

Design Thinking Model in Clever Think Application Design

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ABSTRACT

Purpose: Clever Think is one of the alternatives in the learning model. This study aims to examine the technique of designing clever think applications quickly, easily, and cheaply according to user needs.. the model can significantly reduce the weaknesses in making Clever Think applications.

Design/methodology/approach: This research is a qualitative research because it describes the implementation stages of the Clever. In this research, the software that will be studied will use the System Design Model method that can engineer smartphone-based software easily and quickly

Findings: The results of this study also show that this model can formulate ideas successfully and creatively to build learning applications.

Research limitations/implications: This research is limited to learning applications only

Practical implications: This research can be applied by lecturers, teachers as a learning solution for students during the pandemic

Originality/value: This Paper is Original

Paper type: Research paper

Keyword: Design Thinking; e-commerce, online tutoring

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I. INTRODUCTION

Clever think become an alternative in the learning model. Mobile learning uses a smartphone as the basis for running applications so that learning content can be accessed using a smartphone (Behar-Horenstein & Niu, 2011). Data from the Ministry of Communication and Information Technology in the last 3 years shows a significant increase in the number of users. In 2014, the number of internet users in Indonesia reached 82 million people. It increased in 2016 to reach 132.7 million people and in 2017 it reached 143.26 million people. The data also shows that the most productive age of internet users in Indonesia is currently used by students who reach 89.7%. Data on smartphone users in Indonesia also shows a significant increase, reaching 63.1 million people (47.6%) of the Indonesian population. Mobile devices such as smartphones and tablet PCs can be used to access media. Clever think has increased in terms of the types of internet content accessed in education, reaching 124.4 million people, equivalent to 93.8% (Björgvinsson et al., 2012).

This shows that mobile phones have become the most frequently used devices by students to access learning content. So smartphone is the best choice for mobile learning applications. It is very important to build a smartphone-based learning application design so that it becomes mobile learning. Mobile learning can help users access learning with an easy-to-use, easy-to-learn, simple and useful interface (Black et al., 2019). Clever think is the development of online tutoring by taking into account the advantages of more mobile resources, fast and powerful search capabilities because it uses a more flexible mobile telecommunications network, rich interactions, strong support for effective learning, and performance-based assessment. Mobile devices such as phones and tablet PCs can be used to access mobile learning media. Mobile learning (M-learning) allows more opportunities to interact indirectly between users (students) and teachers (lecturers). M-learning is also a

learning medium where users (students) can access learning materials anywhere and anytime so as to increase user attention to learning materials and encourage learning motivation.

Mobile Learning is based on smartphones and runs applications that allow you to access learning content using your smartphone. Many mobile learning applications have been created, but only a few are used because their formats and features are not attractive to users. In particular, designing mobile learning applications is very important, considering that smartphones still have limitations in running many applications. It aims to identify techniques for designing intelligent thinking applications quickly, easily, and aims to identify techniques for designing intelligent thinking applications quickly, easily, and aims to identify according to user needs. (Brown & Wyatt, 2010).

II. METHODOLOGY

This research is a qualitative research because it describes the implementation stages in the Clever Think application using a design approach. The method used in this research is a design approach which is a fast design paradigm to build applications effectively and efficiently. Clever Thinking is one of the choices of learning models. This application can run applications based on your smartphone and access learning content on your smartphone. The results of this study indicate that the design using an information system modeling approach makes it possible to design smartphone-based software quickly and easily. This template is meant to make crash apps smart and can drastically reduce the vulnerabilities, and the results of this study indicate that this template is successful and creative in generating mobile learning application ideas that you can make. In short, this template is very commonly used to create complex and out-of-the-box crash applications with ease.

The stages in design thinking as shown in Figure 1. consist of five stages, namely empathize, define, ideate, prototype and test. (Clark & Smith, 2008)



Figure 1. Stages of Design Thinking

- a. *Empathize*. At this stage, information search and empathic understanding are carried out for potential users who have the stages carried out, namely observe, engage and immerse (Cooper et al., 2009). At the observe stage, online questionnaires are distributed and information is extracted related to similar applications that have developed. Meanwhile, at the engage and immerse stage, it is carried out by conducting semi-structured interviews with potential users as the target market. This stage will produce a collection of information and will be processed at a later stage as a basic reference for future application development.
- b. *Define*. At this stage, analysis and synthesis of information that has been collected in the previous stage is carried out from the previous stage in the form of insights related to needs, desires and in-depth information on similar applications that have developed as competitors or competitors. The information that has been processed will produce a problem statement that refers to determining what kind of concept ideas and business models should be used to build *clever think* as an application. The problem statement comes from information that has been processed by an analysis and synthesis process so as to produce a list of problems that are considered important as a reference for building clever think ideas and initial concepts. Several problem statements determined at this stage will be used to build ideas and concepts related to services, functions and other elements for working as a startup (Henriksen et al., 2017).
- c. *Ideate*. At this stage, a solution is determined for the problem statement that has been determined at the define stage. At this stage, out of the box thinking is carried out to think about solutions to problems. Determination of solutions to several problem statements is carried out together with team members as the development team and co-founders who will be developed as a startup. Determination of the solution is determined by the ideation technique, namely brainstorming. This stage will produce several solutions in the form of initial ideas and concepts that are used to develop clever think as an application based on the information obtained and then processed in the previous stages (empathize and define). (Hidayat, 2018).

- d. **Prototype** At this stage, a prototype is made as a visual form to investigate the solution to the problem specified in the next stage. Making prototypes will make it easier to get views from potential users about how users will behave and interact with the product to be developed *prototype* based on the solution determined at the ideate stage which aims to outline the use process and appearance of the application to be developed. As for at this stage the prototype is made using the mokingbot.in tools so that the results are in the form of an application prototype that allows interaction between the prototype and potential users as the target market. (Hsieh & Shannon, 2005).
- e. **Test** At this stage, the idea is tested through interviews and prototypes. At this stage, testing is carried out repeatedly to obtain results in order to redefine one or more problems to refine solutions according to user needs. At the testing or testing stage, testing is carried out to internal parties, namely team members and external parties, namely one or a group of people who are experts in the field of startup development through the pitching process and to potential users as market targets through the interview process and interaction with the prototype. At this stage, feedback will be obtained on business ideas and concepts as well as a prototype for the clever think application that will be developed. (Hussain et al., 2020)

III. RESULTS AND DISCUSSION

Based on the research that has been done, the discussion using design thinking is as follows:

1. Empathy

Based on the discussion, several important problems were found during the learning process. That's the emergence of applications like intelligent thinking that are very confusing.

If the process of sending documents continues to use Flash, it can slow down the training and learning process because you have to copy them one by one. Shipping and collection of crafts or printing can still be expensive. Learning apps like this one will come in handy when you want to solve the above problems. Many learning applications have been created, but only a few people are still using them because of the discovery of several obstacles and obstacles.

Researchers can interview stakeholders, such as instructors/lecturers and students, to identify common bottlenecks and problems when using mobile learning apps, and use them as benchmarks to create useful apps. Common problems are in the table below.

Table 1. Learning application problems

<i>Learning App Problem</i>		
<i>Display is difficult to understand and boring</i>	<i>Not compatible with some mobile phones because memory usage is too large</i>	<i>Show and should be made simpler</i>

User observations show that where there is no instructor, there are still students who are silent because the instructor is outside the area and there is no material or homework. Others come to school to get textbooks. This can interfere with the learning process. Teachers also do not provide digital learning materials, so learning will be disrupted if they do not meet in person. Then you need a smart application that accelerates the learning process, implements it, and can be accessed anytime, anywhere with a simple display.

2. Define

As a result of this research, we found that user experience requires fast and accurate troubleshooting when using intelligent thinking apps. The researchers started by gathering and identifying user needs when using mobile learning. These requirements are shown in the following figure. User requirements are arranged in a systematic and structured manner. Then test the requirements map to create the design your users need. User requirements are summarized using the sticky notes tool as shown below: User requirements can be indented with the need for chat/live messaging features, offline accessible learning media, language enhancement, task notification notifications, upload and download materials, download history,

3. idea

At this point, the research team presents a rough design of the Clever Thinking application that will be implemented based on the needs and challenges faced above, and the team will create two designs that can be made by stakeholders. The selected design is like

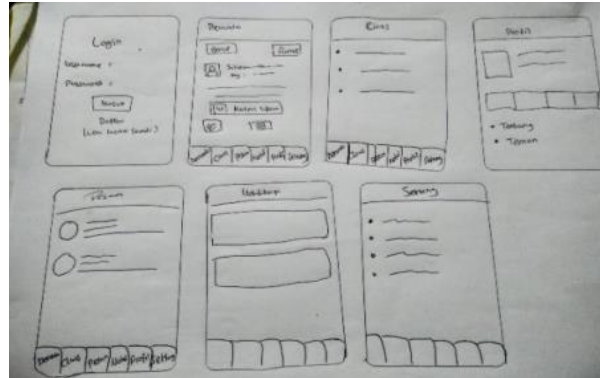


Figure 1. Alternative 1

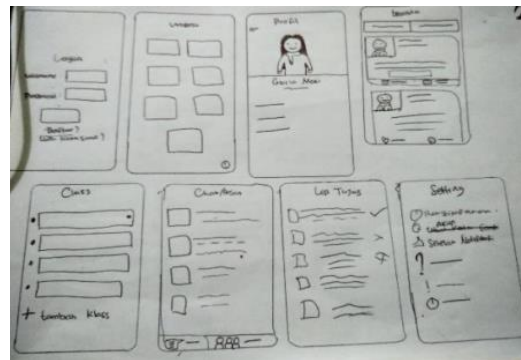


Figure 2. Alternative 2

In the picture above is the image of choice 1 as an alternative design while Figure 2 is the second alternative image that is made to be able to choose which one is more suitable for use in designing applications with the next step.

4. Prototype

The decision-making process is guided by voting. Voting is done after sketching and voting is done by pasting 2 sketches on the board and asking several people to vote for their favorite sketch. After voting, the survey team discussed and considered the most voted options that were used as the basis for designing learning applications on mobile devices. After going through the stages of deciding, the researcher then builds a clever think. This stage is passed by building a prototype according to user needs and application details that have been made previously.

5. Test

At this stage the researcher succeeded to do a test by showing the results of clever think that has been made and the appearance of existing designs. Researchers also provide opportunities for users to try using simulation applications that have been created. The results show that 90% of users really like using this application while 92% of users say that it looks easy to use, 94% say that the clever think application is easy to learn, 92% say that the application has a simple appearance and 90% say that the clever think application is very easy to use. useful.

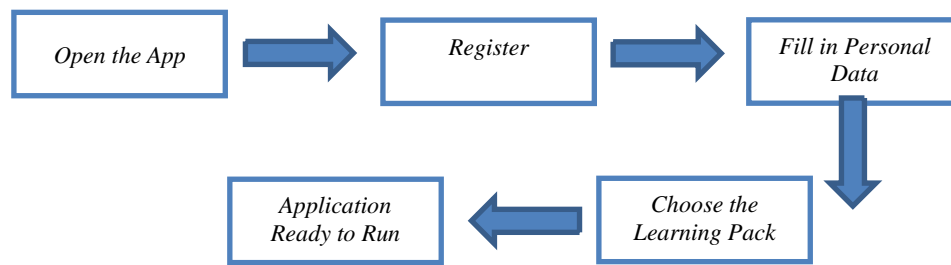


Figure 2. The Mechanism of Using the Clever Think Application

IV. CONCLUSION

The conclusion that can be drawn from designing clever think applications using this design thinking method is to: there is a clever think application. In this case, we don't have to do conventional teaching which has to be face-to-face, with clever think teaching and learning access can be done anywhere, and anytime, and with clever think the teaching process in a lecture can be more effective because of the presence or absence of lecturers during lectures, material Teaching and learning can still be delivered to students with the feature of uploading materials and also for downloading the material being taught, the task feature for collecting assignments that have been given, as well as the message feature used for mutual communication between groups and direct communication with lecturers, so that it takes one semester for the lecture.

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