

Research Article

Designing an Android-based Nursing Theory Reminder of Educational Game Application (GEMPITA)

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Nursing theory is an important thing to learn for nursing students. Nursing theory can be studied by students in philosophy and nursing theory courses. It can be seen from the results of the final evaluation that students obtained sufficient scores of 49%. This has an impact on the student achievement index and student professionalism in carrying out nursing practice, both in clinical practice and later when they have worked in nursing services. The learning method used by lecturers is to form groups and give assignments to students in the form of papers and presentation in the form of powerpoints in front of the class. Therefore, researchers try to make a learning innovation in the form of an android-based educational game. This educational game is called the nursing theory reminder education game (GEmPITA). This study aimed to design an android-based GEmPITA as an innovation for students' learning media in philosophy and nursing theory courses. *Mobile application development lifecycle model (MADLC)* with 7 stages including the rapid application development method, with 3 stages, namely requirement planning, design system, and implementation. The results of this study are in the form of a prototype of an android-based game application that will be used by nursing students. By making the GEmPITA, an interactive educational game, students can learn nursing knowledge in a more fun way and make learning nursing science easier.

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1. INTRODUCTION

Nursing is a comprehensive professional health service aimed at all human beings both in good health and in disease. Nursing services are an important part of health care. Quality nursing services are based on the application of nursing theory in the implementation of nursing care. Nursing theory is not only important for the discipline but also important as the basis of professional nursing practice (1).

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Nursing theory is a common thread in nursing education (2). Nursing students who are aspiring professional nurses need to understand the concepts and theories of nursing as a basis of knowledge that can be applied in clinical practice, leadership roles, research, and development of the nursing profession (3). Nursing students can learn these nursing concepts and theories in the philosophy and theory of nursing courses.

Based on the researcher's experience and observation while teaching at the Undergraduate Nursing Study Program at STIKes Payung Negeri Pekanbaru Riau, it was found that there were still many students who are not optimal in attending lectures on philosophy and nursing theory. This can be seen from the results of the final evaluation where students obtained sufficient scores of 49%. This will have an impact on the student achievement index because the credit load of this course is 3 credits of theory. In addition to having an impact on learning outcomes, this will also have an impact on student professionalism in practicing nursing, both during clinical practice and later when they have worked in the field of nursing services. The quality of nursing care may improve from the application of nursing theory (4). As a result of interviews with students, they said it was difficult to remember and understand the concepts and theories of nursing from each of the nursing experts/figures because there were a lot of theories and concepts that they had to understand.

The learning method used based on the observations of researchers is that students do assignments in groups in the form of papers and present them in front of the class in the form of power points, and at the end of the lecture the lecturer explains the material that has not been delivered by the presenting group. An educator must have innovation and creativity in applying learning methods and solving learning problems experienced by students. Therefore, researchers are trying to make learning innovations to solve problems in the form of android-based educational games. This educational game is called Nursing Theory Reminder Game (GEmPITA). Educational games can allow learners to experiment with solving problems and making decisions freely in a learning environment (5, 6). Educational games can also improve the knowledge and attitudes of learners, and improve the learning process and learning outcomes. As much as 47.8% of students' knowledge increases after using educational games. In addition, educational games can provide practical benefits for educators (7-9). This study aimed to design an android-based nursing theory reminder educational game application (GEmPITA) and to find out whether there is an increase in students' knowledge and students' learning outcomes in philosophy and nursing theory courses after using the GEmPITA application. This research is very necessary considering that the students are prospective professional nurses who will provide nursing services in the form of nursing care to humans. Thus, an understanding related to nursing theory is the basis and key

to carrying out professional nursing actions. The focus area of this research is the social humanities of education with educational themes and also topics of education and learning technology.

2. MATERIALS AND METHODS

This type of research is Research and Development (R&D) research using the RAD or (*Rapid Application Development*) method design. This research was conducted at STIKes Payung Negeri Pekanbaru, with the population being all students of the S1 nursing study program who took courses in philosophy and nursing theory. This research was conducted in January – December 2022.

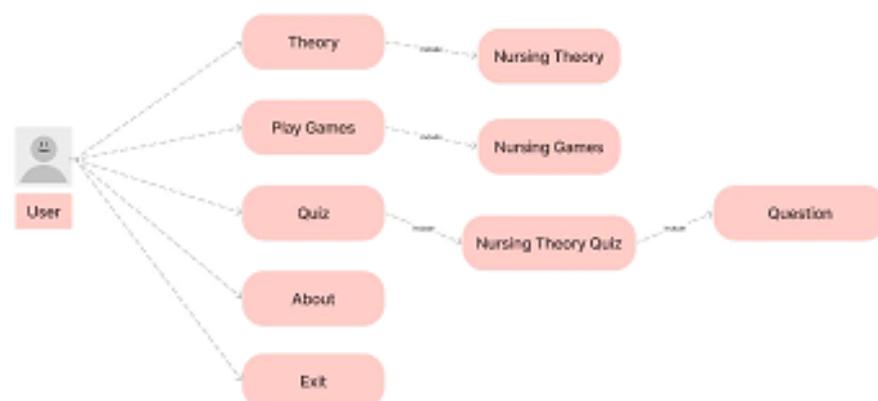
The research method used in this study was the *Mobile Application Development Lifecycle Model* (MADLC) method. This method is a method commonly used in making a game application (1). The *Mobile Application Development Lifecycle Model* (MADLC) method has 7 stages as follows:

1. **Identification phase:** this phase has the main objective of getting new ideas by brainstorming. The resulting idea is visualized in the form of a functional diagram of software needs. In this study, the resulting idea was depicted in the form of an uml diagram, namely in the form of a use case diagram.
2. **Design phase:** this phase translates the initial idea into a storyboard design for user interface interaction. The design results will be used to do the coding. In this study, the design made was in the form of an application user interface design based on the functional needs of the software as depicted on the use case diagram.
3. **Development phase:** This phase is carried out coding based on the results of the design made in the design phase. In this study, coding was carried out referring to the results of interface design in the previous phase using visual studio for android.
4. **Prototyping phase:** This phase is carried out as an analysis of each coding result in the form of a functional prototype. In this study, prototypes were tested and sent to stakeholders to get feedback. After the feedback was received, improvements were made according to the feedback provided. When the second prototype was ready, it was integrated with the first prototype and then tested. Then, they were sent to stakeholders. The process was carried out continuously until the completion of the application.
5. **Testing Phase:** this phase is one of the most important stages of any software development. Testing can be carried out on emulators/simulators or real devices.

In this study, software testing was carried out on real devices in the form of installing software on mobile devices with the android operating system with several versions of Android. In addition, tests were also carried out to see the palpable display of the software on the screen sizes of mobile devices.

6. **Deployment phase:** this phase is the final stage of the development process. After the test is complete and the last feedback is obtained from stakeholders, the application is ready to be deployed by packaging into the installer file based on the desired operating system. In this study, it was conducted specifically for mobile devices with an android operating system.
7. **Maintenance phase:** maintenance is the final stage of the development process. Maintenance is a continuous process. In this study, maintenance was carried out based on input provided by software users, if there is input, improvements will be made.

The writer made a system design using UML (*Unified Modelling Language*) which was depicted through designing diagrams such as *Use Case Diagrams*, along with use case diagrams from this Gempita application:



In the *use case* picture above, it can be explained that when a user is using the Gempita educational game application, it will be presented with several menus on the start page, namely the material menu, play games menu, quiz menu, about menu, and exit menu. In the material menu, a user can learn material about nursing theory. Furthermore, on the play games menu, users can play simple games about nursing. In the next menu, namely the quiz menu, users can test their memory of the material that has been read. The quiz consists of 10 questions and is displayed randomly. Then, the about menu contains information about the Gempita educational game application and the exit menu to close the application.

3. RESULTS

The results of this study are in the form of a prototype of an android-based game application that will be used by nursing students. The purpose of *the prototype* is to develop a model or product design into a final product that can meet user demands. In the product development process, users can take part in the product development process by evaluating and providing feedback. The feedback provided can be used as a reference in product development. In addition, the use of prototypes can bring up new ideas that can be developed into a feature to complement the product.

1. *Splash Screen* Prototype

The *Splash Screen* prototype page is the page that appears first when the user starts running the application.



Figure 1: *Splash Screen* Prototype.

2. Main Menu Prototype

The prototype of the main menu is also called the Home Page, which is a page that *appears after the splash screen*. This page has five menus, namely the material menu, quiz menu, play games menu, about menu, and exit menu.

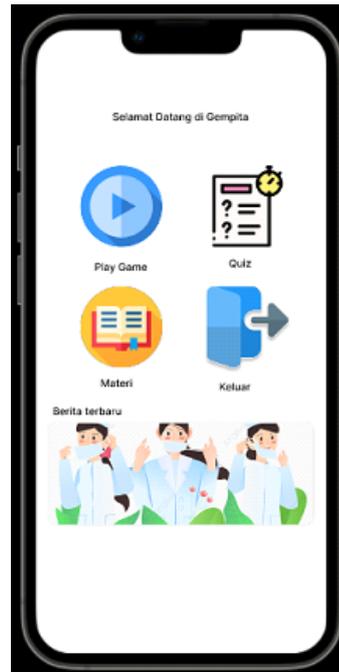


Figure 2: Main Menu Prototype.

3. Material menu prototype

The prototype of the material menu is the page that appears after the material page is clicked. In this menu, users can read material about nursing theory. Here are the results of the prototype design carried out.



Figure 3: Material Menu Prototype.

4. Quiz Menu Prototype

This prototype is a page that appears when the user selects the quiz menu. On this page, users can answer the questions that have been provided in the application. Here is the prototype design.



Figure 4: Quiz Menu Prototype.

5. Score Prototype

This prototype is a page that appears when the user has completed all the questions on the quiz menu, in addition to displaying the score, a level of understanding of the questions that have been done will also be displayed.

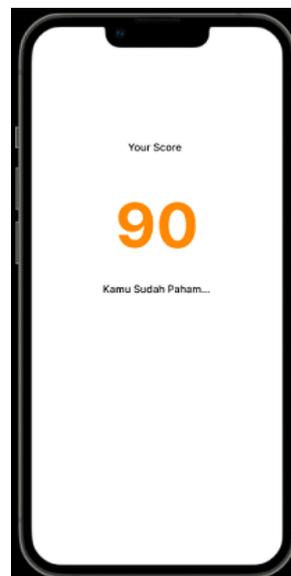


Figure 5

4. DISCUSSION

Nursing theory is a set of ideas, definitions, relationships and expectations and suggestions derived from nursing models that aim to describe and explain nursing phenomena and help create knowledge for future nursing developments and can assist nurses in deciding nursing actions. Nursing theory is key to the development of nursing science and is the basis for compiling a concept model in nursing that can be applied by nurses in nursing practice and determining a model of nursing practice based on beliefs and values (11,12). Nursing theory is a thread in nursing education (2). Nursing students who are aspiring professional nurses need to understand the concepts and theories of nursing as a basis of knowledge that can then be applied in clinical practice, leadership roles, research, and development of the nursing profession (3). Mahasiswa is a prospective professional nurse who will provide nursing services in the form of nursing care to humans where understanding related to nursing theory is the basis and key to doing professional nursing actions.

This educational game is a game that displays the materials that are learned and viewed every day. This game aims to help make it easier for students to learn. As a result of the researchers' observations, *smartphone* users will take a lot of time just to play games and social media. The tendency to attract *smartphones* instead of books can be anticipated with learning media that use smartphones (10). The use of this educational game application is by using a smartphone because this application can be used anytime and anywhere/portable (11). With this educational game application, it will make it easier for students to learn because this game presents simple and interesting material to make it easy for students to learn (12, 13). By creating an educational game that reminds them of interesting nursing theory, it can make it easier for students to learn and increase students interest in learning. Thus, it can be alternative learning to anticipate the feelings of students who are bored and lazy when studying nursing theory. The game is equipped with an attractive appearance that includes music and the presence of audiovisuals that can be an attraction for students to learn by using this game(16).

5. CONCLUSION

By making the GEmPITA, an interactive educational game, students can learn nursing knowledge in a more fun way and make learning nursing science easier.

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