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Stakeholders' Needs Assessment for an Online Module at the Faculty of Medicine, Suez Canal University.

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Abstract:

Background: **Following the outbreak of COVID-19 in late 2019 and early 2020, universities faced a new challenge: transitioning from traditional in-person education to online learning.** ***Methods:*** **A mixed-methods research design (both qualitative and quantitative data) was used. A convenience sample was taken from each academic year and Medical Education experts at the Faculty of Medicine, Suez Canal University.** ***Results:*** **The needs assessment results showed that ninety-three (93%) of participants used computers. Among those who used a computer, 20% used it for entertainment, 61% for study, and 10% for general use. Moreover, 48% of students stated that they prefer to study by E-learning while 52% prefer face-to-face teaching, which indicates that blended learning will be the best choice. A focus group discussion was conducted about the difference between planning undergraduate and postgraduate e-learning experiences with medical education experts. This focus group concluded that undergraduates benefit from more structured guidance and resources. Moreover, undergraduate modules have more exams and module work, multiple formative assessments, feedback, and definitive milestones alongside considering offering undergraduates more interactive and discussion-based elements to engage them effectively with frequent feedback and guidance.** ***Conclusions:*** **The study highlighted the importance and the results of the stakeholders' needs assessment for E-learning during the COVID-19 pandemic, taking into consideration the importance of discussion, feedback, and mentoring to engage the students effectively for better outcomes**

Keywords: E-learning; blended online learning; needs assessment; COVID-19.

Introduction:

Online learning is defined as the development and transfer of knowledge from different places through information and communication technology that utilizes the web, audio/video, text communication programs, and software [(1)].

While e-learning broadly refers to using the Internet for education, this definition overlooks many nuances and crucial aspects. E-learning, often called online learning, is more than just electronically distributing documents to students via the Internet. The content and delivery methods are equally important. E-learning goes beyond simply distributing electronic documents online. It aims to be flexible, engaging, and student-centered, fostering interaction (between staff, students, and peers), collaboration, and communication, often in an asynchronous manner [(2)].

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E-learning includes learning experiences both synchronously and asynchronously utilizing various devices such as smartphones and laptops with internet access [3].

The e-learner is the main participant in e-learning. An e-learner is anyone who engages in online learning activities. While e-learners are more active than traditional face-to-face learners, they still depend on content and activities created by teachers or independently by themselves or the learning environment. The specific mix of these elements will differ based on the active independent learner, teacher, curriculum, and institution [4].

The effectiveness of E-teaching depends largely on the teacher's role and the overall curriculum content. Competent, passionate, and engaged e-teachers are key success factors for e-learning, emphasizing the importance of developing their professional academic skills for online environments [5].

Faculty should enhance a safe online learning environment characterized by engagement, communication, and a sense of social presence, where students feel connected to their faculty, peers, and the online classroom. Moreover, the online class should motivate students to actively explore and engage with the content as a collaborative group of learners, incorporating both in-class and out-of-class learning experiences [6].

Methods

Type of the study:

A mixed methods research design was used, incorporating both qualitative and quantitative data. Quantitative data was collected using closed-ended Likert scale questionnaires, while qualitative data was gathered through self-administered open-ended questionnaires. The study population consisted of 100 students who completed the ICT assessment questionnaire. A convenience sample was taken from each year.

A convenience sample was taken from Medical Education experts at the Faculty of Medicine, Suez Canal University.

Sampling:

- Students' sample:

calculation of students' sample size utilized the following equation:

$N=Z^2 PQ/D^2$ where**:**

- "Z" is a constant that equals 1.96
- "P" is the prevalence of students' perception of online modules. It was estimated in a similar study conducted at De Sales University, USA, to be 67.5% [8].
- "Q" is the completion of the prevalence so that the summation of both equals 1 (P+Q=1),
- "D" is the difference between the prevalence and the results of the study; it equals (Zx1/10P) as only 10% bias is accepted.

So, the equation will be $(1.96)^2 \times 0.675 \times 0.325 / (1.96 \times 0.0675)^2 = 50$ students.

The study population included 100 students who completed the ICT assessment questionnaire. 50 students from pre-clinical years (years 1-3) and 50 students from clinical years (years 4-6).

- A purposive sample was taken from Medical Education experts (17 respondents), Faculty of Medicine, Suez Canal University.

Data collection tools

1. A self-administered questionnaire (Annex 1) was used to gather information on students' familiarity with information communication technology (ICT) and their needs and expectations regarding the designed module.

The questionnaire was distributed before implementing the newly

designed modules. The questionnaire contained two sections: The first part was relevant to students' perceptions of the computer, its programs, and internet familiarity (its use in school, classrooms, at home, for educational purposes, etc.). The second part focused on students' expectations before the online learning experience.

One Focus group (focus group guide Annex 2) about the differences between planning undergraduate and postgraduate e-learning experiences was conducted, and emphasis was placed on discussing challenges and how to overcome them. It was about 60 minutes with Medical Education experts (17 respondents), Faculty of Medicine, Suez Canal University.

The moderator's goal was to explore different ideas and opinions from the participants in the time allotted. The moderator arranged for a comfortable room in the Medical Education Department, FOM-SCU. The participants sat on a table and chairs in a circle (participants, the moderator, and the assistant moderator).

The moderator listened attentively, trying to make sure that all group members were participating in the discussion and managing the group dynamics. The assistant moderator recorded the session, took notes, and identified participants with codes for anonymous identification of individuals when making comments so the responses made by all participants were kept confidential. The focus group moderator asked all prepared questions sequentially within the time allotted and all participants were cooperative. The Focus group was structured around a set of predetermined questions which were:

Exploration Questions:

1- What are the differences between planning undergraduate and postgraduate e-learning experiences?

2- How does the content complexity differ between undergraduate and postgraduate e-learning experiences?

3- How does the teaching approach differ between undergraduate and postgraduate e-learning experiences?

4- How does planning assessment differ between undergraduate and postgraduate e-learning experiences?

5- What do you recommend to enhance students' engagement in undergraduate e-learning experiences based on your work in planning postgraduate e-learning experiences?

6- How does the mentor's role differ between undergraduate and postgraduate e-learning experience?

7- How does feedback differ between undergraduate and postgraduate e-learning experiences?

8- How does the flexibility of schedules differ between undergraduate and postgraduate e-learning experiences?

9- How do the technical skills differ between undergraduate and postgraduate students? Will that affect the e-learning experience?

Exit question:

Is there anything else you would like to say about planning undergraduate and postgraduate e-learning experiences?

Data Analysis

The completed questionnaires were entered into an Excel spreadsheet, and data analysis was carried out using SPSS version 21. The analysis methods used depended on the type of data collected.

A. Quantitative data

Descriptive analysis was conducted using mean, percentage, and standard deviation. Tables and graphs were used to visualize the data.

B. Qualitative data

Thematic analysis was conducted, which involves six steps: 1. Familiarization with the data, 2. Generation of initial codes, 3.

Searching for themes, 4. Reviewing themes, 5. Defining themes and 6. Writing up the results [7].

Results

A) Quantitative

Evaluation of students' familiarity with utilizing online learning media and tools (ICT Assessment).

The results revealed that 64% of participants had good utilization of computers, 29% accepted use, and 7% had poor utilization of computers (figure 1). The majority of students utilize computers for studying (61%), and entertainment (20%), while (11%) utilize them for general knowledge and (8%) for other uses as multiple uses All students (100%) utilize smartphones when utilizing the web. (figure 2)

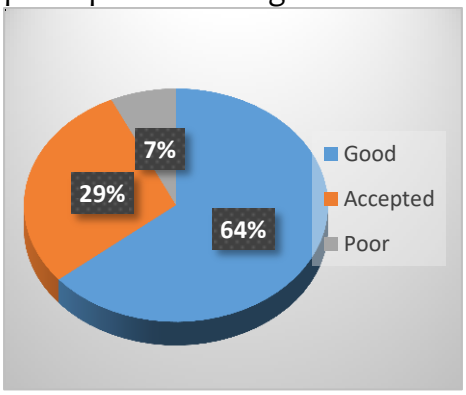

Figure 1: Study participants' usage of computer

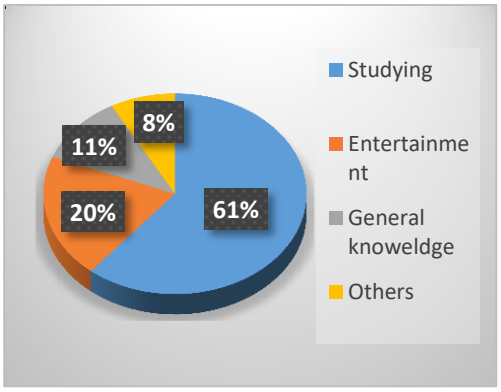

Figure 2: The study participants' computer usage habits

The study revealed also) that 96% of participants had active email accounts while 4% didn't have active email accounts. Of those with an email account, 8% check it daily, 8% check it every week and 80% don't check it regularly, 76% of participants had taken online learning courses before while 24% didn't. (figure 3)

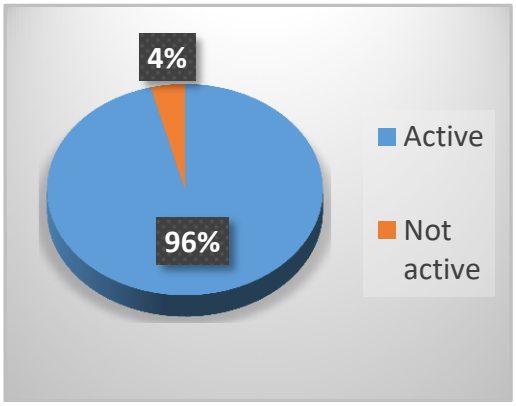

Figure 3: Email utilization by study participants

Evaluation of students' expectations of online learning experience.

The study revealed that 48% of participants prefer online learning while 52% prefer face-to-face learning (figure 4).

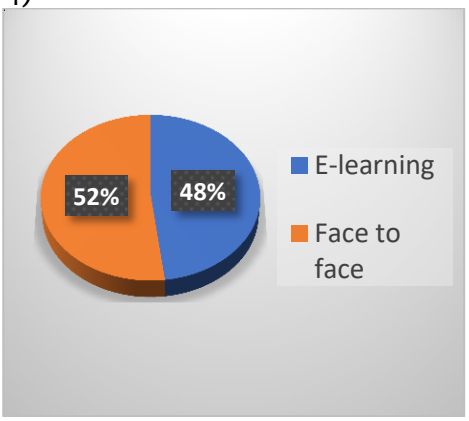

Figure 4: Preference of online learning

Regarding the Students' expectations of communication between staff and colleagues within the implemented E-learning module, the study revealed that

38% of students agree that their communication with teachers will increase with the online learning module also 41% of students agree that their communication with their peers will increase with the online learning module (Table 1) moreover 44% of participants expected that feedback will increase when studying online, while 19% of participants disagree (figure 5).

Table 1: participants' expectations of the online learning module impact on their communication with their peers and their teachers

	Strongly agree (%)	Agree (%)	Don`t know (%)	Strongly disagree (%)	Disagree (%)
Expectation of enhanced communication with teachers as a result of online module	7	31	19	26	17
Expectation of enhanced communication with peers as a result of online module	12	29	13	27	19

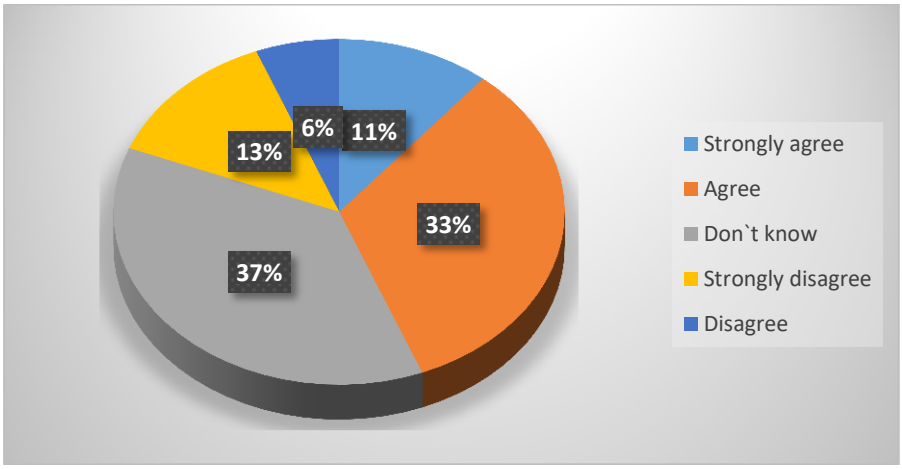

Figure 5: participants' expectation of feedback within the online module

B) Qualitative

focus group to find out if there is a difference between planning undergraduate and postgraduate e-learning experience.

One Focus group about the differences between planning e-learning experiences for undergraduate and postgraduate students was conducted, the aim was to get a view of the planning, and emphasis was placed on discussing challenges and how to overcome them, it was about 60 minutes with Medical Education experts (17 participants), Faculty of Medicine, Suez Canal University. Thematic analysis was done and the following themes emerged:

- **Content Complexity**

Postgraduate modules typically have more advanced and specialized content compared to undergraduate modules, which may be more foundational.

- **Teaching Approach**

Postgraduate students often require more independent study and research, whereas undergraduates may benefit from more structured guidance and resources.

- **Assessment**

Postgraduate modules may include more research-based assessments, while undergraduates might have more exams

and module work. Multiple formative assessments and feedback and Definitive milestones.

- **Engagement**

Postgraduates may be more self-motivated, so consider offering more interactive and discussion-based elements for undergraduates to engage them effectively.

- **Mentorship**

Tailor mentorship methods and frequency to suit the student's needs, and clear instructions while postgraduates often require less hand-holding.

- **Feedback**

Postgraduate students might need more in-depth and personalized feedback, while undergraduates may require more general but frequent feedback.

- **Flexibility**

Postgraduates may have more varied schedules and commitments so the module design should be tailored to their schedules.

- **-Technical skills**

Assess the technical skills of your students and provide necessary training and support, training should be mandatory for undergraduates.

- **Resource Selection**

We should select appropriate resources and materials that align with the student's academic level and objectives.

Discussion

The study population consisted of undergraduate medical students at the Faculty of Medicine, Suez Canal University. Data was collected through a self-administered online questionnaire that assessed both ICT familiarity and students' perceived needs for the newly designed modules.

The study population consisted of 100 undergraduate students (from the six batches) who completed the questionnaires.

An online questionnaire was distributed, despite the lower response rates associated with online surveys compared to paper-based formats. This potential limitation may have affected the contribution of students [8].

Before implementing the modules, a needs assessment was conducted to inform module design and potential modifications. The results showed that 48% of students preferred E-learning, while 52% preferred face-to-face teaching, suggesting that a blended learning approach would be most suitable. Blended learning integrates traditional face-to-face teaching with online methodologies [9].

A recent meta-analysis of medical education studies from 1990 to 2019 found that blended learning, which integrates e-learning with traditional classroom-based learning, is more effective than traditional face-to-face learning. This suggests a need to explore the best practices in medical education and determine the most suitable contexts for face-to-face and online learning. While many have advocated for a future of e-learning in medical education, the COVID-19 pandemic hastened this shift, providing a large-scale trial of online learning [10].

Before implementing the online modules, students' ICT experience was assessed to ensure they had the necessary skills. Ninety-three percent of participants utilized computers, while seven percent did not, possibly due to limited exposure, economic constraints, or lack of training. Among computer users, 20% used computers for entertainment, 61% for study, and 10% for general purposes. In terms of software usage, Word was the most popular (71%),

while Excel and graphics programs were the least used (1%). These results were not surprising for digital generations and guided the module design, which was based on the students' assessed needs.

Previous studies have shown that technological experience and qualifications are crucial factors for online learners' success. Self-efficacy, defined as an individual's belief in their ability to achieve specific goals, is a predictor of learner performance, both in terms of module content and technological skills [11].

A similar study found that Internet self-efficacy is a significant factor in online learning success. Developing positive beliefs about one's ability to use internet technology effectively contributes to a positive online learning experience. Ensuring learners are both comfortable and efficient with technological tools is fundamental for successful online learning [12].

Another study also suggests that higher computer self-efficacy correlates with better performance in online modules and increased computer competency [13].

A similar study also supports the finding that self-efficacy is an important predictor of learners' perceptions of web-based modules [14].

Ninety-six percent of participants had an email account, with 10% checking it daily, 10% weekly, and 80% infrequently. Given that the schedule of online lectures on Microsoft Teams was sent to academic email addresses, students were advised to activate and regularly check their accounts. All participants used mobile devices to access the internet.

A similar study found that students reported positive experiences with mobile learning initiatives and perceived mobile learning tools to be as effective as traditional teaching methods in both clinical and basic learning settings. Students appreciated the quick and easy access to information provided by mobile devices. Additionally, the use of mobile devices among medical students has been associated with improved exam performance [15].

Regarding students' expectations of the impact of the E-learning module on communication, 38% agreed that it would enhance communication with teachers, 41% agreed it would increase communication with peers, and 44% agreed that increased teacher feedback would enhance perception and engagement. Additionally, a positive relationship was found between students' expectations of the E-learning module and increased communication with peers. These findings align with similar research, which suggests that content plays a significant role in students' interactions with peers and teachers [16].

Reflecting on my work as a member of the administration team of the Joint Master of Health Professions Education (online post-graduate program), this experience led me to think about the differences in planning undergraduate online modules and postgraduate online modules so a focus group about differences between planning undergraduate and postgraduate e-learning experience was conducted concluding that Postgraduate students often require more independent study and research, whereas undergraduates may benefit from more structured guidance and resources.

Postgraduate modules may include more research-based assessments, while undergraduates might have more exams and module work, multiple formative assessments, feedback, and definitive milestones.

Postgraduates may be more self-motivated, so consider offering more interactive and discussion-based elements for undergraduates to engage them effectively.

Postgraduate students might need more in-depth feedback and specialized support, while undergraduates may require more general but frequent assistance.

Postgraduates may have more varied schedules and commitments so the module design should be tailored to their schedules, but undergraduates have fixed schedules and terms

Conclusion

The most important finding of the study the majority of students expressed a preference for a blended learning approach, combining both online and face-to-face elements, which could be the most effective method for medical education. Overall, the study's findings suggest that e-learning can be a valuable tool in medical education, but it is important to consider the specific needs and preferences of students and the nature of the subject matter.

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Annex 1: Information and Communication Technology (ICT) Assessment Questionnaire

Dear Student,

This questionnaire is part of an MD thesis by Dr. ,,,,,,,,,,, , Assistant Lecturer in the Department of Medical Education.

Please answer all the following questions, Choose the answer that best represents your choice by marking the appropriate box.

Please be assured that all information collected will be kept confidential and used solely for research purposes.

Student Information:

1. Name (optional):
2. Gender: ☐ Male ☐ Female
3. Year:

A. Students' Interaction with E-learning:

4. Do you utilize a computer?
☐ Yes ☐ No
5. If yes, how often do you use it?
☐ Studying ☐ Entertainment ☐ General information ☐ Other (please specify)
6. Which of the following software have you used before?
☐ Word ☐ Excel ☐ PowerPoint presentation ☐ Audio/Video programs ☐ Graphics
7. Do you use electronic media (CDs, DVDs)? ☐ Yes ☐ No
8. If yes, what do you use them for?
☐ Studying ☐ Entertainment ☐ General information ☐ Other (please specify)
9. Do you use the internet?
☐ Yes ☐ No
10. If yes, what do you use it for?
☐ Studying ☐ Entertainment ☐ General information ☐ Other (please specify)
11. Do you use a mobile phone to access the internet?
☐ Yes ☐ No
12. Do you have an email account?
☐ Yes ☐ No
13. If yes, how often do you check it?
☐ Daily ☐ Weekly ☐ Infrequently

B. Students' Opinions on E-learning:

14. Have you ever taken an online course?
☐ Yes ☐ No
15. If yes, how many courses?
☐ 1 ☐ 2 ☐ 3 or more
16. Do you prefer studying using e-learning?
☐ Yes ☐ No
17. When studying using e-learning, what is your preferred study location?
☐ Home ☐ College (computer lab) ☐ Cyber cafe ☐ Other
18. Do you think communication with faculty members has increased during your e-learning experience?
☐ Strongly agree ☐ Agree ☐ Uncertain ☐ Disagree ☐ Strongly disagree
19. Do you think communication with your classmates has increased during your e-learning experience?
☐ Strongly agree ☐ Agree ☐ Uncertain ☐ Disagree ☐ Strongly disagree
20. Do you think that receiving feedback during e-learning will increase your motivation to study?
☐ Strongly agree ☐ Agree ☐ Uncertain ☐ Disagree ☐ Strongly disagree
21. How many hours can you allocate to studying using e-learning daily?

☐ 1-3 hours ☐ 4-6 hours ☐ I cannot specify
Thank you for your cooperation.

Annex 2: Focus group guide

DATE :
TIME: pm
PLACE: Medical Education Department, Faculty of Medicine, Suez Canal University
This Focus group is about the differences between planning e-learning experiences for undergraduate and postgraduate students .
This focus group is one of the data collection tools for research. This study aims to plan and implement online modules for undergraduate medical students at the Faculty of Medicine, Suez Canal University. As well as evaluation of these online modules and recommend guidelines to improve student's learning experiences and enhance learning outcomes.
We would like to hear your ideas and opinions about the differences between planning e-learning experiences for undergraduate and postgraduate students
You will be in a group with other members from members of the Medical Education Department
You can choose whether to participate or not in the focus group and stop at any time. Although the focus group will be tape-recorded, your responses will remain anonymous, and no names will be mentioned in the report.
Focus group questions:
Exploration Questions:

1- What are the differences between planning undergraduate and postgraduate e-learning experiences?
2- How does the content complexity differ between undergraduate and postgraduate e-learning experiences?
3- How does the teaching approach differ between undergraduate and postgraduate e-learning experiences?
4- How does planning assessment differ between undergraduate and postgraduate e-learning experiences?
5- What do you recommend to enhance students' engagement in undergraduate e-learning experiences based on your work in planning postgraduate e-learning experiences?
6- How does the mentor's role differ between undergraduate and postgraduate e-learning experience?
7- How does feedback differ between undergraduate and postgraduate e-learning experiences?
8- How does the flexibility of schedules differ between undergraduate and postgraduate e-learning experiences?
9- How do the technical skills differ between undergraduate and postgraduate students? Will that affect the e-learning experience?

Exit question:
Is there anything else you would like to say about planning undergraduate and postgraduate e-learning experiences?