



# Mobile Based Counseling Application for Facilitating Counseling Student Learning

Anak Agung Adi Wiryya Putra<sup>(✉)</sup> and Ali Muhtadi

Universitas Negeri Yogyakarta, Yogyakarta, Indonesia  
anakagung.2022@student.uny.ac.id

**Abstract.** This study aims to develop a counseling application prototype that can be used by school counselors to monitor the mental health of university students in Indonesia. Product results can also be used in learning activities for guidance and counseling students, especially facilitating counseling practices in facilitating learning areas. This study uses the human-centered design approach which starts from analyzing user needs to the stage of making application prototypes. To evaluate uses retrospective think-aloud and usability testing methods which are known to be accurate in evaluating applications to obtain aspects of user needs, effectiveness, and efficiency. The subjects used in this study amounted to 6 people consisting of psychologists as counselors and students as clients. In the aspect of user needs, it is measured by a single ease question and a score of 6.80 is obtained, which means this application is easy to use. The effectiveness aspect is obtained using the success rate calculation with a percentage of 96.4% and the efficiency aspect has obtained a value of 0.136 goals/second. Respondents recommended adding more psychological test features and also improving the appearance of the application to make it easier to use.

**Keywords:** Counseling App · Facilitating Learning · Human Centered Design · Usability Testing

## 1 Introduction

Mental health is one of the main aspects that determine a person's health. According to WHO, mental health is a condition in which individuals can realize their abilities to cope with the normal stresses of life, can carry out their activities productively, and are able to participate in their communities. Individuals have good mental health when they have a prosperous mental state [8]. It is known that students in Indonesia in the age range of adolescence (10–20 years) and early adulthood (20–30 years) have a high level of stress where they are in an unstable mental condition and demands from internal and external factors [1]. If these problems are not treated immediately, it will affect overall health. The importance of maintaining mental health for students so that they can carry out self-regulation where this will help for the development of the academic process. Seeing the problems faced by students, it is necessary to have counseling services that can be accessed flexibly both offline and online. It is currently known that the development of

information and communication technology has had a major influence on counseling services [6]. Online counseling services are known to make it easier for someone who wants to consult but cannot attend in person [3].

Initial identification of the problem is done by distributing questionnaires to 20 students. The results of the identification stated that 100% of students had experienced problems in lecture activities, 100% stated that they needed other parties to consult, 100% of students stated that they had difficulties in finding applications for counseling, and all students stated the need for mobile applications to help them consult. Based on these problems, “Mobile-based student counseling application design development with human centered design approach and usability testing” will be carried out. The main purpose of this research is to find out the problems that occur in the mentoring process to maintain the mental health of students. So that products can be developed in the form of applications that can help solve these problems, applications can also be used to facilitate learning for related students. Facilitating learning according to AECT 1994 is an effort to think about how best to organize the learning process by providing facilities that can facilitate an organization in learning [12]. The research was conducted using the Human Centered Design (HCD) method starting from identifying potential users, analyzing user needs, designing and developing products, and evaluating products [5]. Analyzing user needs and product development is based on constructivist theory, humanistic theory, and cybernetic theory. Constructivist theory is a learning process that prioritizes student experience, humanistic theory is a theory of understanding human learning, and cybernetic theory is a learning process with the help of information technology or computers [2]. The HCD method was chosen because in this study it is oriented towards users as individuals who need applications [7]. Ideas from potential users are also expected to help in making interesting and innovative application prototypes.

## 2 Method

Type of this research is research and development using qualitative data in extracting user needs. Research and development is research conducted with the aim of developing a product based on the planning, production, and evaluation processes [13]. The research was conducted in Yogyakarta City and Malang City at Mercu Buana University Yogyakarta and Brawijaya University, beginning with a literature study as a basis for designing and evaluating consulting applications and identify potential users. The subjects used in this study amounted to 6 people consisting of psychologists and students. Using 6 people refers to the opinion Nielsen that using more than 6 participants will only repeat the same test problem [10]. The next stage is to analyze the context of use and identify the need to find out what kind of application is being needed by interviewing potential users. The intended users include psychologists as counselor and students as clients. The information obtained is the need for features. Sources of knowledge related to the selection of techniques, colors, font sizes, and font type refer to the book *The Essential Guide to User Interface Design an Introduction to GUI Design Principles and Techniques* by [4]. Furthermore, the product design stage is carried out using the Figma application. Designing a product must be done systematically based on various theories, principles, and procedures [15]. The results of the design are then developed

into an application that can assist counselors in monitoring student health and is also used by related students in learning activities, especially for counseling and psychology practices. The final stage is a design evaluation using the usability testing method to determine aspects of efficiency, effectiveness, and ease of use [10]. In testing the prototype, it is necessary to have a scenario task that will be carried out by the respondent and can facilitate researchers in obtaining accurate test data [9].

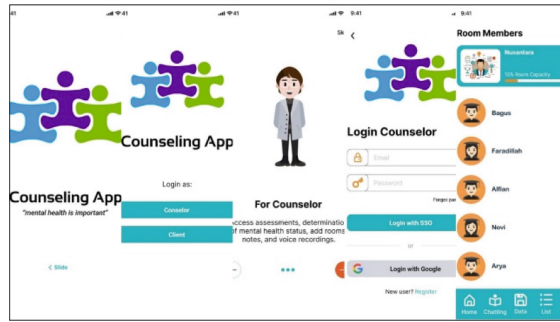
### 3 Result and Discussions

Based on the analysis of user needs, the result is that counselors need applications that can support the counseling process and also be used in the process of facilitating student guidance and counseling learning. Requirements data obtained includes a list of features, functional requirements, and non-functional requirements. The list of features is divided into 2 users, namely the need for counselor features and the need for client features. Counselor feature needs include (1) login, (2) voice recording, (3) counseling monitoring, (4) determining the client's mental health status, (5) client counseling records, (6) mental health tests, counseling data storage, and (7) room. Client feature needs include (1) login, (2) voice recording, (3) record counseling notes, (4) view mental health status, (5) counseling data storage, (6) answer mental health tests, and (7) room.

The following is a list of functional requirements. Functional requirements are the main activities that will be carried out by users in operating an application, so this is an absolute requirement of the needs of prospective users. The functional needs of the counselor include (1) logging in using a google account or sso, (2) doing a voice recording, (3) monitoring client counseling, (4) determining the client's mental health, (5) record client counseling, (6) create the client test, and (7) create a new space for clients. The client's functional needs include (1) logging in using a google account or sso, (2) doing a voice recording, (3) seeing counseling records, (4) seeing mental health status, (5) saving counseling data, (6) following the room created by counselor, and (7) answer the test.

And here is a list of non-functional requirements. Non-functional requirements are a list of requirements concerning supporting factors so that the application can be used comfortably. The non-functional requirements of this counseling application include (1) simple view and easy to understand the features, (2) consistent app display, (3) the color of the display soothes the heart and mind, (4) provide a pleasant experience, (5) the text content and application buttons can be clearly seen, and (6) fast in uploading documents to the storage feature.

The data is used in designing applications to produce a prototype that resembles the complete application. The process that goes through is to make wireframes and prototypes. Wireframes are created to provide an initial overview of the applications that will be developed later. The wireframe is more about the layout of application features and elements, so the result of a wireframe is just like a framework. The description obtained through the wireframe will be consulted with prospective users whether it is in accordance with the placement or not, if it is then the developer will proceed to the prototype development stage to get a more real picture regarding the application. Prototype is an initial description of an application that can be operated, but does not have



**Fig. 1.** Counseling App

an operating system in it. This is done so that prospective users can feel a realistic effect in operating the counseling application. The following is a prototype of the counseling application (Fig. 1).

After making the prototype, the next step is to test the prototype with the usability testing method to get aspects of effectiveness, efficiency, and ease of use. The effectiveness aspect is obtained by measuring the user's success in carrying out the tasks given by the researcher in operating the application. To test the effectiveness of an application, it would be better to use the success rate with task execution [11]. The following is the result of calculating the success rate.

$$\begin{aligned}
 \text{Success Rate} &= \frac{\text{Success} + (\text{Partial Success} \times 0.5)}{\text{Task Total}} \times 100\% \\
 &= \frac{39 + (3 \times 0.5)}{42} 100\% \\
 &= 96.4\%
 \end{aligned}$$

The aspect of efficiency is obtained by measuring the time the respondent performs the task. Whatever time is obtained will be recorded and calculated by the researcher. The technique used is to apply the time based efficiency formula. The following are the results of the counseling application's time-based efficiency.

$$\begin{aligned}
 \text{Time Based Efficiency} &= \frac{\sum_{j=1}^R \sum_{i=1}^N \frac{n_{ij}}{t_{ij}}}{NR} \\
 &= \frac{5.702}{42} \\
 &= 0.136 \text{ goals/second}
 \end{aligned}$$

In the aspect of user convenience, this is done by giving a question to the respondent on the Single Ease Question sheet. On this sheet, respondents can give a rating from 1 to 7 related to the level of ease of operating, recognizing, and using the counseling application. Based on the test results obtained an average of 6.80. The value range for a single convenience question indicates that the counseling application prototype can be categorized as an easy-to-use application. The following is the range of values from the Single Ease Question (Fig. 2).

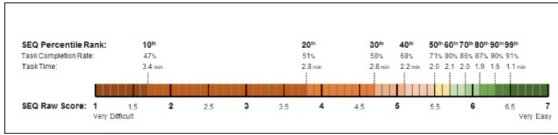


Fig. 2. Single Ease Question Score Range. Source: Single Ease Question [14]

In the recommendations for improvement, a retrospective think aloud technique will be applied to obtain input and suggestions from respondents. This data was obtained by the researcher asking questions again and asking the respondents to remember their experiences when operating the counseling application prototype and provide input regarding the shortcomings of the application in terms of design, layout, and other things that were felt to be lacking. Suggestions for improvement given by respondents include (1) add button on the counselor home page is better made like other buttons by adding the add icon, (2) the join room button on the client home page is better made like other buttons by adding an add icon, and (3) The direction of the arrow on the splash screen page should be directed to the left according to how to open the application.

The design of this counseling application shows that students or individuals involved in counseling activities need an application that can support the learning process and also counseling activities with clients. The contributions made to this research can certainly help in the development of mobile-based applications for use in the learning process and also the consultation process in actual counseling activities. This certainly can help in preventing excessive levels of stress on students in Indonesia. When learning stress levels can always be monitored, it can support prevention activities as early as possible. This can also be used to obtain data for the development of better learning activities in Indonesia. The limitation of this research is that it is still at the prototype stage, so it needs to be developed so that it becomes an application that is ready to be used properly. Of course to develop the application requires quite a lot of funds. Recommendations that can be given for further research are that the counseling application prototype can be developed into a finished application, then another research is carried out to obtain results whether the application can help deal with stress levels and student learning problems or not.

### 4 Conclusion

The output of this research is a high-fidelity prototype of a counseling application. The resulting product can be used to assist mentoring to monitor students’ mental health and also to facilitate learning for students of guidance and counseling study programs in learning practices. The ease of use aspect gets a score of 6.80 through the calculation of a single ease question. The calculation of the success rate gets a percentage of 96.4% and the efficiency aspect with the calculation of time based efficiency gets the result of 0.136 goals/second. The test results indicate that the counseling application prototype is an easy-to-use application and has met the efficiency and effectiveness aspects. The suggestion put forward is that in future research, it is possible to implement this application

prototype into a ready-to-use application that can assist students in consulting related to their problems.

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