SiGoba - Learning Media Based on Android Applications for Introducing Medicine's Classes and Functions

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Abstract. In this covid-19 era pandemic, people are required to use computer technology to run the wheel of life, including learning something. Internet users, including smartphone users in Indonesia, are more than half of the population. Meanwhile, the body must be protected so that the body's immunity is not susceptible to disease. If you are already sick, you must immediately be treated with the right medicine. If the use of drugs is not proper, surely the pain will get worse. But there are still many people who do not understand the class and function of drugs as they should. Therefore, this research develops an android-based application called SiGoba, an information system as a learning medium to recognize the class and function of drugs according to the Indonesian Drug Specialist Information (ISO). Drug data used are drugs commonly consumed by Indonesian people to treat minor ailments. This system was built using the waterfall model, with black-box testing. The system test results show that SiGoba has a function as a learning medium for recognizing drug classes and functions. We hope that SiGoba can be a learning media for the community so they can learn about how to use drugs according to their groups and functions, so it does not cause medication wrong. If this happens, it will have an impact on the recovery of the illness.

Keywords: SiGoba, android, drug class, drug function, drug content.

1. Introduction

Modernization in various fields of life accompanied by mastery of science and numerous technological conveniences has an impact on the tendency to do things quickly and efficiently. Not only how to get income quickly, but also to gain health. In the past, they stated of illness was often seen as a form of punishment or warning from the Almighty so that someone introspective. In modern times, the disease tends always to be interpreted as a barrier to progress so that as soon as possible, it must be eradicated. More than that, people are expected to still be in prime condition and full of vitality even though the activity is terrible.

Health or body immunity is greatly influenced by food intake. Eating errors will have an impact on the emergence of diseases such as diabetes, cholesterol, and others [1]. The disease is an abnormal condition of an organ in the human body that causes pain that can threaten the life of the person suffering from it.
The emergence of various diseases affects the increasingly different drugs so that in overcoming a disorder needed an appropriate drug reference depends on the condition experienced. Medicine is a substance used to diagnose treatment, soften, heal, or prevent disease in humans or animals. However, drugs can cure many events that result in someone suffering from drug poisoning. Therefore it can be said that the drug is as a drug and can also be a poison. Inaccuracy in choosing and taking drugs will have an impact on health [2]. The drug will be as a medicine if it can be used in the treatment of a disease with the right dose and time [3]. Medications can be classified based on several criteria such as free drug classes, limited over-the-counter drugs, hard drugs and psychotropics, herbal medicines, and standardized herbal medicines [4]. Each category of drugs has a distinctive characteristic that is a particular color mark that is labeled on the drug packaging. The development of science and technology is increasingly developing influences on many aspects; one of them is in the issue of health. This encourages the development of many emerging health technologies in their implementation in the medical world. Especially in the current pandemic era, computer and smartphone technology are needed [5] as a source of learning, especially those connected to the internet. Based on the research mentioned that internet users in Indonesia until the beginning of 2020 were 175.2 million [6]. Most of these internet users use the Android operating system. These are reasonable because Android provides an open platform for developers to create applications on various devices [7]. The sophistication of this tool can be used as one of the learning media for anyone. Especially in times like now, when we have to maintain a healthy body, very much needed information on how to take medicine according to your needs. Various computer-based information systems related to medicine have been developed by [8–14]. The information obtained from these studies is beneficial, but it does not meet basic needs regarding the details on how to find out the class of drug functions. Ordinary people need this knowledge as a first step to studying medicine to be used as needed, to minimize the use of drugs that are not appropriate. Therefore, an information system was built as an Android-based learning media for the introduction of classes and functions of drugs called SiGoba.

2. Method
This learning media was developed through the stages following the Waterfall model as in Figure 1 [15]:

![Figure 1. Stages of developing SiGoba learning media using the Waterfall model](image)

2.1. Requirement definition
At this stage, the research data is collected in the form of drug class and function data from the Indonesian Drug Specialist Information (ISO) [4] and the preparation of computer software and hardware to build the system.
2.2. System and software design

The system is designed as in Figure 2. In accordance with the design of this image, the system will provide information related to the drug content and at the same time provide information about its class and function, as well as examples of drug names on the medical market.

![Diagram of information about drugs](image)

**Figure 2. Diagram of information about drugs**

2.3. Implementation and unit testing

Implementation from design to software in the form of coding phase is done using several types of software, namely the Java programming language with various advantages [16] accompanied by IDE Eclips [17], with a MySQL database [18].

2.4. Integration and system testing

At this stage, a logical test is performed on systems built using black-box testing.

2.5. Operation and maintenance

System implementation is carried out by means of socialization to users, namely the general public living in the territory of Indonesia.

3. Results and Discussion

3.1. Research Data

The SiGoba system was built using Indonesian on the grounds that this system was intended for the Indonesian people and drugs produced by pharmaceutical agencies in Indonesia. The main terminology that must be known related to drugs as research data in this study is the class and function of drugs, namely:

3.1.1. *Free medicine*; namely drugs that can be obtained without a doctor's prescription and can be obtained at pharmacies, drug stores, shops, and retailers. The drug packaging is marked in green inside a black circle (Figure 3). Examples: paracetamol (pain and fever relievers) and vitamin products (B complex, B1, vitamin A tablets, vitamin C, and multivitamins).

![Logo of free drugs](image)

**Figure 3. Logo of free drugs**

3.1.2. *Limited free drugs*; namely drugs that can be obtained without a doctor's prescription, but in their use must pay attention to specific warnings. This drug can also be purchased at pharmacies, drug stores, stores, and retailers. The drug packaging is marked with a blue circle inside a black circle (Figure 4), also accompanied by a warning with a black background. Example: Antimo, ultraflu, parazon, and alphadine.
3.1.3.potent drug: that is hard drugs that can only be obtained by prescription from a doctor or given by a pharmacist. This type of drug can only be purchased at pharmacies and may not be traded at drug stores, stores, or retailers. On the drug packaging, there is a red circle in a black circle, and the letter K is black (Figure 5), generally also accompanied by the words read: “must be prescribed by a doctor.” Example: antidiabetic groups, antibiotics such as mfenamic acid, diazepam, methamphetamine.

3.2. SiGoba Implementation
SiGoba has the main page icon and appearance as in Figures 6 and Figure 7.

The icon in Figure 6 is the icon on the main screen of the smartphone that has this application installed. While the main page (home) as Figure 7 is the starting page when the system starts.
The home page has two icons, namely group icon and content icon as a user interface. On this page, the user can see the drug content data based on the drug content, as shown in Figure 8. This page displays data on the drug content, drug names, and drug classes.

Figure 8. Medication content page

The drug class interfaces page, as shown in Figure 7, the user can see the drug class data based on drug categories such as free, limited free, and potent drugs (Figure 9).

Figure 9. Drug interface page

The "Obat Bebas" menu on this page provides detailed drug data included in free drugs and can be searched by name, class, or drug content (Figure 10). Likewise for the menu of “Obat Bebas Terbatas” (Figure 11) and “Obat Keras” (Figure 12). Each drug class, the system will provide detailed information, including examples of images of drugs on the medical market.

Figure 10. Drug-free interface page and drug-free details
System functionality has been tested using the black box testing method. The test results show that SiGoba functions as expected because it is by the data in the drug handbook (Table 1).

### Table 1. SiGoba test results

| No. | Testing                      | Data            | Expected results                      | Testing result      | Conclusion         |
|-----|------------------------------|-----------------|---------------------------------------|---------------------|--------------------|
| 1.  | Menu of class drugs         | Class drug      | Data According to Guidebook rules     | Class drug          | Testing component accepted |
| 2.  | Menu of content drugs       | Content drug    | Data According to Guidebook rules     | Content drug        | Testing component accepted |
| 3.  | Menu of free drugs          | Free drug       | Data According to Guidebook rules     | Free drug           | Testing component accepted |
| 4.  | Menu of limited free drug   | Limited free drug | Data According to Guidebook rules | Limited free drug | Testing component accepted |
| 5.  | Menu of potent drugs        | Potent drug     | Data According to Guidebook rules     | Potent drug         | Testing component accepted |

SiGoba application is designed simply because it is indeed for early learning about the introduction of classes and functions of medicine for the general public. The drug in SiGoba is a chemical medicine as a complement to the information system developed by [9] for traditional medicine. The correct selection of classes and functions of drugs to maintain health and cure against disease, the timeliness of taking
drugs, is also important to do so that alarms are needed, as stated by [19]. Also, SiGoba is an application partner developed by [10] that identifies types of drugs based on the logo contained in the packaging.

4. Conclusion
The introduction of classes and functions of drugs as basic knowledge in choosing the right medicine can be learned using SiGoba learning media. This application is based on Android so that it is easily operated by the general public. By packaging information that is easy to understand, it will greatly help the community so that they are not mistaken in choosing drugs according to their illness. Because SiGoba is built based on drug data that is commonly consumed by the general public, as a follow-up suggestion to develop a system or application that can calculate drug doses based on age and accompanying diseases.

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