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ASSESING STUDENT NEEDS FOR E-LEARNING MEDICAL TUTORIAL AT THE FACULTY OF MEDICINE UNIVERSITAS GUNADARMA

Rena Fuji Erin Setyawati[1], Rama Dian Syah[2], Sofian Zulenka[3], Bhakti Gunawan[4]
[1,2,3,4] Universitas Gunadarma

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Corresponding author*:
Rama Dian Syah

Contact:
rama_ds@staff.gunadarma.ac.id

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Abstract: Tutorials are widely employed in medical education as a form of problem-based learning, utilizing clinical cases to stimulate discussion. However, in practice, tutorial dynamics can influence the achievement of learning objectives. The integration of e-learning as a complementary media to face-to-face instruction offers a promising opportunity to optimize tutorial-based learning. This study aimed to assess medical students' needs regarding the incorporation of e-learning in tutorial sessions. A mixed-methods approach was conducted, combining quantitative descriptive analysis with qualitative narrative inquiry. The study sample comprised 99 medical students from the Faculty of Medicine, Universitas Gunadarma (FKUG), who met the predefined inclusion and exclusion criteria. Quantitative data were collected through a tutorial evaluation questionnaire utilizing a Likert scale, while qualitative insights were gathered via focus group discussions (FGDs) to explore students' specific e-learning requirements. Quantitative findings indicated that the tutorial learning process was rated as good to very good. Nevertheless, qualitative analysis revealed students' desires for enhanced e-learning features, including chat rooms, feedback mechanisms, and video conferencing capabilities. These findings suggested that while current tutorial sessions function effectively, their efficacy could be further enhanced through the integration of e-learning applications. In conclusion, the development of e-learning tutorial platforms tailored to medical education is imperative to address students' evolving needs and to augment the tutorial learning experience.
Keywords: Tutorial, E-Learning, Medical Education, Needs Analysis

INTRODUCTION

The paradigm of the current medical education curriculum has shifted toward a competency-based curriculum. Competency-based medical education aims to produce medical graduates who meet the needs of the healthcare system, both in improving the quality of healthcare services and enhancing patient care outcomes (Misra et al., 2021). Competency-based curricula in medical education adopt the SPICES approach, which includes student-centered, problem-based, integrated, community-based, elective, and systematic learning (Dent, 2014). This paradigm shift toward the SPICES approach necessitates adjustments in the teaching and learning process as an integral part of the curriculum.

One component of the SPICES approach that poses a particular challenge in medical education is problem-based learning (PBL). In medicine, problem-based learning is implemented through small-group discussions of case-based scenarios. Students' learning experiences in discussing medical case scenarios are commonly facilitated through tutorials (Meilania Saraswati et al., 2020). Tutorial-based learning provides opportunities for students to collaborate in discussions, stimulates the integration of medical knowledge, and supports constructive thinking in accordance with the context of the cases discussed (Nandi et al., 2000). Medical tutorials are conducted by providing students with a case scenario to be discussed in small groups under the guidance of a facilitator known as a tutor (Servant-Miklos, 2019). Various types of tutorials are used in medical education, one of the most widely applied being the seven-jump tutorial.

However, the implementation of problem-based learning through tutorials has not fully achieved optimal learning outcomes. Several dynamics that emerge during tutorials may reduce students' enthusiasm for

discussion, resulting in not all students within a group achieving the intended learning objectives (Dwi Fitri et al., 2013). These dynamics may include limited participation of group members due to student passivity, the emergence of tension between students and tutors or among students themselves, as well as suboptimal feedback from tutors due to time constraints (Bakri et al., 2018). Such dynamics need to be minimized and addressed through the use of learning media that can optimize the tutorial learning process. Medical education does not rely solely on face-to-face classroom interactions but also utilizes e-learning as a learning medium that can support the achievement of tutorial learning objectives. Learning approaches such as collaborative learning, project-based learning, and self-directed learning can be facilitated through e-learning platforms (Mahini et al., 2012). Several e-learning features, including discussion forums and assessment tools, are expected to help overcome the dynamics encountered in tutorial processes. Other e-learning features also enable students to exchange learning outcomes, thereby supporting the achievement of both individual and group learning objectives.

Considering the potential benefits of e-learning through its various features, there is an opportunity to develop e-learning–based tutorials as a medium to optimize tutorial learning in medical education (Tudor Car et al., 2019). A needs assessment of students in tutorial learning is therefore necessary to analyze student needs that can be optimized through e-learning. The results of this needs assessment are expected to serve as a foundation for designing a medical tutorial application (e-learning tutorial), thereby minimizing tutorial-related dynamics and enabling more optimal achievement of learning objectives.

RESEARCHMETHOD

Research Design and Participants

This study employed a mixed-methods design using a descriptive quantitative approach combined with qualitative narrative analysis to examine user characteristics and needs for the development of a Medical E-Learning Tutorial at the Faculty of Medicine, Gunadarma University. The study population consisted of medical students at Gunadarma University who participated in tutorial-based learning.

Population and Sample

The study sample comprised students from the Faculty of Medicine, Gunadarma University (FKUG) who met the defined inclusion and exclusion criteria. The inclusion criteria were medical students of Gunadarma University enrolled in semesters III to VII who participated in tutorial-based learning using the seven-jump method. The exclusion criteria included students who did not fully participate in the tutorial sessions.

The minimum sample size required for the quantitative data collection through questionnaires was 85 student respondents, as determined by sample size calculation. For qualitative data collection through focus group discussions (FGDs), purposive sampling was employed. FGD participants were selected based on the same inclusion and exclusion criteria, with three student representatives selected from each cohort.

Operational Definitions

The operational definition of FKUG tutorials refers to problem-based learning (PBL) implemented using the seven-jump method. Students were organized into small groups consisting of a maximum of ten students, guided by one tutor, and conducted in accordance with the FKUG tutorial handbook.

The operational definition of tutorial needs refers to students' needs related to seven-jump tutorial learning, encompassing the pre-tutorial phase, the tutorial implementation phase, and the post-tutorial phase.

Validity and Reliability of Data Collection Instruments

The research instruments were adapted from several studies on tutorial learning evaluation that had undergone validity testing. Content validity of the instruments was assessed by medical education experts from FKUG, particularly concerning the FGD guidelines and questionnaires used to analyze student needs.

Data Collection Techniques

The researchers developed a questionnaire to evaluate tutorial learning and validated its content in collaboration with medical education experts from FKUG. The questionnaire was then distributed to

respondents via Google Forms (questionnaire attached) after obtaining informed consent. Questionnaire data were processed using a Likert scale ranging from 1 to 4.
In addition, the researchers developed FGD guidelines and conducted FGDs with selected student representatives from each cohort. The FGDs were conducted using a cloud-based meeting platform and were audio-recorded with participants' consent.

Data Analysis Techniques
Questionnaire data were processed through four stages: editing, coding, data entry, and data cleaning. Respondent characteristics were analyzed descriptively. Questionnaire statements were analyzed using the Likert scale calculation formula to measure attitudes toward the evaluated objects, with scales ranging from very good to very poor. The Likert scale calculation formula used was:

$$Np\% = (n / N) \times 100\% \quad (1)$$

where Np% represents the percentage of the expected score, n is the total score obtained, and N is the maximum possible score. The interpretation categories were as follows: very good (76–100%), good (51–75%), poor (26–50%), and very poor (0–25%).

Qualitative data from the FGDs were processed through verbatim transcription followed by coding. The coded data were grouped into several categories to obtain an evaluation of the tutorial learning process. The results of this evaluation served as the basis for identifying user needs in the development of the Medical E-Learning Tutorial.

RESULTS AND DISCUSSION

Respondent Data Description
The data in this study were obtained from primary sources, namely questionnaires and focus group discussions (FGD). Based on the sample size calculation for the questionnaire data collection, a minimum of 85 respondents was required. However, a total of 99 respondents participated in the study. For the FGD, 9 participants were selected from those who completed the questionnaire and served as cohort representatives.

Results of the Questionnaire Analysis on Student Tutorial Needs
The questionnaire designed to analyze students' tutorial needs was divided into five sections: 1) tutorial scenario category, 2) group dynamics, 3) tutorial assessment, 4) tutor performance evaluation, and 5) self-directed and regulated learning. The tutorial scenario category was measured using an instrument consisting of 7 questions. The analysis of the tutorial scenarios presented in Table 1 shows that the tutorial scenarios used to date, based on the quantitative data, scored within a range of 80.30% to 86.11%, with a mean score of 82.22% for all respondents. These results indicate that the evaluation based on the tutorial scenario category falls within the "very good" category. The statement "Tutorial scenarios in the form of video, animation, or audio would help me better understand the scenario" received a score of 85.35%, which also places it in the "very good" category.

Table 1. Tutorial Scenario

No.	Question	Score
1	The tutorial scenario used so far aligns with my learning needs.	82.32%
2	The tutorial scenario provides a clinical case that doctors face.	86.11%
3	The tutorial scenario used so far stimulates group discussions.	78.79%
4	The tutorial scenario used so far motivates me to engage in self-directed learning.	80.30%
5	The tutorial scenario used so far stimulates me to think constructively about the case.	82.32%
6	The tutorial scenario in the form of text and images used so far is easy for me to understand.	80.30%
7	The tutorial scenario in the form of video,	85.35%

	animation, or audio will help me understand the scenario better.

The group dynamics category was measured using an instrument consisting of 6 questions, as shown in Table 2. The scores ranged from 53.79% to 91.16%, with a mean total score of 75.6% for all respondents. Therefore, it can be concluded that the evaluation result for the group dynamics category falls within the "good" category.

Table 2. Group Dynamics

No.	Question	Score
1	My group collaborates well during the tutorial.	77.27%
2	All of my group members actively participate in discussions and provide opinions.	71.46%
3	All of my group members contribute to completing the tutorial tasks.	86.11%
4	My group and I discuss and study together outside of the tutorial sessions.	74.75%
5	During my participation in the tutorial sessions, group members alternated as chairperson and secretary.	91.16%
6	I have experienced conflicts with group members due to the tutorial learning activities.	53.79%

The tutorial assessment category was measured using an instrument consisting of 5 questions, as shown in Table 3. The total scores ranged from 78.79% to 86.11%, with a mean total score of 79.60% for all respondents. Therefore, it can be concluded that the evaluation of the tutorial assessment falls within the "very good" category. The aspect of "the delivery of assessment results and feedback by the tutor regarding the tutorial learning process" received a score of 66.16%, indicating that it falls within the "good" category.

Table 3. Tutorial Assessment

No.	Question	Score
1	The tutorial logbook serves as a medium for me to reflect on my performance in the tutorial.	78.79%
2	The tutorial logbook serves as a medium for me to summarize my self-directed learning outcomes.	84.09%
3	The tutorial report serves as a medium for me to integrate the knowledge I gained during the tutorial learning process.	82.83%
4	I am aware of the assessment results and feedback from the tutor regarding my tutorial report, logbook, and performance during the discussions.	66.16%
5	The submission of the logbook and tutorial report through Google Drive makes it easier for me to submit my logbook and report.	86.11%

The tutor performance assessment category was measured using an instrument consisting of 7 questions (shown in Table 4). The total scores ranged from 70.79% to 84.74%, with a mean total score of 80.41% for all respondents. Therefore, it can be concluded that the evaluation of tutor performance in the tutorial falls within the "very good" category.

Table 4. Tutor Performance

No.	Question	Score
1	The tutor provides clues to students during the tutorial when discussions are not proceeding smoothly.	81.58%
2	The tutor stimulates less active students during the tutorial.	79.74%
3	The tutor stimulates students to understand the	82.63%

	mechanisms or theories related to the scenario.	
4	The tutor stimulates students to integrate key aspects of the scenario, including basic medicine, clinical, and psychosocial knowledge.	83.42%
5	The tutor stimulates students to independently set clear learning objectives during the fifth tutorial step.	84.74%
6	The tutor stimulates students to seek various literature sources for self-directed learning during the sixth tutorial step.	80.00%
7	The tutor provides constructive feedback on individual and group performance during the tutorial, including feedback on logbook entries and tutorial reports/papers.	70.79%

The self-directed and regulated learning category was measured using an instrument consisting of 6 questions, as shown in Table 5. The total scores ranged from 61.84% to 86.32%, with a mean total score of 76.01% for all respondents. Therefore, it can be concluded that the evaluation of self-directed and regulated learning in the tutorial falls within the "very good" category.

Table 5. Self Directed dan Regulated Learning

No.	**Question**	**Score**
1	I have enough time to engage in self-directed learning during step 6.	69.47%
2	I receive enough information about the expected outcomes of the learning process, so I can prepare for it well.	78.16%
3	I engage in self-reflection according to my performance in the tutorial.	79.21%
4	I regularly check the Google Drive folder to view the feedback and assessment results provided by the tutor.	61.84%
5	The learning objectives set in step 5 motivate me to study.	81.05%
6	Presenting my learning outcomes (in tutorial step 7) helps me gain additional information to enhance my knowledge.	86.32%

The results of the responses regarding the opinion on the need for e-learning support in tutorial learning activities can be seen in the diagram in Figure 1. The majority of student respondents (90.91%) agree that e-learning tutorial is necessary for tutorial-based learning activities at FKUG. Table 6 shows that students require several features to be provided in the e-learning tutorial.

Table 6. Results of Open-Ended Questions on E-Learning Tutorial

No.	Open-Ended Question	Answer
1	Features needed if tutorial learning activities at FKUG are supported by e-learning	1. Video and audio to represent the results of examinations in cases 2. E-logbook feature 3. Timer for schedule reminders 4. Connection with mind map creation feature 5. Connection with search engines for references and medical dictionaries 6. Assessment and evaluation of tutorials 7. Monitoring and enhancing discussion activity 8. Tutorial task submission 9. Discussion forum *10.* Video conference
2	If there is an e-learning tutorial application, what would be the technical process of combining the use of the tutorial application with	1. The 7-steps tutorial is implemented in the application. 2. Assessment and feedback for students are also provided in the application. 3. The tutorial process is integrated between in-class activities and the tutorial application. 4. A reference search feature for finding materials can be embedded

in-class tutorial activities?	in the application. 5. Task completion is facilitated within the tutorial application. 6. The application is accessible on smartphones. 7. A timer for the tutorial process is embedded in the tutorial application as a reminder. 8. Video conferencing for the tutorial process is facilitated within the tutorial application. 9. Tutorials are conducted offline, but meeting notes are recorded through the application. 10. A chat room for discussions between students and with tutors can be provided in the application. 11. Student activity in discussions is recorded and facilitated within the application. 12. Submission of tutorial tasks is facilitated within the application.

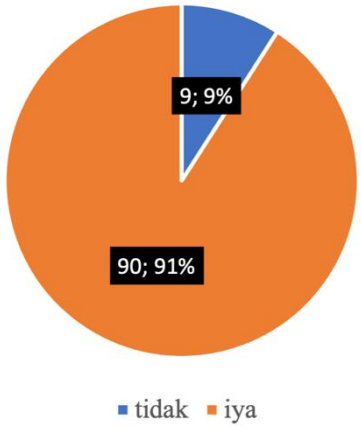

Figure 1. Diagram of Opinions on the Need for E-Learning Support in Tutorial Learning Activities

Analysis of Tutorial Needs Based on FGD with Students

The results of the focus group discussion (FGD) were analyzed and categorized to obtain a needs analysis. The FGD results indicate that students require feedback on their learning outcomes through tutorials, as shown in the following quotes:

"...In my opinion, it's important because if we don't receive feedback, we, as students, wouldn't know where we went wrong or what we need to improve..." (Code: PT9).
"...The problem is that most tutors do not provide feedback optimally..." (Code PT10).
Students need several features in the tutorial application, including note-taking, reference search, discussion features, chat, and the need for the application to be integrated with the face-to-face tutorial process in the classroom, as shown in the following quotes:
"...The feature is more about chatting..." (Code PT13).
"...Maybe it could also add access to learning resources..." (Code SU14).

The FGD results showed that students need the scenario to be presented in video or audio format, as well as features to interact with the group. Here is a quote about these feature needs:
"...For example, sounds like wheezing that cannot be heard in written scenarios. If it were in video or audio format, it could add more insights or a better understanding of the case..." (Code SU13).
"...If the case is made in video or audio format, it would feel more like a real case, like interacting directly with a patient..." (Code ST4).

The needs analysis derived from the questionnaire data indicates that all categories in the tutorial learning process fall within the "good" to "very good" categories. However, the FGD analysis identified several aspects of the tutorial process that need improvement. The group dynamics in the tutorial, with a "good" score, need to improve in the areas of active participation in discussions and collaboration outside tutorial sessions. Active participation and collaboration in tutorials are essential because tutorials are a learning method based on discussions and brainstorming to stimulate critical thinking and analytical skills when

solving cases (Kaur & Mahajan, 2023). This forms the basis for the need to provide an e-learning tutorial equipped with chat or video conference features to facilitate students' discussions outside of face-to-face classroom sessions.

Students need tutorial scenarios to be presented in video or audio formats. This aligns with research indicating that interactive video-based tutorial media can supplement students' learning (Wirasasmita & Putra, 2018). Case scenario modules or videos can help reinforce students' understanding of the cases being studied (Lusiyana, 2019). Based on these needs, the development of e-learning with video and audio features should be considered to support scenario delivery.

The questionnaire data analysis indicates that students do not have enough time for self-directed learning, thus requiring features that help them search for references for independent study. Self-directed learning is essential in tutorials as students need to study material they have not mastered based on the cases (Bokey et al., 2014). Self-directed learning is personal and tailored to each student's needs in the tutorial.

The needs analysis derived from the questionnaire data shows that students feel they do not know the tutorial assessment results and do not receive optimal feedback, indicating that students need feedback from tutors. Providing feedback is crucial in tutorials to give students an overview of their performance, which can then motivate them to improve their abilities to achieve the learning objectives in the tutorial (Meilania Saraswati et al., 2020). Providing feedback requires time, so tutors may not be able to offer feedback optimally. A potential solution is to provide assessment and feedback features in the e-learning tutorial. Providing feedback through e-learning can facilitate tutors, especially with limited time (McCann et al., 2010). One feature of e-learning, such as a chat room, can be used to facilitate feedback from tutors (Ellaway & Masters, 2008).

CONCLUSION

Based on the results of this study, it was found that the implementation of the tutorial learning has been carried out well, but several aspects can be optimized to achieve more optimal learning outcomes. Students require an e-learning tutorial to enhance the effectiveness of face-to-face tutorial learning. The provision of an e-learning tutorial is expected to accommodate student needs, such as the need to discuss outside of tutorial sessions and access assessment results and feedback from tutors. The needs analysis results in this study are expected to be developed into an e-learning tutorial application that includes several features in line with student needs.

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