classes, a considerable proportion struggled with



understanding platform navigation, virtual classroom participation, and troubleshooting technical challenges (Bryant, 2025). Similarly, health science students in Saudi Arabia showed moderate acceptance of virtual lectures, but their effectiveness depended greatly on students' prior knowledge of online learning tools and systems (Alharbi et al., 2024). In Africa, the expansion of e-learning has been influenced by increasing digitalization, smartphone ownership, and internet connectivity. The African e-learning market continues to grow rapidly; however, the success of these platforms remains dependent on users' digital knowledge and skills (Dublin, 2025). Many students possess access to devices but lack an adequate understanding of how to use educational platforms for academic purposes effectively. In Sub-Saharan Africa, limited exposure to technology and inadequate training have hindered students' knowledge of virtual learning systems. Only a small proportion of the population has reliable internet access, which affects students' familiarity with online learning platforms and reduces opportunities for continuous digital practice (Adarkwah, 2021). Consequently, students often rely on trial-and-error approaches when engaging in virtual learning environments. Across East Africa, Kenya has made notable progress in integrating digital skills into education, leading to improved students' competence with online learning systems. Increased access to computers and internet connectivity has been associated with better knowledge and confidence in using e-learning platforms (Kommers, 2021). This suggests that institutional exposure and digital training play a significant role in improving students' knowledge of virtual learning. In Uganda, universities have begun implementing online learning programs and training staff and students in digital education technologies. For example, Makerere University has developed numerous online courses and trained thousands of learners in virtual learning systems (Namisango, 2025). Despite these efforts, knowledge gaps persist among students in many institutions due to limited orientation and insufficient practical training. At Mildmay Institute of Health Sciences, only a small proportion of clinical officer students utilize the available virtual learning programs. This low utilization may be linked to inadequate knowledge regarding the use of e-learning platforms, online communication tools, and digital academic resources. However, no documented study has assessed the level of knowledge of virtual learning among clinical officer students at the institute. Therefore, it is necessary to evaluate students' knowledge to inform strategies for improving the adoption and effective use of virtual learning. This study aims to determine the Level of knowledge towards virtual

learning among clinical officer students at Mildmay Institute of Health Sciences in Wakiso district.

Methodology

Study design

The research utilized a descriptive cross-sectional study design to gather quantitative data from participants simply because it allowed the collection of data from a vast group of people in a short period of time.

Study setting

The study was conducted at Mildmay Institute of Health Sciences, located on Naziba Hill Iweza, off Entebbe Road, in Wakiso district, Makindye Ssabagabo county, Ndejje division, Uganda. It is about 12 kilometers from Kampala city. This was because it was convenient and easy access to the target population.

Study population

The study population was all clinical officer students of year three semester two, year three semester one, and year two semester one, currently enrolled during the study period at Mild may institute of Health Sciences.

Sample Size Determination

The population size was determined using the formula suggested by Kish and Leslie (1965), which states that:

$$n = Z^2pq / d^2$$

Where

n= required sample size

z= standard normal deviation set at 95% confidence level, i.e., 1.96

p= percentage picking a choice or response (in this case, taken at 5% = 0.05) q= 1-p

d- Confidence interval (in this case taken at 0.05 = ±5) Therefore, basing on the formula above;

$$n = (1.96)^2(0.05)(0.97)$$

$$(0.05)^2$$

$$n = 75 \text{ respondents}$$

Sampling method/ procedure

The study employed a stratified random sampling approach to ensure representation from all levels of clinical officer students at Mildmay Institute of Health Sciences. The population of clinical officer students consisted of Year 2 semester 1 (76), Year 3 semester 1(48), and Year 3 semester two (50). These groups served as the strata for the study. From each stratum, 25 students were selected using the lottery method of simple random sampling to achieve the required total sample size of 75 students. In this method, each student in a stratum was



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assigned a unique number, and all numbers were written on separate pieces of paper and placed into a container. The required number of papers was drawn randomly without replacement until the sample for each stratum was obtained. This procedure ensured that every student within each year had an equal chance of being selected, minimizing selection bias and providing a representative sample for the study.

Selection criteria Inclusion criteria

The study included all clinical officer students of year three, semester two, year two, semester one, and year three, semester one who were available at the institute and consented to participate in the study.

Exclusion Criteria

The study excluded all clinical officer students who were absent at the time of study, those who did not consent, and those who were not willing to participate, together with those who wanted to be paid to participate in the study.

Research instruments

The data collection process involved the use of electronic structured questionnaires with closed-ended questions that were specifically designed to meet the objectives of the study. These questionnaires were written in simple and straightforward language to ensure that they were easily understood by students who participated in the study.

Data collection method/ procedure

Data was collected using an electronically structured questionnaire via Google Forms. The questionnaire link was sent to the respondents via their e-mails and WhatsApp to be filled out and submitted upon completion. The questionnaires were used because they ensured a high response rate and required less time and effort to administer. They were administered electronically to the participants who agreed and consented to be part of the research study, both verbally

and electronically from the Google form. Clear guidelines and instructions were given to participants on how to fill out these questionnaires. After filling out the questionnaires were received electronically to monitor the responses.

Data management and analysis

The data was analyzed using the Microsoft Excel application. The findings were presented quantitatively through frequency distribution tables, pie charts, and bar graphs, accompanied by narratives to facilitate easy interpretation.

Quality Assurance: validity and reliability Piloting the study

The study area was visited a week before the actual research to seek and obtain permission from the institute administration.

Pre-testing of the study tool, the questionnaire was pretested using a small number, as compared to the estimated study population, that were 20 clinical officer students, before actual data collection, so that if modifications are to be made, are made before the actual date of data collection, so as to determine if the information collected was reliable and valid.

Ethical considerations

On approval by the Mildmay Institute of Health Sciences Research Committee, written permission to conduct the research study was obtained from the Dean of the School of Allied Health Sciences, permitting the collection of data from the clinical officer students of Mildmay Institute of Health Sciences. The consent of the participants was sought with informed written consent before the study was conducted.

Results

Demographic characteristics.



Table 1: Socio-demographic characteristics of respondents (n=75)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Female	50	66.7
	Male	25	33.3
Age (years)	20–24	24	32.0
	25–29	49	65.3
	≥30	2	2.7
Year of Study	Year 2.1	25	33.3
	Year 3.1	25	33.3
	Year 3.2	25	33.3
Mode of Internet Access	Mobile data	40	53.0
	WiFi	14	18.7

Most of the respondents were female, 50(66.7%), while the minority were male, 25(33.3%). In terms of age, the majority were aged 25–29 years 49(65.3%), whereas the least represented age group was ≥30 years 2(2.7%). Regarding year of study, representation was equal across all groups, with each year (Year 2.1, Year 3.1, and Year 3.2) having a third of the respondents 25(33.3%).

Most respondents accessed the internet via mobile data 40(53.0%), while the least used was WiFi 14(18.7%).

Level of knowledge on virtual learning among clinical officer students.



Table 2: Shows the level of knowledge of respondents on virtual learning (n=75)

Knowledge Variable	Category	Frequency (n)	Percentage (%)
Access to smartphone/e-device	Yes	75	100
	No	0	0
Device reliable for virtual classes	Yes	57	76
	No	18	24
Awareness of virtual learning platforms/tools	Yes	60	80
	No	15	20
Had they ever used virtual platforms	Yes	58	96.7
	No	2	3.3
Ever used medical applications for learning	Yes	69	92
	No	6	8
Were the medical applications helpful	Yes	63	91.3
	No	6	8.7

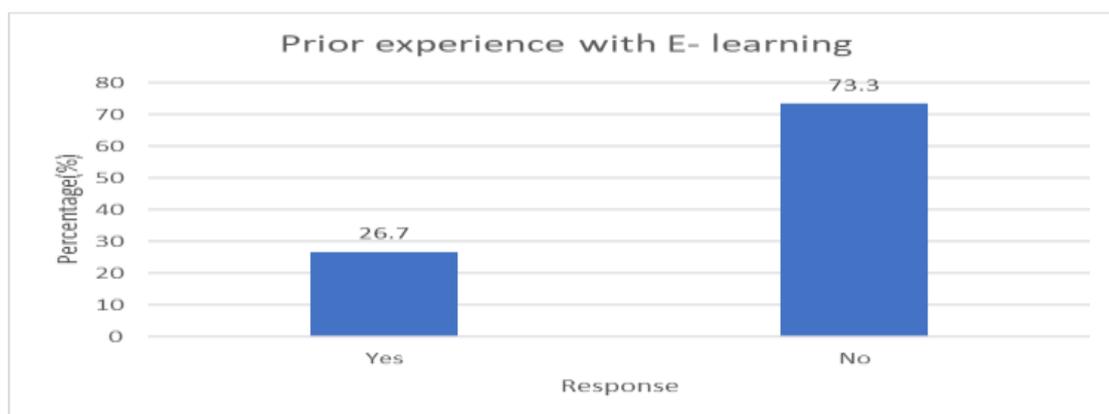
Table 2 showed that 57 (76%) found their devices reliable for attending virtual learning classes regularly, whereas 18(24%) found them unreliable. Most of the respondents, 60(80%), reported that they were aware of virtual learning platforms and tools, whereas the minority, 15(20%),

reported that they were not aware of them. Of them, the majority, 58(96.7%), reported having ever used any of the platforms for academic purposes, whereas the minority, 2(3.3%), reported having never used any. The majority, 69(92%) of the respondents had ever used medical

applications on their phones for learning purposes, whereas the minority, 6(8%) had never used the medical applications on their phones for learning purposes. Of them, the majority, 63(91.3%), found them helpful in their

academic performance, whereas the minority, 6(8.7%), reported that they did not find them helpful in their academics.

Figure 1: A graph showing the distribution of respondents by experience with e learning before joining the institute. (n=75)



Most of the respondents, 55(73.3%), did not have any prior experience, whereas the minority, 20(26.7%), had prior experience in using e learning platforms.

Discussion

Level of knowledge towards virtual learning among clinical officer students.

Regarding whether respondents have access to a smartphone or other electronic device for virtual learning, all 100% the respondents reported that they have access to smartphones or other electronic devices. This implies that all them can have access to smartphones, this is because most students find that these tools have become essential for daily communication, education, and access to information. These results are in line with the study findings according to Bhisare et al. (2024) about Knowledge, perception, and usage of E-learning among medical undergraduates in Andhra Pradesh, India, about 99.6% of the medical students had access to smartphones. This high percentage shows the readiness of the respondents towards digital learning. Therefore, there is a need to provide targeted training to students on the effective use of e-learning platforms and mobile learning apps to boost confidence and skills.

About response of respondents on whether they are aware of virtual learning platforms and tools, the majority, 80% of them, were aware of the platforms and tools. This

implies that a vast majority of respondents knew about the virtual learning platforms, and this is because they had access to digital smartphones that contain most of the platforms. These results are in line with the study findings by Alessa et al (2025) about Bridging the Practice Gap with the Virtual Learning, which found that most 71.15% of respondents were highly aware of virtual learning platforms and tools. This shows that barriers to e-learning are less likely to lie in awareness and access but in factors such as perceived compatibility, ease of use. Solutions to this include providing learners with pilot programs of e-learning tools so they can explore features with minimal risk.

From their response on whether they had ever used medical applications on their phones for learning purposes, the majority, 92% of them, reported that they had ever used them for learning purposes. This indicates that the majority of the respondents have ever used the e learning platforms for learning purposes. This is because e-learning offers flexibility, accessibility, and self-directed learning opportunities tailored to individual needs. These results are in agreement with the study findings by Shanmuga Vadivoo et al. (2024) about Assessment of Smartphone Medical Applications as a Self-Directed Learning Tool for Medical Students, which identified that the majority, 84% of medical students, used various smartphone medical applications for self- directed



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learning purposes. This high usage rate means that most students are ready and willing to learn through mobile technology, and conducting formal training sessions for students on using smartphone applications effectively for self-directed learning and clinical education.

Regarding their response on whether they had prior experience using e learning platforms before joining the institute, at least 26.7% of the respondents reported that they had prior experience before joining the institute. This implies that the least of them had no prior knowledge of using the e learning platforms. This is because most students had access to the smart phones, but they never used them for learning purposes, but for essential reasons. These findings are in line with the study findings according to (Moya-Salazar et al., 2022) about What is the perception of medical students about e Learning during the COVID-19 pandemic. It was revealed that at least 25.5% of the students had no prior experience with virtual learning before joining their institution. This low rate indicates the need for targeted interventions, such as digital literacy training, orientation programs, and support systems, to facilitate their transition from initial exposure to effective utilization. Institutions should provide comprehensive training and orientation sessions for new students to familiarize them with virtual learning platforms.

Conclusion

The study findings show that clinical officer students at Mildmay Institute of Health Sciences generally possess basic knowledge of virtual learning. The majority of students were aware of virtual learning platforms and tools, and almost all of those aware had previously used them for academic purposes. Most respondents had also used medical applications for learning (92%) and

considered them helpful in improving academic performance. Additionally, 76% reported that their devices were reliable for attending online classes.

Recommendations

The institute should provide structured orientation programs on e-learning platforms to newly admitted students to strengthen foundational knowledge.

Continuous digital literacy training should be introduced to improve students' competence beyond basic awareness. The institution should develop user manuals and tutorial videos explaining platform navigation and troubleshooting.

Lecturers should integrate guided online activities to improve students' confidence and mastery of virtual learning tools.

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List of Abbreviations

F2F	:	Face to face
ICT	:	Information and Communication Technology
KAP	:	Knowledge Attitudes and Practices
LMS	:	Learning Management System
ODL	:	Open and Distance Learning
WIFI	:	Wireless Fidelity
IT	:	Information Technology
MIHS	:	Mildmay Institute Of Health Science

Data availability:

The data is available upon request.

Informed consent:

All the respondents consented to this study.

Source of funding

The study did not receive any external funding.

Conflict of interest

The author did not declare any conflict of interest.

Author contributions

Patricia Mary Namayega was the principal investigator.
Jimmy Okwany supervised the research project.
Immaculate Prosperia Naggulu supervised the research project.
Hasifa Nansereko supervised the research project.
Francisco Ssemuwemba supervised the research project.
Jane Frank Nalubega supervised the research project.

Author Biography

Patricia Mary Namayega holds a diploma in clinical medicine and community Health from Mildmay Institute of Health Sciences.



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Jimmy Okwany, Immaculate Prosperia Naggulu, and Jane Frank Nalubega are medical tutors at Mildmay Institute of Health Sciences.

Hasifa Nansereko is the chairman IRC.

Francisco Ssemuwemba is the Dean School of Allied Health.

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