

# Utilization Development of Glide “Daily Nutrition” Application Based on Android

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## ABSTRACT

Today's technology is increasingly sophisticated, one example is the development of android-based applications that have had an impact in various fields, one of which is the health sector. Android is an operating system that allows developers to develop their applications that can then be used by a wide variety of devices. Making applications is one solution to take advantage of technological advances in the mobile field. The Daily Nutrition application is an example of an Android-based application created using Glide Apps which is developing in the health sector, namely nutrition. This application was developed using the ADDIE method, namely 1) Analysis, 2) Design, 3) Development, 4) Implementation, and 5) Evaluation. The purpose of this study was to introduce and determine the feasibility of the Daily Nutrition application to the public by using a questionnaire containing an assessment on a Likert scale with 66.7% of respondents from Unesa Nutrition Students and 33.3% of respondents are from outside Unesa Nutrition Students.

**Keywords:** *Android, GlideApps, Nutrition, ADDIE.*

## 1. INTRODUCTION

The development of science and technology (IPTEK) in the current era of globalization has spread to all aspects of life. Technological developments are rapidly impacting all aspects, including aspects of education. One part of the realm of education is the process of learning [1]. Technology has a positive impact on the ease of implementation of the learning process so that learning objectives can be achieved easily by teachers and students [2][3]. Furthermore, the impact of technological advances on education is the creation of learning facilities that can help students to learn both in the school environment and outside the school environment[4]. Today's learning has been assisted by many technologies, for

For example, learning can be done outside the classroom or school by utilizing virtual classes assisted by internet networks[5]. One example of learning that uses the internet is android-based. In general, Android is widely used by the community, especially students, including in Indonesia. The

existence of a smartphone can have a huge impact on human life and provide a lot of convenience in its use. However, smartphones are only used to access social media and only a few people use them in learning activities[6]. The development of android-based media is expected to increase student literacy. Learning by using learning media allows students to focus on the content of learning. Learning media contains complete media elements which include animated audio, video, text, and graphics that allow users to interact interactively through the available features[7].

Android-based applications have had an impact in various fields, one of which is the health sector. Android is an operating system that has become one of the basic needs of society[8]. Almost everyone needs to communicate, find information and the latest news developments, do work, and various other activities. Android also allows developers to develop their applications which can then be used by a wide variety of devices. Making applications is one solution to take advantage of technological advances in the mobile field. One of the applications that can be developed is Glide Apps. This glide application can be used as a learning medium and can

make it easier for someone to access information about something[9].

Application *Daily Nutrition* is one example of an application made using Glide Apps that is developing in the health sector, namely about nutrition. This application is an application that contains recipes for daily food menus accompanied by how to calculate the nutritional content of macronutrients in these foods and formulas for calculating the nutritional needs of macronutrients in the body. Nutrition is the content of substances in healthy food that serves to help the growth and development of body organs optimally. This application aims to provide information on how to calculate the nutritional content in food and the nutritional needs of the body and can be used as a guide for cooking.

Based on the explanation above, the purpose of this research is to introduce the application of *Daily Nutrition* to the public and find out the level of feasibility of this application as a learning medium for both Unesa Nutrition Students and Unesa Nutrition Students.

## 2. LITERATURE REVIEW

### 2.1. Android

Android is an operating system that has become one of the basic needs. Almost everyone needs this one tool to communicate, find information and the latest news developments, do work, and various other activities. Nowadays almost everyone depends their activities on the Android they have. currently Android also allows developers to develop their applications which can then be used by a wide variety of devices. Usually, Android is used on smartphones or tablet computers. Android is an operating system that also gets full support from the world giant company, Google[10]. Users of this operating system must be familiar with the various Google platforms that exist on their Android. Android is an operating system designed by the Google company based on the Linux kernel and also various software such as Open Source and others[11]. Mobile phones that use Android can be used for devices with touch screens such as smartphones and tablet computers.

### 2.2 Glide Apps

Glide Apps is a website glideapps.com, which lets you build your app[12], from Google Sheets, in just 5 minutes. But of course, it won't be time to learn how to program an application. To build apps with Glide Apps is an account with them, a Google Drive account so it uses Google Sheets, and little time. Glide Apps has a free account option. It will serve most people's needs and even allow you to share the app with others.

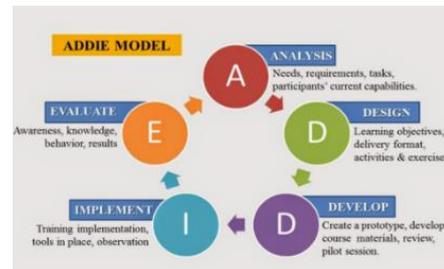
### 2.3. Nutrition

Nutrition is the content of substances in healthy food that serves to help the growth and development of body organs optimally[13]. Nutrition is the process of providing energy and chemicals from food which is essential for the formation, maintenance, and replacement of cells body[14][15]. Nutrition itself is often referred to by many people with the term nutrition. The way of obtaining nutrients is through the breakdown of food essences by the digestive system. Nutrients can be classified into two groups, namely

micronutrients and macronutrients. Macronutrients or macronutrients are the main food that helps the body and forms energy. Macronutrients consist of 3 main parts, namely fat, protein and carbohydrates[16]. Macronutrients are nutrients that contribute a lot of energy to the body. The term macronutrient describes the chemical substances that provide calories for energy including carbohydrates, proteins, and fats. The body requires these nutrients in large quantities. Based on the theories above, therefore the Daily Nutrition application was created which is expected to provide knowledge about nutritional needs and nutritional content in food.

## 3. METHODOLOGY

The method used in developing the glide Daily Nutrition application is ADDIE (Analysis, Design, Development, Implementation, and Evaluation). One of the functions of ADDIE is to become a guideline in building training program tools and infrastructure that is effective, dynamic, and supports the performance of the training itself [17]. ADDIE model is often used to describe a systematic approach to instructional development. In addition, the ADDIE model is a general learning model and is suitable for development research. The term is almost synonymous with the development of instructional systems. When used in the development, this process is considered sequential but also interactive, where the results of the evaluation of each stage can take the development of learning to the previous stage. The final result of a stage is the initial product for the next stage. The ADDIE framework is a cyclical process that develops over time and is continuous from the entire instructional planning and implementation process. Five stages comprise the framework, each with its distinct purpose and function in the development of the instructional design.



**Figure 1.** Step-by-step method of Research and Development ADDIE

In addition, the selection of the ADDIE model was based on several considerations, including:

- a. This ADDIE model is a generic learning design model that provides an organized process in the development of learning materials that can be used for both face-to-face learning and online learning. It can be concluded that the ADDIE model is a simple framework that is useful for designing learning in which the process can be applied in various settings due to its general structure.
- b. The ADDIE model can use a product approach with systematic and interactive steps.

- c. The ADDIE model can be used for the development of learning materials in the realm of verbal, intellectual, psychomotor, and attitude skills so that it is very suitable for the development of blog media for ICT subjects.
- d. The ADDIE model provides an opportunity for learning design developers to work closely with content, media, and instructional design experts to produce good-quality products.

The following is a description of the five stages of the ADDIE development model:

- a. **Analysis**  
The analysis phase is a process of defining what the learning participants will learn, namely conducting a needs assessment (needs analysis), identifying problems (needs), and conducting task analysis (task analysis). Therefore, the output that we will produce is in the form of characteristics or profiles of respondents, identification of gaps, identification of needs, and detailed analysis of tasks based on needs. At this stage, the phase is divided into three segments, namely: student analysis, learning analysis (including learning goals and objectives), and online delivery media analysis.
- b. **Design**  
This stage is also known as making a design. The stages that need to be carried out in the design process are: first to formulate SMART learning objectives (specific, measurable, applicable, and realistic). Then determine what the appropriate learning strategy should look like to achieve these goals. In this case, there are many choices of combinations of methods and media that we can choose and determine which is most relevant. In addition, consider other supporting sources, such as relevant learning resources, what the learning environment should be, and so on. In this design stage, a training designer needs to carry out the initial design of the training/learning program,
- c. **Development**  
At the development or developmental stage, activities are carried out by realizing the concepts that have been made at the design stage that have been carried out previously. This development activity realizes the framework made in the form of training materials, preparation of equipment to be used in training, and making training evaluations.
- d. **Implementation**  
The implement stage is the stage where the training program is implemented. The training program is carried out by the planning of training methods that have been made and the use of materials that have been made. Implementation is a real step to implement the developed learning system. That is, at this stage everything that has been developed is installed or set in such a way according to its role or function so that it can be implemented.

e. **Evaluation**

After the stages of analysis, design, development, and implementation are carried out, the last stage is evaluation. Evaluation is carried out to review the implementation of the training whether it is under the needs or not. Then the evaluation is also used by the training designer to correct the shortcomings of the method used, so that future learning activities can be designed better.

Product feasibility testing is carried out using a questionnaire based on ISO 9126-1 standardization with indicators of Variable Understandability, Learnability, Operability, Functionality, and Content [18][19]. Questionnaire data regarding the feasibility of development products were analyzed by transforming the average score of all observed aspects into qualitative sentences with the criteria proposed by [20].

#### 4. RESULT AND DISCUSSION

In the development of the Daily Nutrition application using the ADDIE method according to Branch [21], there are several stages carried out, namely analysis, design, development, implementation and evaluation.

The development of the Daily Nutrition application in this study used the ADDIE method. The first stage is the analysis by analyzing community needs. Based on the needs analysis, more than 80% of respondents needed knowledge and information about the nutritional content of food and the material, nutrition needs, and guidelines for preparing healthy, nutritious, and balanced foods. Nutrition knowledge is important to process food properly so that the nutrients contained in it are not damaged or lost [22]. In addition to analyzing community needs, analysis is also carried out for learning, namely, information is obtained that the application of research results can be used as learning, especially in knowing how much the nutritional content of food and nutritional needs in the body. This is in line with the opinion of Putra et al [23] which states that the use of android application-based learning media has an influence of 60.16% on student understanding and gets a positive response by users of 80.05%. Analysis of online delivery media was also carried out to find out whether the Android-based Daily Nutrition application is easy to reach or not. The results of this analysis can be concluded that the Daily Nutrition application is easy to reach with online delivery media because in the current era the average community has a smartphone that can support the reach of the Android-based Daily Nutrition application. The design stage in the development of this application is done by formulating learning objectives, designing the concept of the application, and designing the appearance of the application according to the needs by paying attention to graphic factors to make it look attractive and looking for material or theory as the content that will be displayed in the application [24]. In the third stage, namely development by executing a design that has been designed into an application with existing tools. The following is a screenshot of the application taken from the Daily Nutrition application (<https://rare-shop-5075.glideapp.io/>) that has been developed:



Figure 2. Initial Appearance of the Daily Nutrition Application



Figure 3. Display of the first application menu



Figure 4. Display the Menu of the Two Applications



Figure 5. Display of the Three Applications Menu

Implementation is the stage where testing is carried out on applications that have been made in the development stage. Application testing is carried out using existing software standards. In developing the Daily Nutrition application, the implementation stages were carried out, namely: validating expert lecturers or subject lecturers, publishing applications that have been made, testing the Daily Nutrition application directly to android users, and distributing the Daily Nutrition application link and barcode to users to promote the app. The last is the evaluation stage, at this stage the application is tested using usability testing [25]. The evaluation is carried out by users consisting of nutrition and non-nutrition students through an online form. The assessment indicators are the appearance of the application, the ease of accessing the application, the ease of understanding the content and studying the application, the accuracy of the material, and the convenience of the user (ISO 9126-1).

4.1. Testing and Questionnaire

Software testing is the process of running and evaluating software manually or automatically to test whether the software meets the requirements or not or to determine the difference between expected results and actual results. The implementation of software testing is usually adapted to the software development methodology used.

The questionnaire is a relatively easy, fast, and efficient way of gathering large amounts of information. With a questionnaire, we can also get data from a large sample of people. Data collection is also relatively fast because researchers do not need to be present at the time of filling out the questionnaire. The tests and questionnaires carried out have the aim of knowing the level of feasibility or quality of the Daily Nutrition application. This test uses data from questionnaires from respondents. The respondents involved in this test were 10 respondents from the Unesa Nutrition Study Program students, and 5 respondents from students outside the Unesa Nutrition Study Program.

Questionnaires and grids carried out from the testing of this research were taken based on the ISO 9126-1 standard, there are several characteristics in testing software quality, which consist of Variable Understandability, Learnability, Operability, Functionality, and Content [19]. The following are the characteristics of ISO 9126-1 in the table along with the criteria and results:

Table 1. Testing Grid [18][19]

No.	Variable	Information
1.	Understandability	Capabilities in software that are easy for us to understand
2.	Learnability	Skills in software that are easy for us to learn
3.	Operability	Capabilities in easy-to-operate software
4.	Functionality	Capabilities in software that provide functional accuracy, security, appearance, and data management as they are used
5	Content	The ability to define the truth, adequacy, suitability of the contents contained therein

**Table 2.** Eligibility Criteria and User Respondent Criteria

Information	Answer
Very good	76%-100%
Good	51%-75%
Not good	26%-50%
Not good	0%-25%

**Table 3.** Questionnaire Test Results on All Respondents

No.	Question	Results	Criteria
1.	How GlideApps Daily Nutrition Looks	71.4%	Good
2.	How easy is it to access the Glide Daily Nutrition application?	93.4%	Very good
3.	How easy is it to understand and learn the Glide Daily Nutrition application?	93.4%	Very good
4.	How is the level of accuracy of the material in the Glide Daily Nutrition application if it is used as a lesson?	86.7%	Very good
5.	How comfortable is the glide Daily Nutrition app?	86.7%	Very good

The final average of the results of the questionnaire testing on all respondents: 86.32%.

#### 4.2. Understandability

One of the parameters for measuring software quality is understandability, which is how high the level of ease in understanding a software module is developed. Understandability can be measured by calculating the degree of complexity, cohesion, and coupling of the software [26]. Users should be able to define a suitable software product for their intended use. Measures easy to understand: completeness of description, demonstration of the ease of access, demonstration of the ease of access when used, the effectiveness of demonstration, real function, understandability function, easy to understand input and output [27]. Based on the research results, the Daily Nutrition application has an understandability value of 93.4%. This means that users are easy to understand and study the content of the application. The application is also easy to understand because it has an attractive design, the right color composition, and images, making it easier for users to understand the content of the material.

#### 4.3. Learnability

Learnability describes how easy it is for users to fulfill basic tasks when they see or use the design results for the first time. In this study, the ease with which the application was measured was to find out how long the user needed to learn to use certain functions. The learnability of the application that has been designed has a value of 86.7%, which is included in the very good criteria. This means that the designed application has convenient for the user. This is in line with [27][28] who explained that good software is easy to use and easy to learn so that it will facilitate a job. Operability What is meant by operability is software that is easy to operate [27]. The Daily Nutrition application is measured by its ease of operation, whether the user can operate and control the application properly and precisely. From the results of the assessment, the design application has

an operability value of 93.4% which is included in the very good criteria. This means that the level of ease of accessing or operating the device is very good. A quality device is one that does not make it difficult for users to operate it. This shows that the Daily Nutrition application is included in a quality application in terms of operability.

#### 4.4. Functionality

Namely the ability of software to fulfill the functions of software products that provide the satisfaction of user needs (ISO 9126-2) which has 5 characteristics, namely: suitability, accuracy, security, interoperability, and compliance. Based on the results of the assessment, the functionality of the Daily Nutrition application is 71.4% which is included in the good criteria and it can be stated that the application has functions and uses for users because it is in accordance with user needs. This is in line with ISO/IEC 9126, that a device must have the ability to provide a series of functions according to the needs of the community as users.

#### 4.5. Content

The content in an application is very important to be formulated, because the content must be able to define the truth, not multiple interpretations, and have the appropriateness of the content contained therein. Based on the results of the assessment, it can be seen that the results of testing the content in the Daily Nutrition application are 86.7% which is included in the very good criteria and it can be stated that the level of accuracy of the material in the application is very good.

## 5. CONCLUSION

Creating and developing the Glide Daily Nutrition application is one example of utilizing technological advances in the health sector. The Daily Nutrition application can be developed using the ADDIE development method.

Based on the results of the questionnaires distributed to 66.7% of Unesa Nutrition student respondents and 33.3% Unesa Nutrition students, it can be concluded that the feasibility of the Android-based Daily Nutrition application is included in the very good category, with the average test results with 86 questionnaires, 32%.

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