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Analysis User Interface: Development of E-Fotonovela for Deaf Students

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ABSTRACT

This research deals with the use of development applications using mobile devices as tools for mixed learning models. However, in developing learning applications, one important concern is the user interface (UI). Therefore, the purpose of this research is to find out which UI design components are easy to use and according to the user to be more user friendly, so that the purpose of using mobile applications for education can be realized. This study covers design principles that are appropriate for applications developed for platforms. Based on research, user interface testing has been carried out from 5 user interface principles and analysis using the System Usage Scale (SUS) given to 12 respondents. The results showed that the majority of respondents agreed that the mobile application developed had met the requirements of the user interface element.

Keywords: E-Fotonovela, deaf, mobile devices

INTRODUCTION

Efforts to improve the quality of education are always carried out in order to face the process of globalization and face the development of science and technology which are increasingly complex and greatly affect the joints of life. Learning is one component in education. In the learning process involves the interaction between educators and students. Success in the learning process depends on the creativity of the educator in delivering learning material and on the desire or motivation of students to accept learning.

Multimedia technology has promised great potential in changing the way a person learns, obtains information, adjusts information and so on. Multimedia also provides opportunities for educators to develop learning techniques so as to produce maximum results.

Children who are categorized as children with special needs are children who have mental retardation, learning disabilities or attention disorders, emotional or behavioral disorders, physical barriers, communication, autism, traumatic brain injury, hearing impairment, visual impairment, and children who have special talent [1]. In SLB, deaf children receive the teaching of Natural Sciences (IPA), where physics is one of their knowledge. Physics is one of the branches of science that aims to study and analyze natural phenomena or processes and the nature of substances and their application [2]. The values of character education can be developed, integrated and internalized with students through the learning process, including physics learning [3].

Based on the results of previous research by Farida Ariyani, Taras Nayana, Antomi Saregar, Yuberti, Agitha Pricilia in her research entitled 'Development of Photonovela with Character Education: As An Alternative of Physics Learning Media or Photonovela Development Based on Character Education', stated that the assessment results by material experts got a percentage of 85%, media expert ratings were 90%, and middle school teacher ratings were 84.16%, while the responses from students in three junior high schools were 87.6%, 94%, and 93.6%. In conclusion, the study produced a product in the form of appropriate and appropriate photo media as a medium for learning physics with character education in business and energy material [4].

Theoritical review

Learning Media

Media is important in the teaching and learning process between teachers and students to achieve interactive learning in school. Based on the theories of experts regarding learning media, the media have the same meaning, namely the media as a component of learning resources. Temmy Syamsu Taufiq defines learning media as a single unit, meaning that efforts can be used not only in the learning process but in daily life so that learning programs can be sustained and students' progress in learning will be more quickly achieved [5].

Learning media are included in the learning resource component that contains instructional material in the student environment that motivates students to learn. Tools used as learning resources by students that contain learning materials that can arouse student motivation to learn. Learning media can help the teaching and learning process and function to clarify the meaning of the message conveyed, so that it can achieve learning goals better and perfect [6]

Fotonovela

Learning media are classified into several types of media that are used based on needs in the learning process. Fotonovela media is a variety of visual media in the form of images or photos that are put together into books. According to Parlato et al in Ridho Adi Negoro, said that fotonovela has a uniformity with comic and comic that is containing messages that are equipped with pictures and illustrations. Fotonovela uses images with high reality in the form of photographs while comics and comics that use pictures with reality that are lower than fotonovela because it is in the form of abstract images [7].

Djohani et al in Dwi Wahyuni's book stated that fotonovela is a media that resembles comics or picture stories, using photographs instead of illustrated images. Fotonovela is a visual media that has general characteristics, which are easy to make themselves in a simple, inexpensive, in accordance with students' emotional, easy to prepare and use, very practical treatment and themes in this media are lifted from the conditions of students with the intention that students more easily understand it [8]. According to Boyte, et al. in the research of Ruth Koops van Jag t Jagt, et al., stated that the benefits of the visual form of narration, fotonovela, are strategies to reach audiences with low literacy levels. Fotonovela is a small book that portrays a dramatic story with photos and captions, enabling engaging audiences with realistic characters, simple texts, and real photographs [9].

Making fotonovela begins with making a story script as a basic material. This text is then arranged into a storyboard for reference to take pictures (photographs). So, fotonovela relies more on the strength of the script rather than the strength of the scene and the player's expression. Based on the results of Kirova's [10] fotonovela is an effective approach as a medium because it makes it possible for children to realize a picture of something visually. Fotonovela is very appropriate to be used as a learning medium in deaf children, because they use a lot of vision [10].

Deaf

Every child has their own characteristics. Some children are born with perfect physical but some have limitations or deficiencies in one of the senses of the body. The limitation to the functioning of the sense of hearing is called deafness. Children with hearing impairment are children with hearing loss with some level of hearing loss from low, moderate to severe, so that they have problems in receiving information in language that causes children with hearing loss also experience problems with speech due to lack of vocabulary absorbed by hearing.

According to the Librarian in the book Ministry of Education and Culture states that deaf children are children who have difficulty hearing ability from mild to severe, which are classified as deaf and less hearing, thus inhibiting the process of receiving language information through hearing whether using hearing aids or not, by therefore special guidance and education is needed in accordance with their needs to optimize the language and its potential [11]. In general, deaf children who are not accompanied by other abnormalities, have a normal level of intelligence, but often determined their academic achievement is lower than children hearing the same age. According to Lanny Bunawan as quoted by [12], disability does not result in a deficiency in their intelligence potential, but deaf students often show lower academic achievement results compared to children hearing their age [12].

RESEARCH METHOD

In designing this research to build mobile applications used thunkable applications. After the mobile application is developed, user interface testing is carried out. Survey questions from 5 user interface principles based on research by Bunga Lailatul Riqki [13]. Aspects include: content, natural use, navigation, consistency, flexibility. Questionnaire analysis used the System Usability Scale (SUS) given to 32 respondents. Respondents try to install the application and open all the application features so they need to rate each question from 1 to 4 (1 = strongly disagree, 2 = disagree, 3 = agree and 4 = strongly agree). The data collected was analyzed descriptively as mean. The final results of this survey will indicate the level of user interface of the prototype developed.

RESULTS AND DISCUSSION

The development of this media uses the development method of research from Akker which is presented through the stages of research carried out, namely: preliminary research (preliminary research), prototype stage (prototyping stage) consisting of six stages, summative evaluation (summative evaluation), systematic reflection and documentation (systematic reflection and documentation).

Table 1. Component Menu of the Application

Component	Details
Selection Screen	Display selection Indonesia
Main Menu	E-Fotonovela, and Student Center menu (link platform e-learning)
E-Fotonovela Menu	Display the learning sub-menu theory
Video Menu	Display video learning from lecturer linked on Youtube
Student Center	Display e-learning for SLB-B students
Practice	Display evaluation test for general visitor students (English Version)

The following are some screen design application screenshots

Figure 1. E-Fotonovela

The expert instrument by media experts consisted of 4 aspects with 18 statements to get a proper category in the media fotonovela. While the instrument in the material expert consists of 4 aspects with 15 statements that must be filled out by the material expert in order to find out the suitability of the material contained in the media photonovela. Then the validator results are used as a reference for the feasibility of developed learning media.

This application is rated user interface. Based on the findings from Figure 1 it can be concluded that respondents have a high level of agreement on the mobile application development user interface. This is indicated by the overall average score for the 4 principles of user interface at a high level (language average = 54%; material average = 98%; average benefit = 85.67% and design 87%).

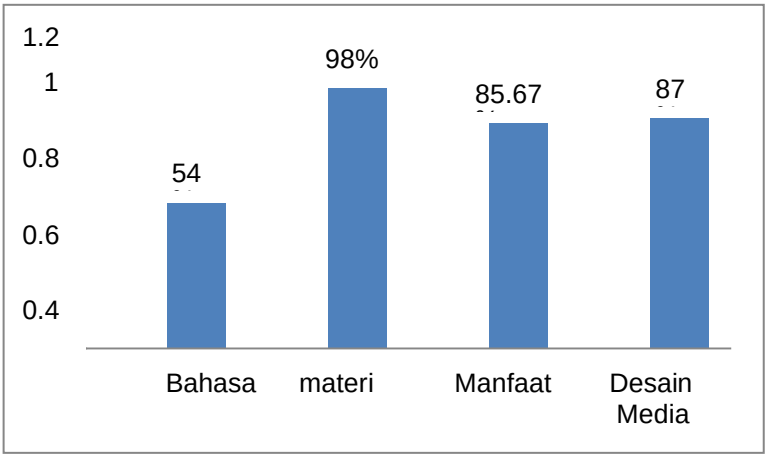

Figure 2. Graph of Average value for 4 user interface principles

Data analysis and percentage data of assessment by media experts and material experts as well as the percentage of respondents' ratings in the validation test of small groups. Based on the principles of identified user interface results (Figure.1, and figure 2.), below are some discussions about the android application that is being developed. The first principle, the overall application of the content presented is relevant to competencies for students. The contents of the application are also designed in the form of stories so students can easily find important information. However, because this content is magnetic, there are some symbols that are not appropriate.

Then, the second principle, the application installation process is easy to do and the process can be used in all versions of Android with all screen resolutions. But, this application has a large size memory. The third principle is navigation. The button display works fine but suggestions for revision are given additional buttons on the screen to move to another page or to move to another section with only one or two key presses. After that, consistency, all page layouts are designed the same. And then, the principle of suggestion flexibility is to make the menu button back on the screen so that users can jump from one section to another easily.

CONCLUSIONS

Evaluating the user interface is important in developing mobile applications. By knowing the achievement of the principle of the user interface can improve the quality of application functions that are made so that it is easier and more interested in using. In this study the results obtained from the assessment of 4 user interface principles were 98% which were considered high. The results showed that the majority of respondents agreed that the application developed had a good user interface.

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