

ORIGINAL ARTICLE

Tele Contextual Study Development: Unfolding Case Study Using E-KOM to Improve Analytical Thinking to Content UJIKOM Ners

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ABSTRACT

Introduction: Case-based learning is often used to maximize critical thinking skills by matching clinical cases with the body of knowledge. The use of applications that can be accessed anywhere can be an innovative learning media solution. Therefore an application called e-KOM was designed to support learning for nurse students in preparing for competency tests.

Objective: This study at developing e-KOM as a learning media in clinical learning with the Tele Contextual Study method: Unfolding Case Study.

Methods: The research design method used the Research and Development method. Based on Borg and Gall's stages, the researchers modified it according to the application's needs as a learning medium. They adapted the ADDIE development model, namely Analysis, Design, Development or Production or Implementation or Delivery and Evaluations. **Results:** This study showed that the application's feasibility level was based on validation by material and media experts. The average score of 4.4 is in the feasible category, while the user's assessment is at an average score of 85.76%, which means it is easy to use. **Conclusions:** e-KOM, as a nursing student learning application, is expected to improve student's learning outcomes and improve the statistical graduates in Nursing Competencies Test.

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1. Introduction

A competent nurse can be proven by passing UJIKOM. Student Competency Test (UJIKOM) in health workers, especially nursing, is part of the learning evaluation for students that has been carried out since 2013. This regulation is supported by Nursing Law No. 38 of 2014, which requires nursing students to take the National Competency Test at the end of their education process (Kariasa et al., 2019). This condition is a challenge, especially for private educational institutions, to meet national standards for students who have not exceeded the UJIKOM graduation score limit so that they have to repeat in the next UJIKOM wave. Increasing NCLEX-RN graduation is still a priority for nursing programs in the USA, as is UKNI graduation in Indonesia.

Nursing higher education institutions are required to provide maximum education for students who will face UJIKOM not only for first takers or those who take UJIKOM for the first time but especially for crackers who have done UJIKOM before. Data shows that in October 2018 the number of retakers reached approximately 24.8% (Kariasa et al., 2019). The number of students increasing every year is a challenge for educational institutions to continue improving education

quality and innovating appropriate learning methods for retakers. One of the learning methods that can be used is to maximize students' critical thinking skills related to clinical cases. This situation relates to the form of the question, which is related to clinical decision-making, clinical procedures, and the reasons for clinical action.

Case-based learning is a learning method often used to maximize critical thinking skills by matching clinical cases with the body of knowledge. One of the learning methods that can be used is a modification of case-based learning, namely contextual study using unfolding circumstances. This situation is expected to improve clinical performance, attitudes, and teamwork (Mclean, 2016). Hong and Yu (2016) states that critical thinking skills in nursing include analyzing, applying standards, discriminating, information seeking, logical reasoning, predicting, and transforming. Being able to study a case is a crucial component of critical thinking. Nursing students need analytical thinking to be able to determine clinical issues that occur in the field. It takes the role of the lecturer as a supervisor to be able to hone analytical thinking and increase student learning motivation. The results showed that the lecturer's teaching students influenced 86 respondents (59.3%) (Anugrahawati & Hartati, 2017).

Students need analytical thinking skills to carry out the competency test (UJIKOM), the main requirement for obtaining a Nurses Registration Certificate (STR). STR is the main requirement in getting a job in a clinical environment. Data shows that in October 2018, the number of crackers reached approximately 24.8% (Kariasa et al., 2019). The ability to analyze methodological skills during the education period will impact barriers to work performance and further career development (Bratajaya & Ernawati, 2020). In addition, student learning styles will determine Ujikom's graduation (Lisum & Sianturi, 2020). The results showed a significant relationship between learning style and passing or success in the NCLEX-RN exam (Low, 2017). The number of students who always increase every year is a challenge for educational institutions constantly to improve the quality of education and innovate appropriate learning methods for students.

The existence of technological developments and demands for patient safety in the realm of Nursing requires nurses to have qualified competence (Missen et al., 2014). Revolution 4.0 focuses on the use of technology in everyday life. Likewise with the learning method for UJIKOM crackers often has problems following the debriefing that educational institutions have prepared. This condition underlies the need for an innovative learning method in digitization to be easily accessible to cracker students. Learning innovation in the form of using Android-based media is the leading choice because of the acceptability of its use.

The use of applications that can be accessed anywhere can be an innovative learning media solution. Therefore, an application called e-KOM was designed to support learning for nursing students in preparing for competency tests. The e-KOM application is an online-based learning system connected directly to the internet that facilitates the teaching and learning process. The e-KOM can later be accessed via a laptop (desktop) or Android Smartphone with a social media application system. In the application system, there are competency test practice questions in the form of a try-out so that users get competency test experience so that this will be good preparation for the user. The e-KOM has two types of accounts, one specifically for lecturers and one for students.

The researcher hopes that the e-KOM application and facilitating the teaching and learning process can also increase the passing rate of the nurse competency test in which there is an evaluation of nurses' critical thinking knowledge. This condition is in line with the results of the study, which stated that the smartphone-based education group showed significantly higher skill scores ($t = 4.774$, $p < 0.001$) and self-confidence in performance ($t = 2.888$, $p = 0.005$) than the control group. The knowledge score ($t = 0.886$, $p = 0.379$) and satisfaction with the learning method ($t = 0.168$, $p = 0.867$) for the experimental group was higher than the control group. This study shows that smartphone-based education can be an effective method for nursing education

(Kim et al., 2017). Therefore, researchers are interested in developing an e-Kom application to improve the analytical thinking of UJIKOM Nurses.

2. Research methods

The research design uses the Research and Development method. This method is used to produce specific products and test the effectiveness of these products (Sugiyono, 2016). The steps in this research consist of stages in Research and Development, as shown in Figure 1.

Development Procedure

Based on the stages proposed by Borg and Gall, the researcher modifies it according to application needs as a learning medium and adapts the ADDIE development model, namely Analysis, Design, Development or Production or Implementation or Delivery and Evaluations. (Aldoobie, 2015):

a. Analysis stage

At this stage, the researcher conducted interviews with the Competency Test Section regarding the need for learning media and program evaluation for students, especially crackers who need distance learning media.

b. Design Stage

At this stage, product design is carried out in making media design (storyboard), determining the material, making logos, making questions, and discussing case questions.

c. Development Stage

At this stage, product creation activities, media and material expert validation, practitioner validation are carried out

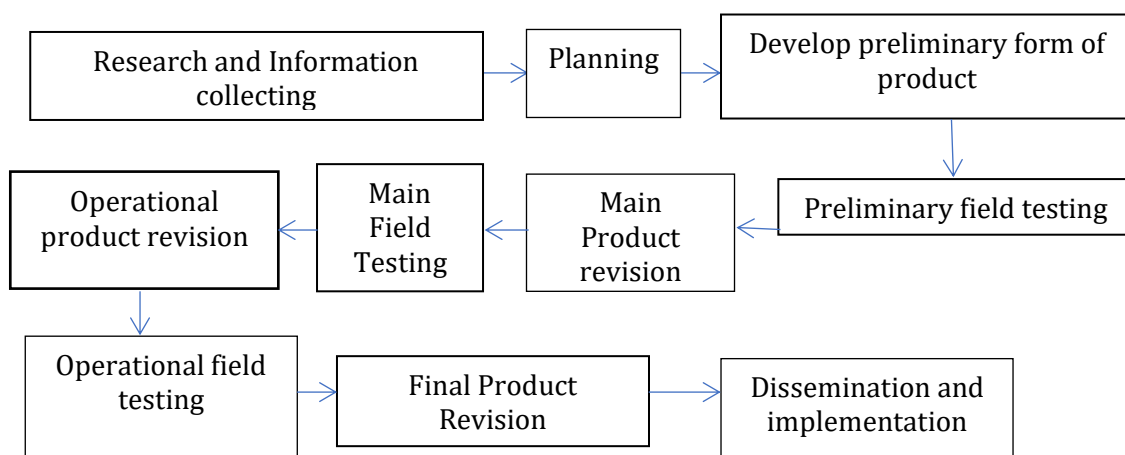


Figure 1. Research and Development Step

d. Implementation Stage

Collecting quantitative data as part of the initial field trial using the USE instrument consisting of aspects of learnability, efficiency, memorability, errors, satisfaction composed of 13 questions. Data about the dimensions of the variables analyzed in this study were addressed to respondents using a scale of 1 to 5 to obtain ordinal data.

3. Results and Discussion

The implementation of the entire procedure for developing this research in detail can be seen in the following description: (a) Analysis Stage; at this stage, the researcher analyzes the needs and competencies and instructional. A needs analysis was obtained by conducting structured interviews with the STIKep PPNI Jabar Competency Test Section. The interview results showed that no electronic or blended learning media could be accessed remotely for students who face the competency test. The Competency Analysis used by the researcher is based on the blueprint contained in SINERSI; (b) Design Stage; the design stage is the media design stage which includes making an overall media design (storyboard), compiling materials, questions and answers, making logos, backgrounds, images, and buttons to be used.

Media Creation

The basis for developing media creation realizes the initial prototype design and User Interface Design, an interactive design for users at this stage of making and designing using Android Studio software Version 4.3. A basic review of using this software is because it is free and easy to understand, along with the initial page work on the software makes it easy to use this software—terms of schema and interactive in making android-based applications.

The initial steps are to install the android studio software on the official website and then the software installation process. This application uses basic OOP (Object Oriented Program) programming with proficient skills in programming using Java, Kotlin, Dart, and PHP languages as a supporter in designing CRUD database systems, Live Image, Database Analysis, User Interface, Widget, Layout, Back-up. End, Front-end, and the required mechanism according to the universal android application and flexibility in its use.

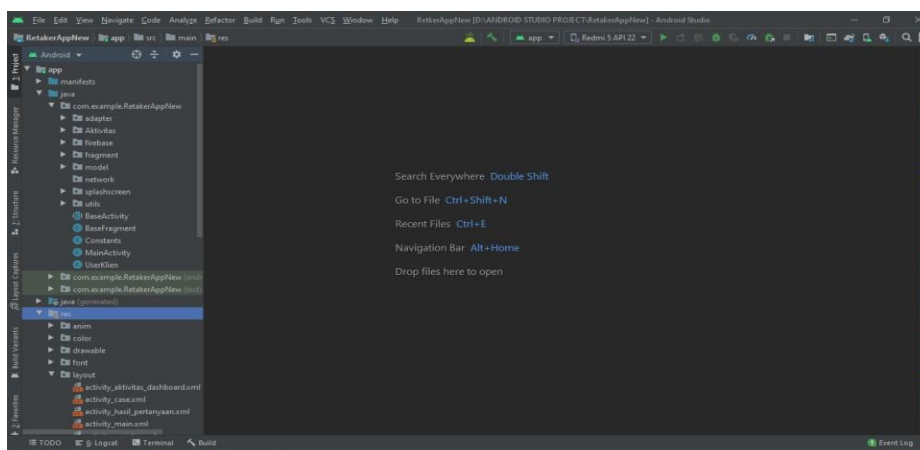


Figure 2. Initial View of Android Studio 4.3

Features System Management

a. Register

On the register page, the user is first required to register on the registration form. This step aims to gain access to the login page, all inputted data will be stored in the database which is automatically recorded in the database safely without anyone knowing and for authorization—login to the application.

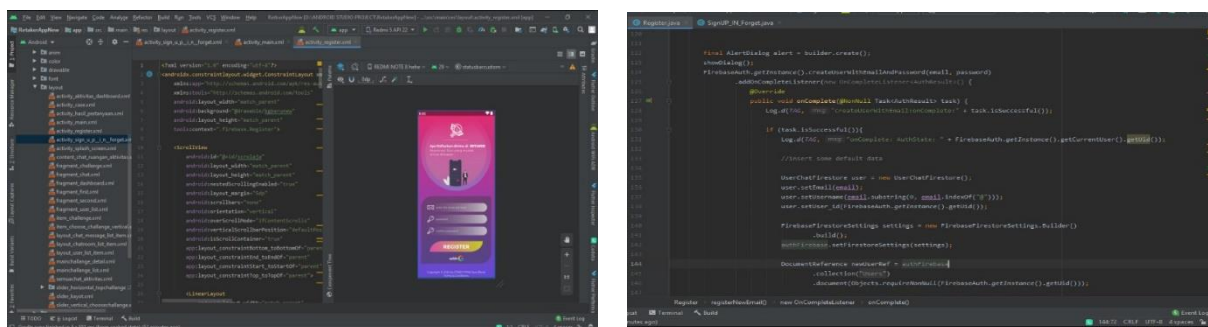


Figure 3. Display of the Register Page .xml and Back-end code from the register to the database page

b. Sign in

This view presents a user interface design layout that is easy to access and easy to understand in terms of design. This page requires each user to input data that has been registered on the register page so that when logging in, it will be automatically validated by the database for entry authorization. into the application

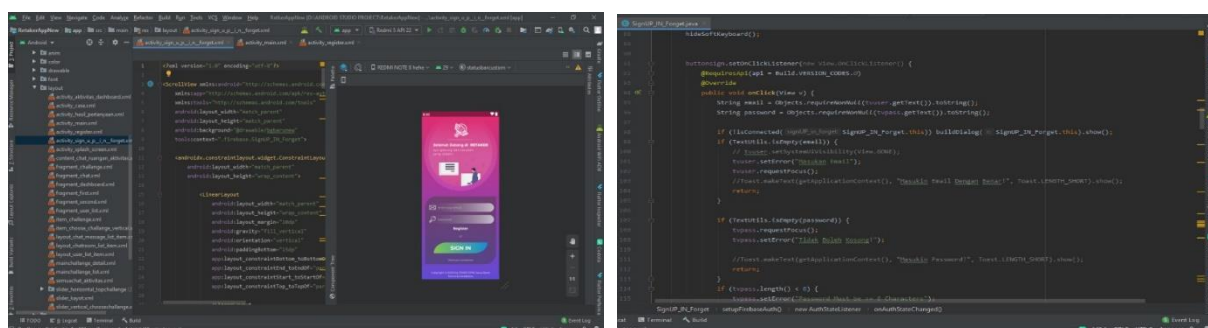


Figure 4. Display Sign in Page .xml and Back-end code from the sign-in page

c. In-App Cluster

On this page, users who have been authorized and successfully logged in can select the appropriate question cluster that has been inputted from the database and choose the types of questions in this cluster. Many question clusters can be input according to the field, the database strictly controls the number that can be created without limits, and the user is not able to delete except certain authorized accounts, and can be edited or deleted on a system controlled by the connect to app database.

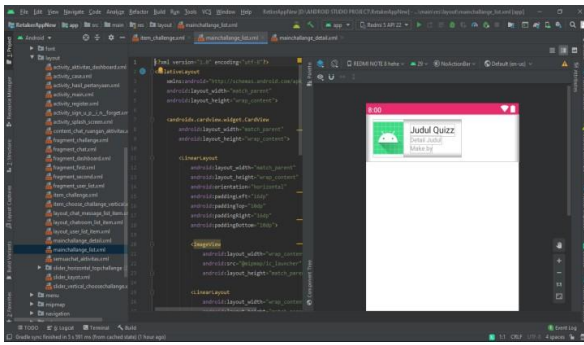
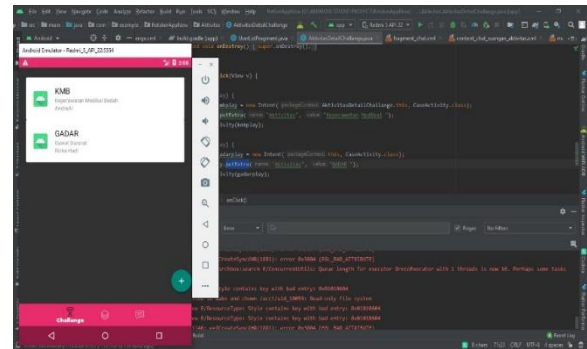


Figure 5. (a) Cluster View .xml;



(b) Cluster View .xml on Android emulator

d. Control Database Admin

The use of databases plays an essential role in controlling and utilizing the structure of an application. Android Studio 4.3 uses an authenticated Firebase Auth database system with apps, google, and the database itself. Database management can be done by entering the Repository Library from a database obtained from Google by inputting basic programming on Android Studio 4.3; this library is only to assist in the programming process in Build Java from the required applications.

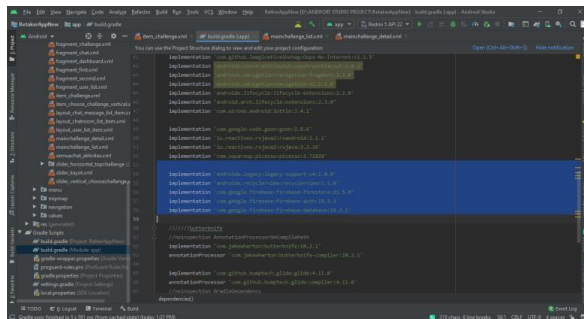


Figure 6. Repository View Figure

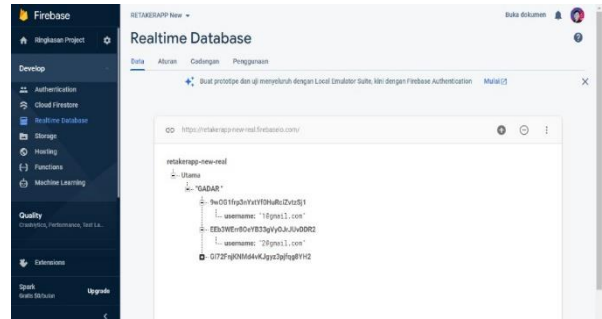


Figure 7. Firebase Database "Cluster" View Library Database and Email with authenticated users

e. Chat Room Layout

Each user can have an active discussion according to the title field in the group created by the database admin. Sharing sessions on cases or discussion topics according to topics in the next plan in this development process will be added chat features that can fully assist in conducting

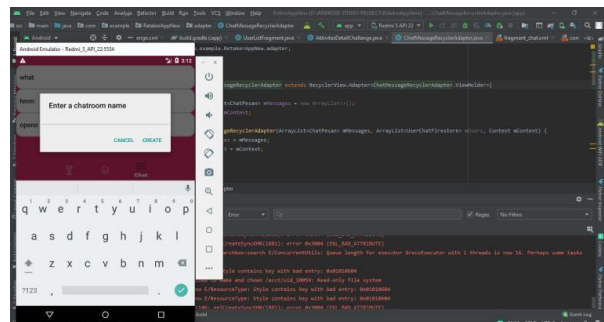
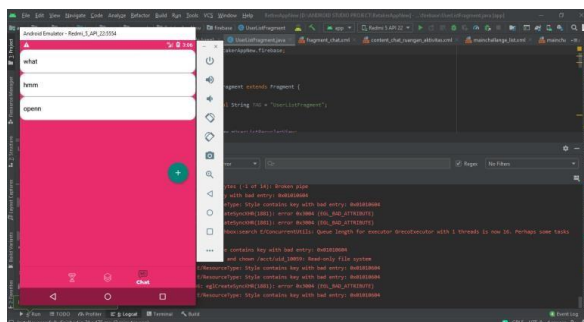


Figure 8. (a) chatroom view based on the created topic cluster; (b) the emulator view creates a chatroom by a user who has admin privileges sharing sessions in chat as an effective method of messaging and conveying information in real time.

3.3 Development Stage

At the development stage, besides making the application, validation of media experts, material experts, and students as users were also carried out. The purpose of the media and material expert validation is to assess whether the developed media is feasible for testing. Measurement using a questionnaire (Questionnaire). Based on Figure 9, the evaluation of the e-KOM application gets an average rating of 4.2, which is in the category suitable for use as a learning medium for Ners students in facing competency tests. Based on Figure 10, it is known that the evaluation of the e-KOM application by material experts gets an average value of 4.4, meaning that the media is suitable for use as learning media.

3.4 Implementation Phase

At this stage, the researcher conducted a trial using the application on 34 students as users. Students are given a task to open the application and try the Quiz menu to fill out emergency questions. Then students are given a questionnaire to measure the usability of e-KOM (Table 1.)

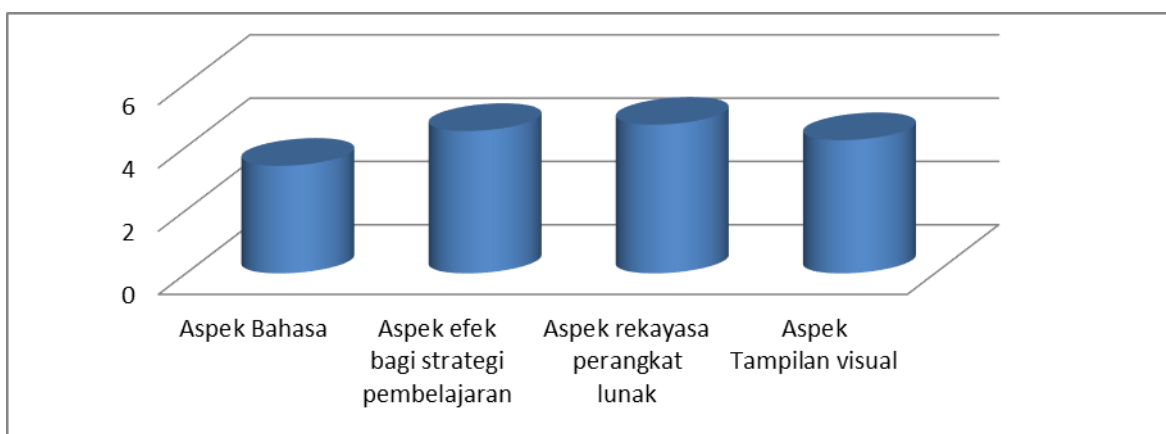


Figure 9. Bar Diagram of Media Expert Validation results

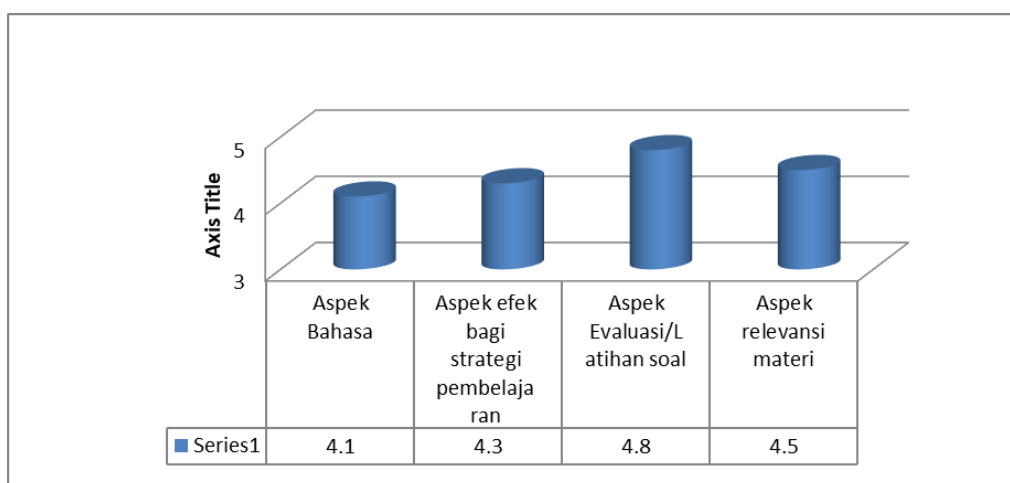


Figure 10. Bar Diagram of Material Expert Validation Results

Table 1 shows the usability of using online platforms based on: (a) Learnability; The use of online platforms shows a value of 70.6 percent, which means that some respondents consider the application to be easy to use in completing basic tasks when they first see or deal with the existing system, (b) Efficiency, the use of the online platform shows a value of 91.2 percent, which means that respondents think the application can be used quickly in completing the existing tasks when they first learned the system, (c) Memorability of using online platforms shows a value of 100 percent, which means that respondents consider the application to be easy to use again after not using it for a while; (d) Errors the use of online platforms shows a value of 67% which means that few respondents experience errors or errors made by users and how easily they can overcome them; (e) Satisfaction shows a value of 100 percent, means that all respondents are satisfied in using the system that has been created.

Table 1. Distribution of Useability of the Use of e-KOM

Variable	Frequency (n)	Percentage(%)
Learnability		
Non-Easy	10	29.4
Easy	24	70.6
Efficiency		
Incorrect	3	8.8
Correct	31	91.2
Memorability		
Non-Memorable	0	0
Memorable	34	100
Errors		
Major Errors	11	32.4
Minor Errors	23	67.6
Satisfaction		
negative	0	0
Positive	34	100

4. Conclusion

The development of the e-KOM application as a learning medium from the case-based learning method that strongly stimulates students' critical thinking has been carried out through various stages using the ADDIE model, namely analysis, design, development, implementation, and evaluation. The evaluation stage has not been carried out in research because it requires a different process and application improvement, especially in updating the UKOM questions. Media and material expert assessments show decent results, which means the application is ready to be tested. The implementation stage is done by measuring the usability of the application. The results show that students can use the application in terms of ease of use of the application. So it is hoped that the application will improve learning outcomes.

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