



## The Development of the Interactive Application "Jamune Cah Cilik" to Improve the Health of Early Childhood Using the ADDIE Model

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### Abstrak

Childhood is a critical period in a child's growth. Therefore, parents and educators have a significant role in providing appropriate stimulation to help children reach their optimal potential. Presidential Regulation of the Republic of Indonesia No. 60 of 2013 concerning Integrative Holistic PAUD has urged the fulfilment of all children's basic needs, including those related to their health, nutrition, education, protection and welfare. This project aims to create an interactive application, "Jamune Cah Cilik", which will educate users about the use of *jamu*, a traditional Indonesian drink with positive health effects, to improve the health of young children. The ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) was used in developing the interactive application "Janecil or Jamune Cah Cilik". Beta testing will be carried out by users, medical experts, and nutritionists, who will participate in the alpha test to determine the effectiveness of application development. The application development stage is the last stage discussed in this article. The approach and procedures required to create the interactive program "Jamune Cah Cilik" to improve the health of early childhood are explained in this article.

### Article Information

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## INTRODUCTION

Technological developments in the modern era have had an impact on human consumption patterns (Jamun, 2018). The use of electronic devices makes it easier for the process of providing various needs in communicating, building relationships, coordinating tasks, transactions, work resources and other needs that can be done digitally (Komalasari, 2020; Salsabila et al., 2022). This cannot be denied because modern technology is efficient, practical, and easy to obtain at various levels of society (Siddiq et al., 2020; Wahyudi et al., 2023). Six things promised by technology in human life such as change, progress, convenience, increased productivity, speed and popularity Six things promised by technology in human life such as change, progress, convenience, increased productivity, speed and popularity (Jamun & Momang, 2021). Some of these things make humans familiar with technology dependence (Gani, 2018).

The use of technology knows no age; from children and teenagers to adults, it is easy to adapt because technology is constantly updated, making people not get bored quickly and want to explore new things. Technological advances have an impact on education, one of which is in early childhood (Fadila, 2022; Newman et al., 2016). Early childhood is a period of curiosity, especially for the current generation, which has more technological awareness compared to previous generations (Ardiva & Wirdanengsih, 2022; Yumarni, 2022).

At an early age, a child experiences a rapid development process, which is very important for his future (Dua Dhiu et al., 2021; Mulyani, 2018). A child's early years, or what is usually called the golden age, are a valuable asset that they have and play an essential role in the future of a nation (Istighfarrina, 2021; Safitri & 'Aziz, 2019; Tresna Dewi et al., 2020). Early childhood development depends on three main pillars, namely adequate nutritional intake, access to health services, and care that is related to each other or psychosocial stimulation (Purwati et al., 2020; Suryaputri & Rosha, 2016; Tridhonanto, 2014). So that children can develop as well as possible, the role of parents and educators should be to provide relevant direction by stimulating them according to their developmental stages. (Panzilion et al., 2021; Saadah et al., 2020; Tanto & Sufyana, 2020). This is stated in the Presidential Decree of the Republic of Indonesia Number 60 of 2013 concerning Comprehensive and Integrated Early Childhood Education (PAUD) or Comprehensive and Integrated Early Childhood Development, concerning the urgency of providing the totality of children's basic needs, including the areas of health, nutrition, care, education, as well as protection and welfare, have been officially determined by the government. This aims to ensure optimal child development (Windarta, 2021).

2022 brings significant changes for Indonesia as it moves towards recovery after emerging from the COVID-19 response phase. Click or tap here to enter text. UNICEF is supporting various government efforts to improve children's access to essential health services and to address falling routine immunization rates. Among the most important is the catch-up vaccination campaign, with the results of the measles and rubella vaccine being given to 26.5 million children, the polio vaccine to 1.3 million, and the Penta vaccine to two million children. As of 2022, Indonesia has achieved 94.6 per cent of basic immunization coverage. Despite progress in recent years, the rate of child malnutrition in Indonesia is one of the highest in the world. 1 in 10 children under five experience wasting (thin), and 3 in 10 children experience stunting (short stature) (UNICEF Indonesia, 2022). From this, education regarding the importance of health from an early age still needs to be disseminated to the public.

Nutrition is essential for early childhood so that the child's immunity is strong (Abdilah et al., 2022; Kurniawati, 2018; Mayar & Astuti, 2021). Children have the right to health as a process of growth and development in their lives for their future. When a child is healthy, the child is able to do whatever activities he wants without interference, can carry out activities well and smoothly, reason, and is able to concentrate on carrying out his learning activities (Alfianur, 2021; Carmela & Suryaningsti, 2021; Windarta, 2021). Therefore, parents and teachers should work together to provide services to optimize children's growth and development. These services can be carried out appropriately if parents and teachers have knowledge and understanding of nutritional health services and psychosocial stimulation according to the child's development stages (Rahman et al., 2022). Health education is implemented not only to increase growth and development but also to look at mechanisms and ways to optimize the potential of early childhood (Yuniarni et al., 2023).

Early childhood development can be said to be an ideal time to systematically and continuously increase human capacity with good quality (Rozana & Ampun, 2020). This can happen because the first five years of life can be interpreted as a susceptible period that lasts short and cannot be repeated, so it is often referred to as the "golden period", window of opportunity (window of opportunity), and critical period (period of critical) (Masganti, 2017). Therefore, investments that start from an early age, namely childhood, are considered the most profitable in developing human resources.

Apart from that, so that children's potential can be developed to the maximum, parents and educators must know various strategies to optimize children's abilities (Inten & Permatasari, 2019). A strategy is needed in this case because the growth and health of early childhood children require special attention to their parenting patterns (Handayani, 2017; Noorhasanah & Tauhidah, 2021; Saripudin, 2017).

One effort to improve early childhood health is an education program for children about the benefits of using herbal medicine, which can be used as a strategy to promote optimal health and development. Jamu is a traditional Indonesian drink made with natural ingredients that offers a number of health benefits (Setiawan et al., 2018a). Education for young children about the use of herbal medicine can be done by introducing the various benefits of types of plants and natural ingredients to help improve and maintain body health naturally. Apart from that, children can also be taught to use plants and natural ingredients as a means of medicine and health (Robiah & Kurniawaty, 2022).

Efforts to teach young children about healthy lifestyles and eating patterns are one strategy to improve children's health from an early age. However, in reality, education for early childhood is still challenging to provide (Aulina & Astutik, 2019; Megawaty et al., 2021; Tabi'in, 2020). Shofia Maghfiroh stated that children tend to get bored quickly and cannot focus on conventional learning; providing learning media that is varied and not monotonous is one way to overcome this problem. In the increasingly digital era, children tend to be more exposed to technological devices such as smartphones and tablets, which are often used solely for entertainment. Therefore, in the learning process, it is necessary to follow the development of existing technology so that students can accept it. Apart from that, it also requires an exciting and interactive method (Fitrianiingtyas & Jumiati, 2023; Wayan et al., 2019).

The use of facilities based on technological developments in efforts to improve the health of early childhood has been carried out by several researchers, such as research conducted by Erawati (2016) on the use of the IBM "interactive smart board" application for health education for kindergarten students in sub-districts in Semarang district. As a result, there has been an increase in the knowledge and skills of kindergarten teachers in detecting, analyzing and stimulating growth and development for young children. Apart from that, training participants also found it easy to use thematic interactive intelligent boards for health education for their students (Erawati & Ratna Yulianti, 2016).

Furthermore, similar research was also carried out by Amaliah (2018) regarding the use of the "healthy toddler" mobile application to increase mothers' knowledge and attitudes toward maintaining the growth and development of toddlers. As a result, the use of applications is one of the factors that influence attitude change besides the father's education. The "Healthy Toddlers" application can be an effective means of increasing mothers' awareness of maintaining their children's growth and development.

There has been a lot of research on the use of media for children's health. However, previous research on herbal medicine education for early childhood has not been carried out. Likewise, the use of the ADDIE method helps analyze from the start the importance of applications that introduce traditional ingredients to be used as herbal medicine for children.

The development of interactive applications can be an attractive alternative to answer challenges related to efforts to improve early childhood health through the realm of education. An interactive program entitled "Jamune Cah Cilik" will be developed to improve children's health. "Jamune Cah Cilik" is an application developed with the main aim of helping improve the health of young children by providing interactive and engaging information about healthy

eating patterns, physical activity, and health care, as well as getting to know natural ingredients that can be used to treat and maintain body health.

Developing this type of application requires an organized design process. The ADDIE model (Analysis, Design, Development, Implementation, Evaluation) was chosen by researchers as a structured approach to designing and developing educational and training materials. The ADDIE instructional design model is general and can be used as a guide in developing applications that are effective, dynamic and support performance. This can be seen from the help of teachers in carrying out learning education (Hayat & Cancerita, 2022).

The ADDIE model, which consists of five sequential steps of analysis, design, development, implementation, and evaluation, functions as a development framework for learning. The sequential stages in this model ensure that the applications developed are effective and appropriate to the needs of young children.

In this article, researchers will thoroughly discuss the development of the interactive application "Jamune Cah Cilik" using the ADDIE Model. A comprehensive discussion of the process of creating the interactive application "Jamune Cah Cilik" using the ADDIE model will be the main focus of this research. Furthermore, this article is intended to provide useful guidance for app developers, parents, and educators in improving children's health during their most important developmental period.

## **METHOD**

This research uses a type of development research (Research and Development ). Development research can generally be interpreted as research that produces a product and tests its effectiveness (Sugiyono, 2015). The stages consist of analysis or studying research results related to the product to be made; secondly, design, which includes use case diagrams, activity diagrams, and sequence diagrams as well as data collection criteria. Followed by Development, or the process of designing an application interface that illustrates the concept of the application you want to create. The content presented is in the form of a combination of audio-visual or video, which aims to make understanding the material easier for children.

On the other hand, the results of this research will be an application that can be downloaded and installed on Android-based smartphone devices, with a file that has the extension ".app". Implementation, or the process of creating an interactive application called "Jamune Cah Cilik", to improve the health of early childhood. Ending with an evaluation by a product validation expert, the product is modified until the test data shows that the product meets the criteria set to be made by testing the finished application through black box testing (Abdul Rokhim, 2020).

Furthermore, the location of this research was carried out at RAM NU 028 Ngrupit Village, Jenangan District, Ponorogo Regency. The selection of respondents in this study used a purposive sampling technique, namely children aged 5-6 years, and in classes B1 and B2 with a total of 34 children. This research was conducted over one month, namely in September 2023. The stages in forming the ADDIE development model are Analysis, Design, Development, Implementation, and Evaluation. (Desi et al., 2021). This research article focuses on the analysis of the third stage, namely the development stage.

## **RESULTS AND DISCUSSION**

### **A. Result**

#### **The Analysis Stage**

At this stage, the need to create an interactive media application (Jamune Cah Cilik) is seen to improve the health of early childhood. The ADDIE model divided needs analysis into

two categories, namely system needs analysis, and user needs analysis. HTML5 was used to analyze the needs of the interactive application development system "Jamune cah Cilik".

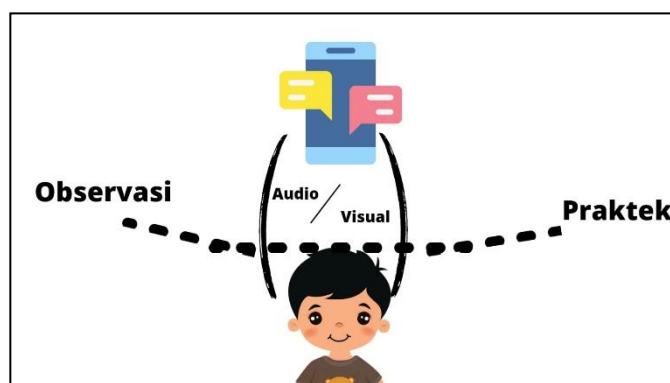
The material in learning media must be adapted to the age of the user because young children are the intended users. In addition, it must be able to take into account the cognitive development of early childhood. At RAM NU 028 Ngrupit Ponorogo, observations and interviews with teachers made it possible to analyze user needs. The results of the analysis show that there are no learning resources or applications that aim to educate users about the value of maintaining health interestingly and simply or are packaged with interactive audio-visual displays to show that traditional herbal medicine is not always scary. The application in question is a simple program that can increase children's practical knowledge.

### Design Stage

The interactive program "Jamune Cah Cilik" is currently being developed, and the form and workflow are adapted to the knowledge of early childhood. The illustration below shows how this application collects user interactions and work operations:

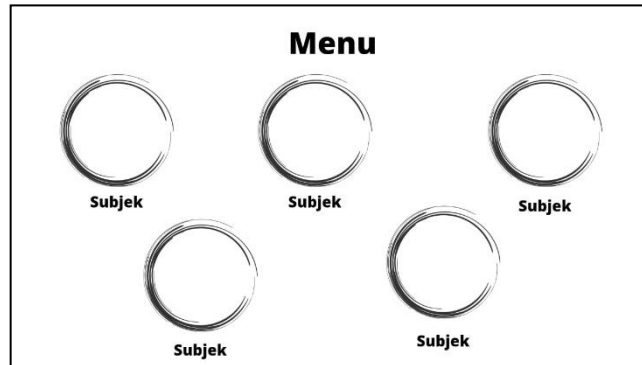


**Figure 1.** Janecil Application Logo



**Figure 2.** User and Application Interaction

Next, the interface of the interactive application "Janecil" was designed. The following are several interface designs for the learning media developed:



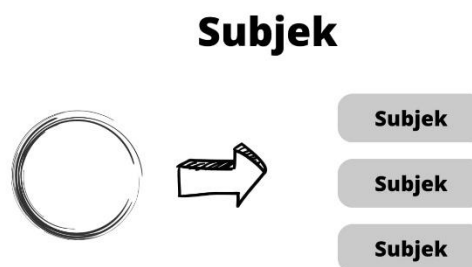
**Figure 3.** Initial Design of the Janecil Application Interface

There is a menu for the "subject" categories you want to study on the home page. Users will be taken to the image selection page to study the selected subjects after selecting them. The following image depicts the page interface design:



**Figure 4.** Interface Design for Selecting Images from the Category You Want to Study

Next, after the user selects an image from the selected category, they will be directed to the image's detail page. The interface for this page has been designed and can be seen in the image below:



**Figure 5.** Knowledge Interface Page

### Development Stage

After analyzing user needs and designing an appropriate interface, the next step is to enter the application development stage. At this stage, researchers have succeeded in



producing an interactive application called "Janecil" based on the development process that has been carried out.



Figure 6. Janecil Application Home Page



Figure 7. Image Selection Page from the Category You Want to Study



Figure 8. Application Details Page

## B. Discussion

This study leads to the development of learning materials for traditional herbal medicine for early childhood, which is intended to foster cognitive development and interest in discovering local authentic spices. This includes the ability to understand, hear, process information, remember, and put into practice what has been seen and heard. This learning media application focuses on educating young children about traditional herbal drinks and contributing to improving their natural health.

This application contains a number of educational features, such as questions and answers about traditional drinks, recipes, various herbal medicines, and the properties of

herbal medicine. Activities in this application include learning about herbal drinks, learning the names of medicinal plants and their physical forms, and learning the benefits of herbal medicine. Technology such as the Janecil interactive multimedia-based application can be a solution to convey health information to children from an early age. Of course, in accordance with the aim of technology, namely providing a rich and enjoyable learning experience.

According to research by Iwan Setiawan et al., young people rarely know and are interested in herbal medicine and traditional medicinal plants. Even though traditional medicinal plants are quite common in the area, initial exposure to herbal medicine will provide information that the disease can be treated with methods other than chemical treatments. However, with a basic understanding of application as well as direct experience and practice, children can be taught and given a deeper understanding of how herbal plants found in gardens and sold in markets can cure many diseases (Setiawan et al., 2018b).

## CONCLUSION

Based on the development efforts carried out, a blueprint for the interactive application "Jamune Cah Cilik" has been produced, which aims to educate young people about healthy drinks. The next stages include implementation and evaluation. The next two stages involve testing the product being developed, which is divided into two stages: alpha test and beta test. Alpha testing is conducted by media and nutrition experts, while beta testing involves end users. However, these two phases have not been presented in this research article because this research exclusively concentrates on the application development process, especially up to the development stage.

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This article still has many shortcomings and improvements. Please provide constructive criticism and suggestions for future improvements. Hopefully, in the future, this article will be useful for all of us and can become a reference in other research.

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