Stunting for isemantic

by Vilda Setyawati

Mobile Health Nutrition Book Design to Prevent Stunting at Childreen <5 years

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Through the national health work meeting (RAKERKESNAS), stunting is one of three health problems that are prioritized to be handled holistically by several ministries. However, the treatment are preventive and curative from one party only (the government). Laymen, often do not understand things related to stunting itself. Stunting is a growth disorder that affects children's growth and development. Efforts can be made to support the program by providing health education for mothers. In the digital era, almost everyone has a smartphone that can be used for health education media. This study aims to compile a mobilmobile book design that is expected to help mothers to monitor children's growth and development. The approach used in this study is an object-oriented approach. The method used is the method of developing SDLC prototyping models with usability testing. The steps taken are Requirement Analysis, Design & Development, and Application and Testing. Based on the results obtained, the mobile health nutrition book can be produced and used on mobile phones that have an Android form plate.

Keywords : Health nutrition, mobilmobile book, SDLC, prototyping

I. INTRODUCTION

Toddlers are children aged 0-59 months. Infancy is a golden period in the process of growth and development. In its time Growth and development will be decisive in the success of child growth and development in the next period. Growth is a process of increasing the size / dimensions of the body due to the increasing number and size of cells. Development is the process of organ function maturation, which is shown by the development of abilities, intelligence and behavior [1].

Factors that influence the growth and development of children after birth are poverty, infectious diseases, reduction or deprivation of rights, injustice, limited access to health service resources, food and nutrition information, and ignorance of the relationship between food and health or body needs [2].

Based on Riskesdas 2013 there was an increase in stunting children from 36.8% in 2010 to 37.2% in 2013. Over the past 20 years, handling stunting problems has been very slow. Globally, the percentage of children who are stunted has declined by only 0.6% per year since 1990. WHO proposes a global target of a decrease in the incidence of stunting in children under five years of age by 40% by 2025, but it is predicted that only 15-36 countries meet the target [3].

Health problems that inhibit the growth and development of children, namely stunting. Even according to the results of the national health work meeting (RAKERKESNAS), stunting is one of the priorities besides tuberculosis and improving the quality of immunizations. Cross-sector handling, involves many components and costs are not small. However, being a problem in the region, many people do not understand stunting [4]. One example when stunting was the topic of discussion in a regional head debate, there were several regional heads who were still not exposed to this term. Therefore, education is needed for the community to understand stunting.

Children have the right to foster care, compassion, and sharpening with a maximum age of gold. These three things will have a good impact on the growth and development of children if given appropriately according to their age and sex. People who play a role in child development are mothers. Generally mothers provide education to their children since they were born. Mother is the first and most important teacher for children. A housewife is not a nutritionist, but must be able to compile and assess the dishes that will be served to family members. Knowledge of health nutrition for mothers is needed so that children get proper care. Lack of knowledge and misconceptions about food needs and food values are common problems. One of the causes of stunting problems is lack of knowledge about nutrition or the ability to apply that information in daily life [5].

Mother's character is increasingly following the times. At present, almost all mothers already have cellphones that can be used as health education media. The purpose of this study is to compile a mobile health book that can be used as reference material for mothers to provide care, compassion, proper teaching so that children avoid stunting.

II. HEALTH EDUCATION

Nutrition and health education is an educative approach to produce improvement or to maintain good health status. The objectives of nutrition and health education are as follows:
a. Can form a positive attitude towards health.

b. Knowledge and skills in selecting and using food ingredients.
c. The formation of good eating habits
d. There is motivation to find out more about things related to health.

Nutrition education in particular to increase the knowledge of mothers aims to change wrongdoing which results in the danger of malnutrition. Media for nutrition and health education is equally important in the process of delivering health information. This media serves as an extension tool. Based on its function, the media is divided into 3, namely [6]:

a. Print media, consisting of: booklets, leaflets, flip charts, rubrics, posters
b. Electronic media is a medium for delivering health information through television, radio, video, or slides, smartphones
c. Media boards (bill boards) usually installed in public places can be used as a medium to convey health messages / information.

III. METHOD

The approach used in this study is an object-oriented approach. In addition, the SDLC method prototyping model is used with usability testing. Steps taken in the prototyping model include Requirement Analysis, Design & Develoment Application and Testing. These stages can be done overlap and cycle.
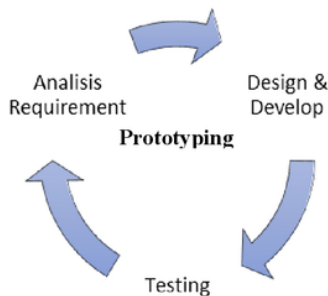

Figure 1: Prototyping Model Diagram

At this step of requirements analysis, defining what material is needed to make a mobilmobile book for stunting prevention is done. The results of the needs analysis to expand the stunting prevention mobilmobile book application system include functional requirements which include the need for material / title selection, title search and facilities to determine material content. Non-functional requirements that include software requirements include the Windows 8 Operating System, Android Study 3.1, Android Emulator, Adobe Photoshop and Google Drive. The minimum hardware requirements needed to build this application are the Core I5 Processor, 8Gb RAM, 1636 VGA.

In the design phase, the design of the general system design will be carried out with tools such as use case diagrams, Activity Diagrams and Class Divisions. The user interface

design that is made is expected to be a user friendly design so that it will facilitate the user in using the application. In this stage Menu Design is made to facilitate application users in tracing the menu layout. Some displays that are designed and built include Splash Screen, home page, and Material Pages that are equipped with images to enhance the appearance.

At the testing stage is done by usability testing. As for some things that are tested, among others, the function of the material selection menu button. Application prototype is made using Android Studio software, usabiliy testing scenario is done by asking the user to try to choose a theme / title of the material to see whether the content of the title can appear on the screen or not. The prototype was tested to the user with criteria for Male / Female aged 25-35 years and familiar with smartphone usage.

IV. RESULT

The system design tool used is UML (Unifield Modeling Language) which is a graphical language for documentation, specifications, visualization, and building software systems. UML provides standards in notations and diagrams that can be used to model a system [7].
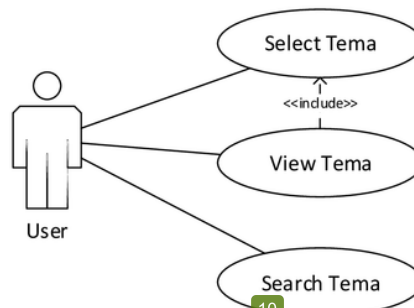

Figure 2 : Use Case Diagram

Use Case Diagram
The use case diagram above serves to explain the interactions that occur in the application system, the series of interactions between users and application systems that occur for more details will be described in the use case scenario as follows.

Nama Use Case : Select Tema	
Function	Select the options provided in the menu and sub menu according to the theme in the stunting prevention mobile book
Use Case Scenario	Users on the main menu page first select a title or subtitles from the menu icon. To be able to see the content the user must choose a title in which there

	are several options such as Toddler Growth and Development, Stunting, Sharpening, Care and Fostering
Actors Involved	User

Nama Use Case : View Tema

Funtion	Displays the theme / title that has been chosen by the user
Use Case Scenario	After the user chooses the theme, the user will be able to read the content of each theme that has been chosen.
Actors Involved	User

Nama Use Case : Search

Fungsi	Look for Themes / Titles in mobile book
Use Case Scenario	Users / users can search the content based on the desired theme / title
Actors Involved	User

Activity Diagram
Activity diagram is a depiction of the work flow of the E-Book stunting prevention application. Activities described in the activity diagram are not activities carried out by the user but activities carried out by the system from what the user does. The activity diagram is as follows:
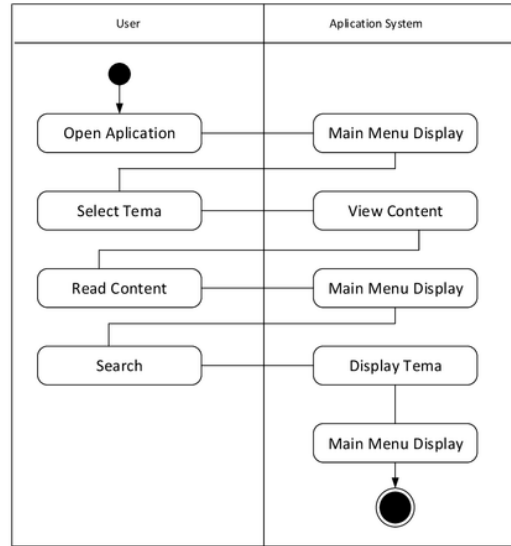

Figure 3 : Activity Diagram

In the activity diagram, the user first opens the application then the system application will display the Main Menu E-Book Prevention Stunting, User then selects the theme or title to be read, from the user system application options will then display the content of the theme or title that the user has selected . The user reads the content that has been selected, the application system provides facilities for searching the title or theme that the user wants and will display search results performed by the user.

Class Diagram
The relationships between classes that occur in the design of the stunting prevention e-book application system can be described as follows:
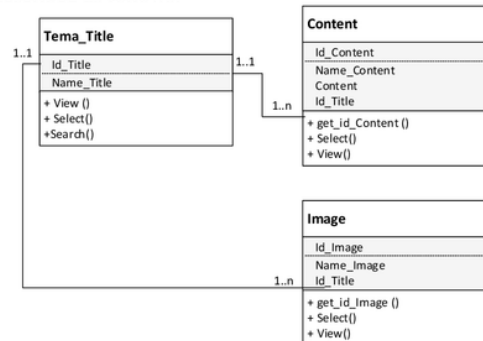

Figure 4 : Class Diagram

Menu Design
Menu design is used to facilitate searching when running a stunting prevention book mobile application program will be created, the menu structure design on the mobile-based mobile book prevention stunting application program can be described as shown above. The menu consists of the main

Menu (Theme / Material, Sharpening, Asih, Foster and Search). In the material menu there are sub menus, among others, toddler growth, development and development, stunting (prevention and impact of stunting) and the right 3A.
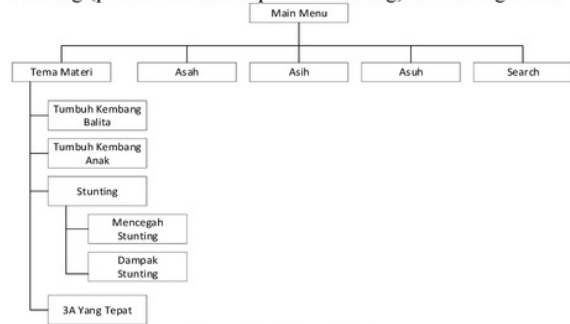

Figure 5 : Menu Design

Implementation Result

Is the result of the steps that have been taken before. The results of the making of the stunting prevention e-book can be seen in the picture below as a sample user interface, which includes the display of the main menu display material and the appearance of the stunting material.

Figure 6: Tampilan User Interface

V. DISCUSSION

There are different ways through which parental education can affect their children's health status. Education might have a direct impact on child health because it increases the ability to acquire and process information. This helps parents to prevent stunting and make better health investments for themselves and their children and may result in better parenting in general. Alternatively, education can affect child growth and development through indirect pathways. An increased level of education can give access to more skilled work with higher earnings and these resources could be used to invest in growth and development to cushion the impact of adverse health shocks [8].

Health education is needed by parents as early as possible. If necessary health workers should provide health education since the mother is still pregnant. According to research conducted in Nigeria, maternal education provided since the fetus is still in the womb, effectively increases knowledge and changes health attitudes (p <0.05) [9].

The development of technology in the era of globalization is very rapid as it is today, technology is used to help human work, where in this case mobile-based applications are used to facilitate or help users to find out nutritional status. Based on these conveniences, mobile-based applications are currently very popular because they are easy to use and easy to access anytime and anywhere.

The development of information and communication technology (ICT) today has penetrated into various aspects of life. The more affordable the prices of hardware such as computers, gadgets and other devices, supported by the increasingly easy operation of software that works on various hardware platforms so that it can help solve various complex computations or use various applications for science, education, economics, entertainment and etc.
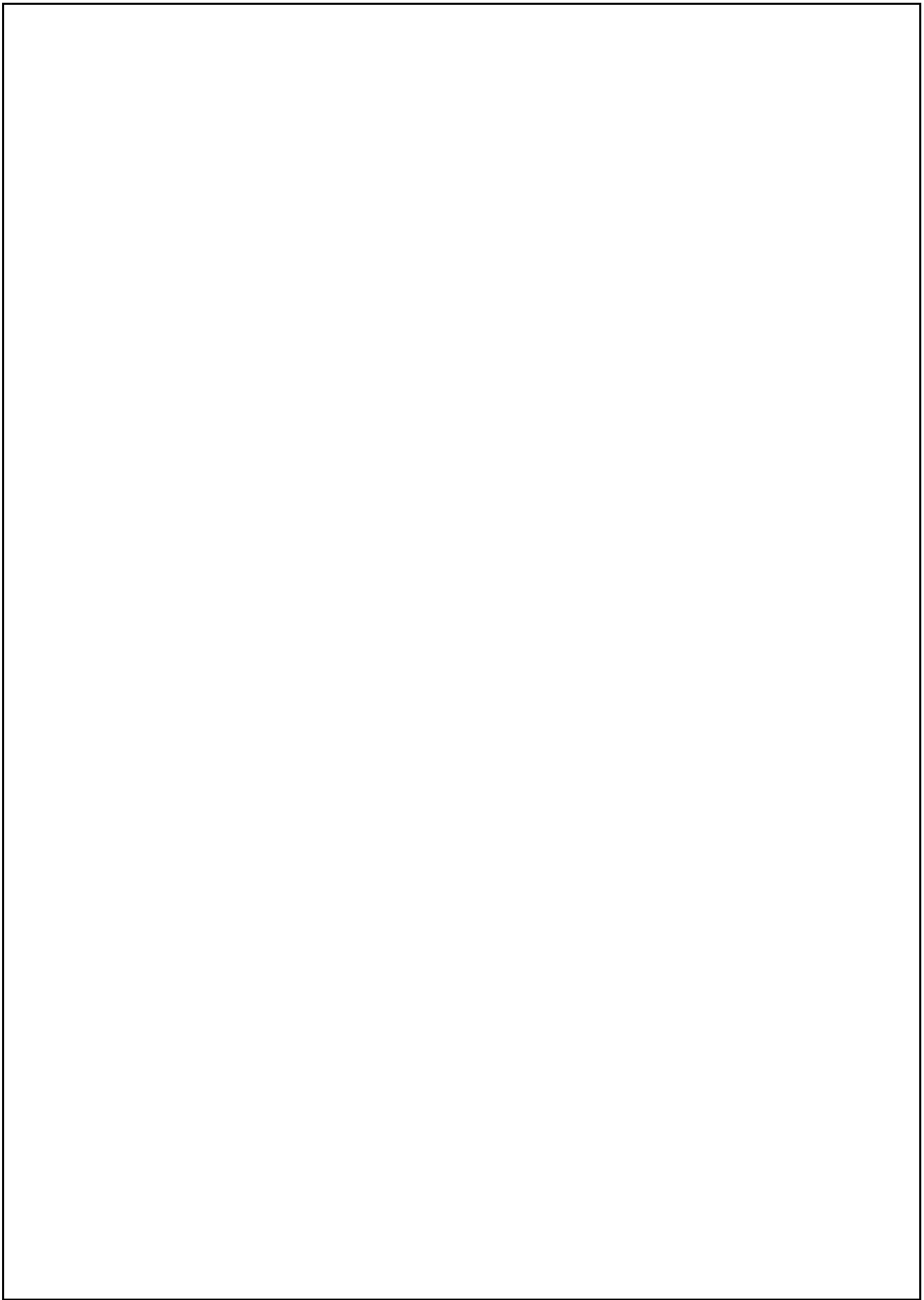
In another category of smartphone functionalities, Hardyman et al investigated the use and perceived value of a smartphone with a library of medical textbooks preloaded onto a micro secure digital card to support workplace learning [10].

VI. CONCLUSION

Based on the development method of SDLC prototyping model, the design has been successful through all three processes, namely needs analysis, design and development, and testing. Based on the results obtained, the mobile health nutrition book can be produced and used on mobile phones that have an Android platform.

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