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## Feasibility of Introducing an E-Learning Project Program at the Faculties of Medicine and Nursing sciences at the University of Khartoum

Zeinab Swar Eldahab<sup>1\*</sup>, Shahinaz Abdelrahman Osman<sup>2</sup>, Ahmed Abdulaz<sup>3</sup>, and Elhadi Miskeen<sup>4,5</sup>

<sup>1</sup>Dept. of Community Medicine, Faculty of Medicine, University of Khartoum, Khartoum, Sudan; <sup>2</sup>Chair of Global Collaboration PLN at the International Society for Technology in Education (ISTE); <sup>3</sup>Federal Ministry of Health, Directorate General of PHC, EPI (Extended Program of Immunization); <sup>4</sup>Dept. of Obstetrics and Gynecology, College of Medicine, University of Bisha, Bisha, Saudi Arabia; and <sup>5</sup>Dept. of Obstetrics and Gynecology, Faculty of Medicine, University of Gezira, Sudan.

\*Correspondence: [zeinabswar@hotmail.com](mailto:zeinabswar@hotmail.com) (Zeinab Swar Eldahab, Consultant and Teacher, Department of Community Medicine, Faculty of Medicine, University of Khartoum, Khartoum, Sudan).

### ABSTRACT

E-learning is defined as learning with the aid of information and communication technologies. These tools, named Technology enhanced learning, are used to enhance distance learning. e-Learning helps in situations of quarantine and lockdown. A wide set of Learning Management Systems (LMS) which are mainly internet based, have been developed and used to support the e-learning process. This study aimed to assess the current situation of establishing an eLearning Program in the Faculties of Medicine and nursing sciences at the university of Khartoum. A cross-sectional study was carried out among 95 participants; 75 (78.9%) were students, and 25 (21.1%) were faculty members and administrators. Their skills and competencies were assessed through online google –form Questionnaire. The result revealed that 100% of the study participants had owned e-Learning devices. The most common type is the mobile. The majority (93.7 %) have consistent internet coverage, while 6.3% mentioned the problem of Internet coverage and cost. All participants owned smart devices; 69,6% were engaged in discussion, almost 22% in assignments, and 85% achieved their objectives. Nearly 6.3% needed internet coverage. After completing our project, the key findings were submitted to the University training center, where it was successfully adopted into the university teacher's training policy.

**Keywords:** E-learning project program, Medicine, Feasibility, Faculties of medicine, and Nursing.

### INTRODUCTION:

Due to the overwhelming priority, e-learning has become a mandatory part of all educational institutions worldwide. This was made clear in COVID - 19. This deadly situation has radically changed the offline teaching process. E-learning represents an effective teaching method that allows students to self-actualize (Radha, 2020). E-learning is the use of information and communication technologies and tools for learning. Technology-enhanced learning

(TEL) refers to using technology to enhance students' distance learning. The technologies used in e-learning, such as mobile devices, are becoming more common. learning management systems (LMS) is a term that refers to systems that provide collective functions to organize and manage the learning process and support interaction among users (Zacchaeus and Iruo, 2022; Aboagye, 2021). E-learning is adopted and implemented by many educational institutes worldwide (Klobas, 2010). With the application of

E-Learning, more involvement of teachers occurs as they are no longer content distributors but facilitators and competency assessors (Browne, 2006).

There is almost no difference between the E-Learning and traditional regarding learners' academic performance and level of achievement (Ruiz, 2006). One of the supporting things for this transformation is that students come to college already grown up in a technologically supported environment, and they are on the side of the integration of eLearning (Al-Qahtani, 2013). Comprehensive learning management systems (LMS) are used to support e-learning. LMSs, which are mostly Internet-based software, allow teachers to manage the distribution of materials, assignments, communication, and other aspects of instruction for their courses (Epstein, 2013). Explore potential challenges to learning activities. A study looks at e-learning from the perspective of students and faculty on using and implementing e-learning systems at a public university during the pandemic COVID - 19. Challenges and benefits of using e-learning systems in place of traditional instruction in higher education in general and during times of crisis (Maatuk, 2022). R. Radha *et al.* did another study to find ways to make students who know how to use the web better at learning independently. The study showed that students like e-learning a lot, especially during the COVID -19 pandemic lockdown period (Radha, 2020). Yengin *et al.* (2011) investigated the factors affecting instructors' performance in e-learning systems. Satisfaction is one factor that affects the system's usability and directly affects instructors' performance. The study found that the "E-Learning Success Model for Instructors' Satisfaction" could be an important guide for e-learning designers and decision-makers to understand interaction and usability outcomes related to instructor satisfaction (Yengin, 2011).

Aboagye *et al.* studied the challenges students face in online learning during the coronavirus pandemic. Instructor issues, accessibility, learner motivation, academic issues, and other factors were examined. Only instructor issues were relevant to the learning process (Aboagye, 2021). Online learning for daily use strengthens traditional higher education rather than replacing it. Blended education is an excellent alternative to face-to-face instruction because communication with a mentor in a live environment, even if virtual, should lead learners to complete on-

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line learning and improve its outcomes (Falfushynska, 2021).

In our situation in Sudan, where there are limited resources, the rationale behind conducting this study is that e-learning helps quarantine and lockdown situations. It helps us continue our learning process despite interruptions of air travel, public transport, and any situation leading to personal movement restrictions. The use of e-learning has become a necessity, especially in crises that hit countries and bring the learning process to a halt, as in the case of the pandemic COVID -19. At the time of the study, e-learning was not yet established at the University of Khartoum and had not been officially introduced. This study investigates the feasibility of introducing an e-learning program at the faculties of medicine and nursing at the University of Khartoum. It also aims to determine the availability of technological resources to enhance the learning environment, improve skills and awareness of e-learning, assess participant engagement and satisfaction, and evaluate changes in attitudes toward e-learning in pre-and post-tests.

## **MATERIALS AND METHODS:**

### **Study design and setting**

A cross-sectional, mixed-methods quantitative and qualitative, campus-based study. A total of 95 accessible participants were surveyed to assess the availability of essential resources needed to use the online learning system. Faculty members and students from the faculties of medicine and nursing at the University of Khartoum (U of K) were purposively selected and trained in basic general eLearning activities. Their skills and competencies were assessed through an online google form pre and post-test. The U of K is a public university and the first university in Sudan. The roots of the university date back to 1898 when Lord Kitchener of Khartoum proposed the establishment of a university in memory of General Gordon.

### **Study Population**

Seventy-five students from different classes were selected to serve as classmate facilitators, and 18 faculty members were assigned as instructors of trainees (TOT). Two staff members, the administrator and IT oversee the data process. A series of meetings were held in advance with stakeholders (the deans of both faculties, the IT student offices, the university training center, and the WHO technical

officer) to get them on board, ensure consensus, and obtain the WHO guidelines.

**Project phases (two phases)**

**A. Pre-implementation** (situation analysis phase)

Five-step e-learning planning framework was used to prepare the program strategy for implementation.

- 1) **Pre-emerging** (Preparing to engage with e-Learning)  
Place an action plan to integrate e-learning across the departments and raise the awareness of how digit technologies can enable effective e-learning. Three workshops were conducted with stakeholders.
- 2) **Emerging** (Investigate to raise the awareness of Plan)  
The students and teachers were approached to ensure their commitment to the program, and the current situation of E-learning resources was explained.
- 3) **Engaging** (Trial and establish)  
The participants began to use digital technologies appropriately. The technology was used collaboratively.
- 4) **Extending** (Align vision, process, and practice)  
The program was effectively aligned across the related departments, and a policy issue was created to integrate it into conventional curricula.
- 5) **Empowering** (Innovate and reflect as a community practice)  
Uof K training center has adopted the e-Learning program to be one of the compulsory in-service training sessions held by the center to build the capacity of the university's teachers.

**B. Post Implementation**

During implementation, an evaluation survey was conducted using a Google form. This survey provided students with feedback to monitor and track learner activities and outcomes. This survey was aligned with the Kirkpatrick evaluation framework following indicators: engagement and attendance, goal achievement, and performance. These indicators were used to evaluate the e-Learning satisfaction and outcomes.

**Data Collection Tool**

Google form, a standard Questionnaire was structured and sent to the participants. It includes the variables assess availability of resources, types of devices, internet coverage, past experiences, and perception of e-Learning.

**Data Analysis**

A computerized SPSS program (version 27) was used for quantitative data analysis. Qualitative data were analyzed by incorporating the steps of identifying, examining, and interpreting. Coding was performed, and then the results were interpreted.

**RESULTS:**

Participants were 95 participants completed the project process and were enrolled in the final analysis. Of them, 75 (78.9%) were students, and 25 (21.1%) were faculty and administrators from medicine and nursing. Most of the participants were female, 53 (55.8%), and from the age group 21-26, 54 (56.8%) were (Table 1). SWOT analysis was conducted, and it showed that 100% owned the devices. The most typical type of device is the cell phone. 93.7% have Internet access with sufficient speed, while 6.3% have no Internet access. In the pre-and post-tests, they showed a positive attitude towards eLearning, and being a savvy generation and supporting WHO.

**Table 1:** Shows demographic properties of the study participants (N=95).

Position	Number	Percentage	Gender	Number	Percentage	Age	Number	Percentage
Faculty members- Medicine	10	10.5	Male	42	44.2	16-20	21	22.1
Faculty members-Nursing science	8	8.4	Female	53	55.8	21-26	54	56.8
			Total	95	100	32-38	3	3.2
Administrators	2	2.1				38+	17	17.9
Student- Medicine	50	52.6						
Student -Nursing	25	26.3						
Total	95	100						

The major weaknesses are prohibitive Internet costs and unstable power supply, 43% have no experience with LMS before they are needed, and there are no

eLearning policies (Fig. 1). Almost seventy percent participated in discussions, 21.7% in discussions and tasks, while only 4.5% completed their tasks (Fig.

2). Almost 85% have mentioned that they've achieved their objectives, indicative of general satisfaction comparing with 14% that haven't achieved them

(Fig. 3). Attendance indicates their satisfaction was increasing over time since implementation (Fig. 4).

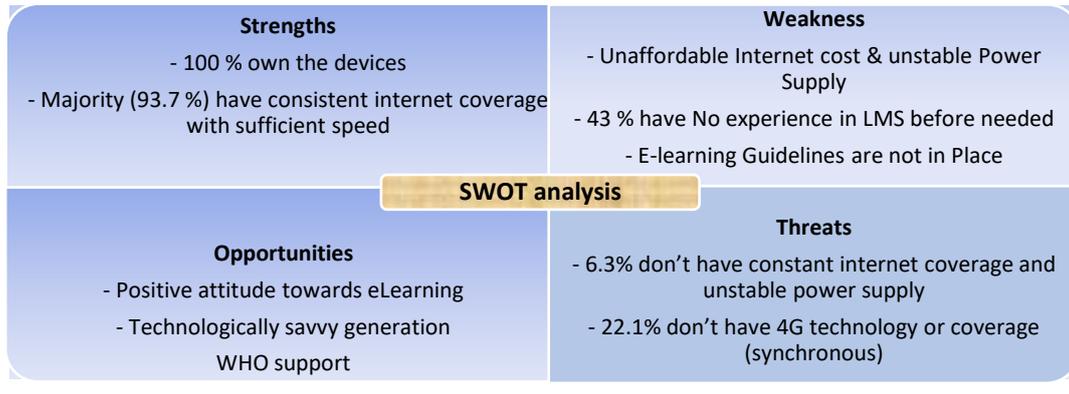


Fig. 1: Showed the SOWT analysis diagram of e-learning essential resources.

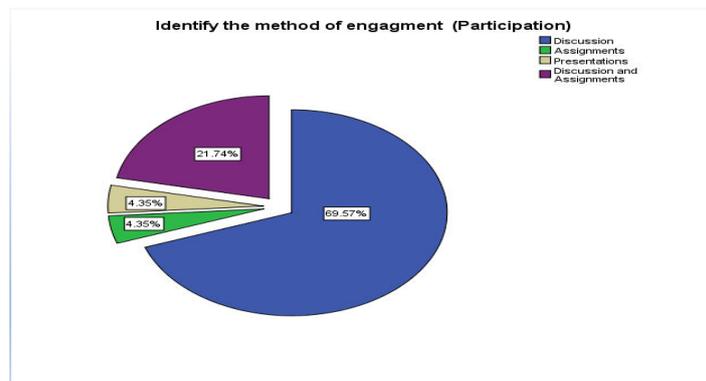


Fig. 2: Shows the levels of satisfaction and engagement.

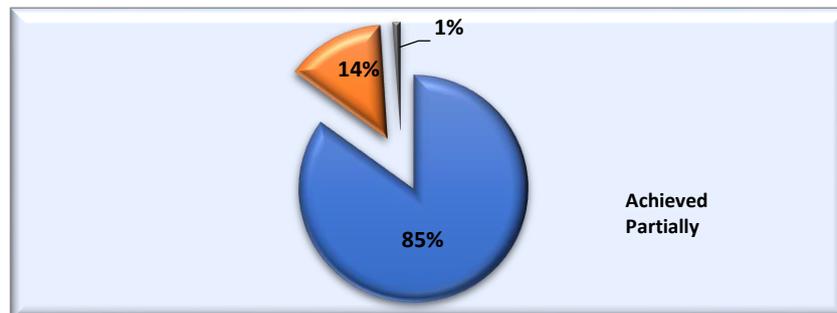


Fig. 3: Achieving the objectives of learning.

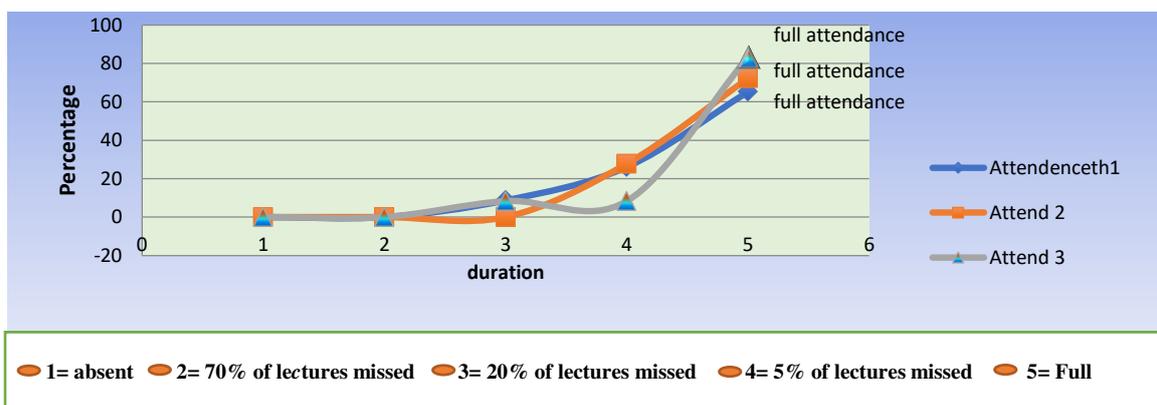


Fig. 4: Showed the participants' attendance during the program implementation.

## DISCUSSION:

This study evaluated the feasibility of implementing an e-learning program in our setting through faculty and student input. The availability of technological resources and commitment and satisfaction were evaluated. Both students and lecturers showed a positive attitude towards e-learning, expecting a successful transition to e-learning even in emergencies with full support from WHO. They are aware of the obstacles and resources required for eLearning. This finding is consistent with a study conducted by the College of Benghazi that examined the potential challenges to learning activities. This study examined the perspective toward the use and implementation of e-learning (Maatuk, 2022). These findings were consistent with studies worldwide, as universities and institutions were closed worldwide during the Covid 19 pandemic, resulting in significant impacts on students and major disruptions in the learning process (Alqahtani, 2020; Giray, 2021; Elfirdoussi, 2020). In our setting, the existing burden of the Covid 19 pandemic, other challenges include insufficient resources and infrastructure in Sudan and security and system instability during the revolution in Sudan. This poses further challenges for Sudanese universities to overcome for successful transformation. Technology-enabled e-learning requires using the Internet and other essential tools to create instructional materials, train learners, and manage courses in an organization. E-learning is flexible when it comes to time, place, and health by providing access to vast data, enhancing collaboration, and strengthening relationships that promote learning. Our study found that most students belong to the savvy generation and are familiar with web-based technology. This result was consistent with Radha's study on improving self-competence. It shows that e-learning has become very popular among students (Radha, 2020). There were many published studies reflected the same findings, and showed the challenges faced the fellows to overcome? conventional setting of face-to-face interaction ad vice versa (Mathivanan, 2021; Mahalakshmi, 2020). The teaching staff believes that e-learning is beneficial and that promoting students' technological skills is one of the most important positive elements. Faculty agreed that e-learning is widespread and the other e-services is the most important use. One of the pedagogical implications is the learner's characteristics, such as the charac-

teristics of the learner's background know-ledge and how to motivate students. The level of satisfaction was indicated by 69.6% engagement, achievement of goals, and attendance rates that steadily increased over time. This was compared to the study conducted to investigate the factors that influence performance and satisfaction. This study found that the "e-Learning Success Model for Instructors' Satisfaction" could be an essential guide for e-learning decision makers, essential for understanding the challenges and needs of users (Yengin, 2011). Many studies reported the same finding and sowed factor that affects the system's usability and directly influences instructor performance (Asoodar, 2016; Kang, 2013; and Al-Fraihat, 2020).

The ultimate goal is to make a student who is a constant learner and an active person in the interconnected world and the ever-changing technology, it would be necessary for users to have the opportunity to take new paths to stay current and evolve. The project's primary outcome is developing a model approach to continue the learning and support the students' apparent learning results for e-learning. The important successful factors related to the human resources (stakeholders) is the positive attitude towards e-Learning will play an important role need to be considered before implementing e-learning program. After competing our project, the key findings were submitted to the University training center where it was successfully adopted into the university teacher's training policy

## CONCLUSION AND RECOMMENDATIONS:

The key success factors related to human resources (stakeholders), infrastructure, and positive attitude toward eLearning play an essential role before applying eLearning as a key readiness factor that you need to consider before implementing e-Learning. Almost all participants had smart devices; 69.6% participated in the discussion, 22% participated in the task, 85% met their goals, and 6.3% did not have Internet access. A framework was developed to help institutions. E-learning implementation should be strengthened to increase learner satisfaction. We investigated the feasibility of implementing blended e-learning and traditional learning with different emphases at the beginning in a mixed method. We recommend the creation of a policy guide for digital transformation strategy. We are committed to improving Internet connectivity, power supply, and cost.

### Limitations

The Covid 19 pandemic is impacting universities and medical schools. There have been difficulties in reaching key individuals to conduct a higher-level interview and evaluate the other infrastructure technologies and materials that support e-learning. Therefore, the study's results will serve as a basis for further research on more successful learning systems in Sudan.

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### CONFLICTS OF INTEREST:

The authors declare that there is no conflict of interest.

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