

## Development of Eye Care Android Application for Children

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**Abstract:** The study was conducted to develop an eye care app for children to convey information and to alert parents or guardians about the importance of keeping an eye on children using the android application platform. The issue of eye care among children has been ignored because many children have vision problems early in their age. The development of this android application is very interesting and suited to the present-day delivery method of this technology which can be translated into a more dynamic form than the use of statistically-presented information delivery using the right distance to the smartphone screen. Waterfall models serve as a guide throughout the process of developing this application. The testing and evaluation of this application is done through expert review methods that have been performed on four experts. In this study, three interface experts were selected, lecturers with extensive skills in creative multimedia from the Faculty of Technical and Vocational Education, University of Tun Hussein Onn Malaysia (UTHM) and an expert in eye-catching content from the Islamic University of Malaysia (USIM). The results of the study show that all experts have given positive comments, suggestions and feedback on this developed application. In conclusion, this app can alert parents or guardians of the importance of keeping an eye on children. It is hoped that this app will become an interactive health knowledge platform and will attract more parents or guardians to provide good care for the child's eyes.

**Keywords:** Eye Care Application, Children, Eye Exercises

### 1 Introduction

Children today need to be given full attention in their current development. This is because children today are the catalyst for the future of the country. Children are a very important part of society, which is a national asset and the heart of national development in the future in the National Children's Policy 2018. In addition, children need to take care of their own health, especially in the eyes. The eyes are the main senses for a child who is still going through the learning process because as a whole they will learn something based on what they see. The eye is a major organ in children's learning where 80 percent of what is learned is through sight (Ahmad, 2019). Eye care among children nowadays is given

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less attention and causes most children to have vision problems. The results of the study showed that 25.4% of children were categorized as having moderate limited vision, 33.9% had severe limited vision and 40.7% were blind (Omar, Knight, Mohammed & Tholasee, 2007). To reduce vision problems in growing children, parents should play an important role in a healthy diet for their eyes. One way is that parents should pay attention to the foods given to children and are advised to prepare foods that contain a lot of vitamin A. According to Brazier and Wilson, (2017) vitamins are one of a group of organic substances found in small amounts in natural nutrients and it is essential for normal metabolism. For example, vegetables that contain vitamin A and are good for eye health are spinach vegetables that are very nutritious for overcoming vision problems. Spinach contains a large enough vitamin that can prevent degenerative eye disease which is the destruction of stems and cones outside the retina of the eye (Lingga, 2010).

In addition, eye exercises for children should be done regularly to strengthen the muscles in the eyes, strengthen the eye concentration system and strengthen the center of vision in the brain. This statement is supported by Lin et al., (2013) this eye exercise is performed twice a day by children in school for the purpose of relieving ocular fatigue and reducing farsightedness. Eye exercises work on the principle of removal of toxic substances from the eyes, stimulation of the eyes and its muscles, relaxation of the eyes and mind (Dhote, 2015). This eye exercise is also very easy to do as it can be done anywhere and does not incur any expense costs. According to the Ministry of Health Malaysia (2016), there are many types of eye exercises that can be done easily without involving any special equipment and additional costs, making these eye exercises like a free method of vision restoration. Methods to cultivate awareness of eye care among children are not easy because at this time they are at the stage of exploring the environment around them. According to Sumrah et al., (2008) the growth of children is associated with behavioral problems experienced such as resisting or not following instructions as well as overly dependent attitudes. Nowadays, the application is a platform for all groups, including children, in finding reference sources and knowledge.

Abdul Manaf, Zaid and Din, (2015) stated that the use of applications is one of the materials that can be used in seeking knowledge in this modern age because it can be obtained for free or paid. In addition, the development of the application can provide awareness to parents or guardians of the importance of eye care at the age of children. An application is a computer program created to perform and perform special tasks from a user (Ihsanuddin et al., 2014). Therefore, the development of eye care applications for children is expected to help parents in adopting the correct methods in children's eye care well and monitoring from parents and teachers in the use of smartphones.

## 1.1 Research Background

In this modern age, the existence of a variety of unhealthy foods and detrimental to the health of the child will cause great harm to them. The consumption of banned foods as early as the age of the child will dominate the nutritional, health, and psychological status of children as they grow older (Buhari, 2003). In addition, parents should also play an important role in the consumption of healthy foods for children. One way is for parents to pay attention to foods provided to children and to be advised to provide foods containing vitamin A (Budiharto, 2015). The next method of eye care in children is that eye exercises for children are very good for sharp eyesight and can create good eye therapy. According to Dhote (2015), for healthy eyes and bright eyes, eye exercise is a very effective therapy. Unfortunately, most people today do not exercise enough for good health. If the child does not receive proper care in the early stages, it can cause a variety of symptoms which can lead to vision problems such as blindness, cough, eye pain, and so on. Vision problems in children if given too late for treatment and prevention can lead to serious problems in the future (Hussin, Omar & Victor, 2009).

Further vision distances between eyes and gadgets should be a proper technique to prevent any visual impairment in children. Leaving the eye to interact with the device for too long, in the long run, can pose a risk for eye problems, and the result is eye fatigue (Fitri, 2017). In this 21st century, mobile

technology can help individuals find information or perform their day-to-day work with just the tip of a finger. With the application in the smartphone, users can use the application anywhere without the time, place, and so on with a combination of user-friendly, multimedia and mobility elements (Abdul Manaf, Zaid & Din, 2015).

## 1.2 Problem Statement

Based on the background of the problem, eye care among children is very important for their future. Vision problems in children without early treatment and prevention can lead to serious problems in the future. Therefore, parents should play an important role in maintaining healthy nutrition for the eyes of their children. In addition, eye exercise is important to strengthen the eyesight of children in their early years. To achieve healthy eyes and visual acuity, practicing eye exercises is a very effective therapy. These eye exercises should also be done continuously to have a good effect on the child's eyes. Today's sophisticated technology makes kids more focused on their daily activities with their gadgets. Children of today are making technology gadgets as their loyal friends and playmates especially when connected to internet networks. Therefore, parents should play an important role in monitoring children's behavior in the use of gadgets. The use of android technology can be used as a platform for effective technology in children's learning. Learning application programs that work on the Android operating system are great at helping the learning process and improving understanding because they are engaging. Therefore, the development of eye care apps for children will be based on the android app to provide parents with exposure to and understanding of the importance of eye care early in childhood. The objectives of developing this study are to:

- i. Design eye care application for children.
- ii. Develop eye care application for children.
- iii. Evaluating the functionality of eye care applications for children.

## 1.3 Literature Review

Literature review is a review of information obtained from books, journals, past research for a new research. In this chapter the focus is on the Development of Eye Care Application for Children.

### 1.3.1 Eye Care Methods

According to the Ministry of Health Malaysia (2015) to ensure that individuals can enjoy good and long-term vision, they must focus on eye health and maintain overall function in vision. Among the eye care methods that developers are focusing on are eye exercises, healthy nutrition for the eyes, and proper use of the gadgets. These eye exercises are the activity of relaxing the eyes to strengthen the muscles of the eye and promote the circulation of blood around the eyes so that the eyes look fresh (Maryoto, 2009). According to the Ministry of Health Malaysia, (2014), healthy nutrition for the eyes is by adopting and prioritizing food sources of colour, greenness, and redness. According to MyHealth, (2015) the use of appropriate distance in the use of gadgets to keep the eyes tired and tired while using the gadget.

### 1.3.2 Eye Exercise for Kids

Eye exercises work with the principle of removing toxic substances from the eyes, stimulation of the eyes and muscles, relaxation of the eyes and mind and helping to enhance the ocular extra muscles, the flow of the mind to see objects and improve the determination of the eye center (Dhote, 2015). This statement was also supported by Malaysian Health Sciences, (2016) which stated that this exercise would strengthen the eye muscles, strengthen the central nervous system, and stimulate the central nervous system. To achieve healthy eyes for children, these exercises should be performed at least twice daily to relieve ocular fatigue and reduce long-term vision problems (Zhong, 2019). According to Zhong, (2019) again in China, the National Education Commission has mandated Chinese exercise methods that were introduced in the 1980s to schools there.

### 1.3.3 Balanced Nutrition for Children's Eyes

The Ministry of Health (2014) states that the human body requires calcium for strong and healthy bones just as the eyes also require a specific set of nutrition to regulate retinal function and overall eye health. According to the Ministry of Health Malaysia, (2014), proper nutrition for the eyes is to take and prioritize sources of food that are greenish, greasy, and reddish. For a healthy diet for the eye, humans need at least a diet containing vitamin C, beta carotene, vitamin E, vitamin B2, vitamin B6, selenium, zinc, bioflavonoids and essential fatty acids as all of these nutrients are already present in the daily diet of humans. (Maryoto, 2019).

### 1.4 How to Use a gadget for Children's Eye Health

In this modern age, various advanced technologies can benefit consumers including children. Gadgets are small objects or electronic devices that have special functionality and are different from technology as they are not updated from day to day with the latest and greatest technology (Omar & Latip, 2015). Monitoring the use of these gadgets for the health of the parents' children should play an important role in controlling the use of the gadget among their children. Hafiz Al Ayouby, (2017) said that parents should not give gadgets to children under the age of six because, at that time, they were encouraged to engage in social activities. According to MyHealth, (2015) the ideal sight distance for children to see gadgets is not less than 18 inches while they should also practice the 20-20-20 rule, which is to use the gadget for 20 minutes, then 20 seconds to relax the eye by looking at 20 feet equals 6 meters. According to OSHA, (1996) screen distances to screen for computer use or gadgets of at least 20 to 40 inches or 50 to 100 cm.

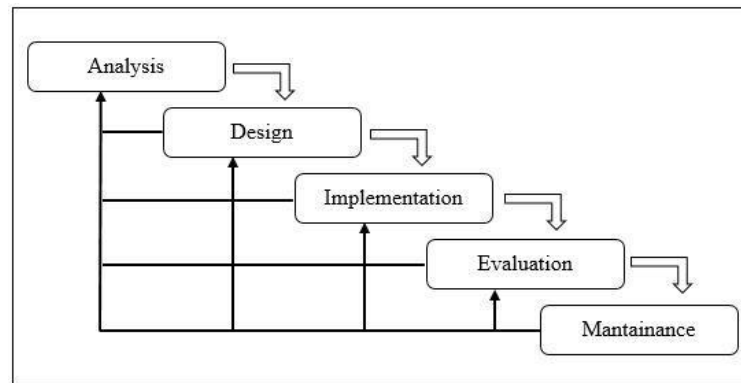
### 1.5 Android Application for Information Delivery

Android applications are an open-source for mobile operating systems supported by Google Corporation, a world-leading search engine company (Rahim, 2013). According to Rahim, (2013) again android-based smartphones have become indispensable communication for many individuals, especially students. In addition, smartphone technology and applications provide opportunities to collect and disseminate information about individual healthcare and behaviors to improve self-management in healthcare changes over time and many applications have a well-designed structure and navigation, sometimes with problems. technical to the functionality and interactivity of this technology, in some applications may be federally controlled in the future (Kratzke & Cox, 2012).

Studies by Skinner, Biscope, Poland and Goldberg, (2003) conducted studies on adolescents, most of them using information technology in the search for health information rather than traditional approaches to technology such as mobile phones, interactive websites, and so on. accessible 24 hours nonstop.

## 2 Methodology

Waterfall model was chosen because the process involved in the development of this product is either follow-up or follow the steps in the waterfall model. Each process or model of the waterfall model has its own specifications, so that the product developed can meet the needs of the customer and the user friendly according to the respondent level. This waterfall model has five phases namely planning, analysis, design, implementation, and testing. Figure 1 showed the phase in waterfall model.



**Figure 1: Waterfall model Pressman (2010)**

## 2.1 Phase Analysis

In this phase, analysis is conducted before designing the application using this waterfall model as a guide to identify the related problems. In addition, the things that need to be emphasized in this phase are to identify problems, determine the objectives and scope of the project, and analyze existing health applications with health applications for children to be developed. Next, the developer should analyze the instruments that need to be used in obtaining data from children on the level of eye care among them where the respondents involved are level one children in the range of year one to year 3 from Sekolah Rendah Kebangsaan Pintas Raya, Batu Pahat . Next, the developer should estimate the time and cost required in this development to avoid any possible risks during the development process of this application. In addition, the developer should analyze the requirements for the hardware and software to be used in this application so that it can run as planned.

## 2.2 Phase Design

The design phase is the second phase after the analysis phase which is conducted to explain the needs of the project in a clearer form according to the plan and guidelines that have been set. According to Constantine (2006) the resulting design production will be more accurate, easy to use and meet all requirements for this function. In this phase it involves things such as the production of the storyboard design, the construction of the flow chart and the navigation structure that will be used to explain the actual picture or journey of the application to be developed. A rough sketch of the storyboard is produced as a preliminary planning or an overview of the application development planning through the analysis conducted in the previous phase. Next, the developer sets an appropriate theme to grab the child's attention and uses the appropriate type of text. The use of multimedia elements such as audio, text, graphics, video and animation is also used in this application. Regarding the video part, the developer put in relation to the eye exercise techniques that are based on 3D animation. Through this phase can be seen the overall picture of the design, application content type of media and technology used is explained through the storyboard produced.

## 2.3 Phase Implementation

The implementation phase is the production phase of an application development by using software that has been planned in the previous phase. In this phase, it focuses on the interface production process and software usability in the development of eye care applications among children. In addition, the planning of multimedia elements has also been included in the storyboard design. During the production of this product, the developer should follow the storyboard and flowchart that has been developed previously. This storyboard is a visual arrangement guide for developers to produce a product interface according to the storyboard planning Flowcharts, on the other hand, are processes or sequences for developers to perform development tasks according to what has been planned.

## 2.4 Phase Testing

Once the product has been developed, the developer must test the product to ensure the effectiveness and functionality of the product in good and perfect condition. Evaluation was performed on all phases to ensure its effectiveness. In this formative assessment is conducted to experts such as content experts, interface experts and also to users to get feedback for the content, strategy, graphics, audio, video, interface and so on through questionnaires.

## 2.5 Phase Maintenance

In the last phase this is the monitoring phase from time to time after the software begins to be used by the user. This maintenance is done to ensure that there are no problems with the developed product. This phase is also to identify undetectable errors in the testing phase. In addition, all risks such as errors and problems that occur can be corrected. Furthermore, it can provide an opportunity for developers to make product improvements according to the needs and tastes of consumers.

## 2.6 Develops the Eye Care Application for Children Interface

Developer is developing interfaces based on storyboards that have been designed to facilitate each level of application development.

### 2.6.1 Home Screen Interface

In every development that needs to be developed, there should be a key point for the user to begin development. In this eye care app for children developers have developed a great look for users who are ready to start using this app as shown in figure 2.



**Figure 2: Home screen design interface**

### 2.6.2 Home Menu screen Interface

The main menu screen is the next screen when the user clicks the 'start' button. On this menu screen, users can select the option to select the topic they want to see. On the navigation buttons, there are five topic selection buttons namely 'introduction', 'objective', 'healthy nutrition', 'eye exercise techniques', and 'user manual'. In addition, the developer places the 'exit' button on the right side of the application screen. Figure 3 shows the main menu screen.



**Figure 3: Home menu screen interface**

### 2.6.3 Introduction screen

On the introduction screen, the developer places three navigation buttons on childcare. These include information on eye care in children, healthy nutrition for the eyes, and eye exercises. An introduction is placed at the beginning of the application to give the user an understanding of the purpose of the application being developed. Figure 4 shows the introduction screen.



**Figure 4: Introduction screen interface**

### 2.6.4 Note Introduction Screen

On the introduction information screen, the developer enters text for the description of each introductory information screen. In this introductory information screen, the developer maintains consistency at every interface for each subtopic in the topic of introduction. The application interface was shown in figure 5.



Figure 5: Note introduction screen for eye care in children, healthy nutrition for the eyes, and eye exercises

### 2.6.5 Nutrition screen

On the next topic screen, developers place healthy nutrition screens for the eyes. On this screen, developers put a variety of vegetables, fruits that are healthy for the eyes. Figure 6 shows the interface of nutrition screen.

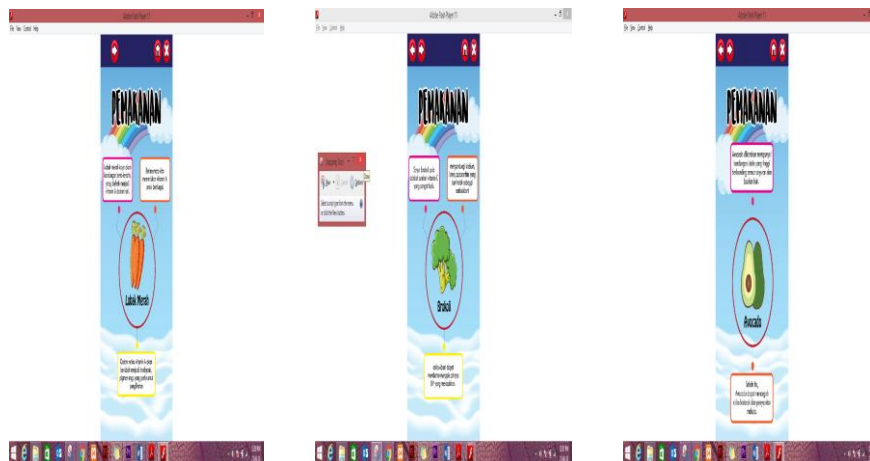


Figure 6: Healthy nutrition screen

### 2.6.7 Eye Exercise Screen Menu

In the next screen development is the subject of screen exercise techniques. In this eye-catching technique, developers categorize it into four buttons, namely four eye-catching techniques. In this navigation button, the developer places four cloud-shaped navigation buttons with gradient colour elements for the exercise techniques. These include rotate, blinking, zooming, and diagnostics. Figure 7 shows the screen interface for eye exercise screen menu.





**Figure 7: Screen menu for eye exercise**

### 2.6.8 Video Tutorial Eye Exercise Screen

On the screen of eye-catching techniques, developers put 3D animated videos on eye-catching techniques. This eye-catching technique video developed in 3D is for users to better understand the technique of eye exercises correctly. Figure 8 shows video tutorial eye exercise screen interface.



**Figure 8 Video eye exercise tutorial interface**

### 2.6.9 User Manual Screen

The user manual screen was developed by the developer to explain to the user the function of each control button used in the eye care application among these children. The buttons used in this application are intended to make it easy for users to quickly and easily reach the information they want. Figure 9 shows the user manual screen interface.



**Figure 9: User manual screen interface**

#### 2.6.10 Exit Screen

An exit screen is developed to tell users whether or not they want to leave this application when they press the 'exit' button on each screen. This view is the text in question. If a user wants to sign out of this app, they will need to hit the 'Yes' icon button and press the 'No' icon to remain on the app. Figure 10.0 shows the exit screen interface.



**Figure 10: Exit screen interface**

### 3 Results and Conclusion

Through expert evaluation, it is divided into two (2) sections, namely, interface design expert review form and content design expert check form. For the interface design expert, three (3) experts were selected consisting of lecturers in the field of Creative Multimedia from the Faculty of Technical and Vocational Education, University of Tun Hussein Onn Malaysia. Whereas for content design specialists, one (1) eye specialist or ophthalmologist with deep experience and eye specialist from the Faculty of Medicine and Health Sciences/Ophthalmology, Islamic University Malaysia (USIM). Table 1 shows the demographics of these four experts.

**Table 1: Demographics of these four experts**

Details	Expert 1	Expert 2	Expert 3	Expert 4
Gender	Women	Women	Women	Women
Educational status	Doctor of Philosophy	Doctor of Philosophy	Masters	Masters
Duration of working experiences	More than 10 years	More than 10 years	More than 10 years	More than 10 years
Specialty field	Information technology	Software Engineering	Instructional design	Ophthalmology

### 3.1 Design Specialist Assessment

The interface design expert's assessment of the development of the application focuses on the content of multimedia elements so that the application is developed to provide clear and interesting information by incorporating a variety of multimedia components. Thirty-two (32) question items were provided to the experts in this section that were developed and analysed using frequency and percentage acceptance levels. Table 2 shows the results of expert evaluation studies on interface design.

**Table 2: Frequency analysis and percentage of expert acceptance of interface design**

No	Item	Frequency		Percentage of acceptance (%)
		Yes	No	
	TEXT	3	0	100
1	The test colour used in this application is appropriate	3	0	100
2	The text colour used in this application are easy to read	3	0	100
3	The text size used in this application is appropriate	3	0	100
4	The type of font used can attract the reader or the user	3	0	100
5	The types of fonts used are easy to read	3	0	100
	GRAPHIC	3	0	100
6	The graphic elements used in each page of this app are in line with the user's goals	3	0	100
7	Graphical positioning in this application is appropriate	3	0	100
8	The function of the icons used in this application is easy to understand	3	0	100
9	The graphic colours used on each page of this application are appropriate	3	0	100
10	The size of the graphic included on each page of this application is appropriate	3	0	100
	AUDIO	3	0	100
11	Background music used in this application is appropriate	3	0	100
12	The music used can capture the attention of users	3	0	100
13	The background music used in this application does not interfere with the users focus	3	0	100
	VIDEO	3	0	100
14	Use if video in this application works well	3	0	100
15	The transmission of information through 3D animated videos on eye-catching techniques is easy to understand	3	0	100
16	The length of time for the video in this app is appropriate	3	0	100
17	Video controls in this application can be controlled by the user	3	0	100
	ANIMATION	3	0	100
18	The animation used in this app are perfect	3	0	100
19	Use of animation can interest user in using this application	3	0	100
20	The 3D animation movement in the visual exercises technique section if this app works well	3	0	100

21	2D animations on the introduction section are appropriate for this application	3	0	100
	NAVIGATION	3	0	100
22	The navigation buttons used work well	3	0	100
23	The colour of the navigation buttons used is interesting in this application	3	0	100
24	Easy-to-use navigation buttons	3	0	100
25	The navigation buttons are well organized	3	0	100
26	The button on the main menu view works well	3	0	100
	INTERFACE DESIGN	3	0	100
27	The use of background of colours on every page in this application is appropriate	3	0	100
28	Interface design is highly customized to suit the needs of users	3	0	100
29	The text positioning in this app is consistent	3	0	100
30	Graphic positioning in this app is consistent	3	0	100
31	Icon positioning in this app is consistent	3	0	100
32	The content contained in this app is appropriate	3	0	100

Table 2 shows the results of the percentage frequency analysis of expert evaluation and acceptance of the interface design. Through the results of the analysis conducted through a questionnaire on the first item, the text section shows that all experts choose the scale "Yes" on question one to question five. All three agree that the type of text and size used in this app is young and clear for users to read. Next, all three experts agreed that the colors on the text were appropriate and did not interfere with user reading. On the next item, which is the graphics section, questions starting from questions six to ten, all three experts agreed that the graphics used in this application are appropriate to the target user, the position of the graphics in this application is also appropriate as well as the color and size of the graphics on each page appropriate. Furthermore, in the audio part, starting from questions eleven to thirteen, all experts agree that the selection of audio for the background music of the application used by the developer is appropriate, can attract users' attention and not distract users when using this application.

In the next section, i.e., question items sixteen to nineteen all three experts agreed that the video on this app could work well. Even the time duration of video and video control in this app can be well controlled. On the animation part, which is a question item of twenty to twenty -three, the experts agreed that the 3D animation used to show the eye exercise technique is appropriate and can attract the user's interest. In addition, the animated movements shown also work well. On the navigation part, starting from question items from twenty -four to twenty -eight, all the experts agreed that the navigation buttons worked well and the attractive colors were used by the developers. In addition, these navigation buttons are arranged consistently on each page. For the design part, it is the question items from twenty -nine to thirty -four. All three experts agreed the use of background colors in the app was appropriate and the positioning of the text, graphics as well as icons on each page was arranged consistently. Furthermore, two out of three experts have provided comments and suggestions on the design section for this app. Expert 1 suggested that the text in the 'Introduction' section be reduced as this app is built for children. While expert 2 suggested using animated infographics in this application, in order to attract more user interest. Overall, all three experts chose a "Yes" scale for all questions in the questionnaire and were satisfied with the development of this developed eye care application for children

### 3.2 Content Design Specialist Assessment

Content design expert evaluation for the development of this application focuses on content to ensure target users can understand the content and the information presented. Thirteen (13) question items provided to experts in this section have been developed and analysed using frequency and percentage acceptance levels to ensure that the content contained in this application is appropriate for the target user. Table 3 shows the results of expert evaluation studies on the content design section.

**Table 3: Frequency analysis and percentage of expert response to the content design section**

No	Item	Frequency		Percentage of acceptance (%)
		Yes	No	
1	The content in this app enhanced the user's understanding of eye care for children	1	0	100
2	The contents of this application are clearly stated	1	0	100
3	The contents of this application are organized in order	1	0	100
4	The content of this application is easy to understand	1	0	100
5	Background music content used in accordance with the application	0	1	0
6	The content of this app can interest children to learn how to care for the eyes	0	1	0
7	The content of this app meets the objectives of eye care for children	1	0	100
8	Use of easy-to understand language is used in this application	1	0	100
9	The content on the nutrition page for the eyes is very clear	0	1	0
10	Fill out the contents of the content page is displayed to suit the child	1	0	100
11	The content in the introduction section is very clear	1	0	100
12	The content of each technique is clear:			
	i. Rotate Techniques	1	0	100
	ii. Blinking Techniques	1	0	100
	iii. Diagonal Techniques	1	0	100
	iv. Zooming Techniques	1	0	100
13	The steps of the eye exercise technique shown in the app are accurate:			
	i. Rotate Techniques	1	0	100
	ii. Blinking Techniques	1	0	100
	iii. Diagonal Techniques	1	0	100
	iv. Zooming Techniques	1	0	100

Table 3 shows the results of the frequency analysis of the percentage of expert acceptance of the content design section. The results of the analysis conducted through the questionnaire showed that the expert chose the scale "Yes" on the first question item and that he agreed that the content in this application can improve users' understanding of eye care for children. In the second question item, the content included in the application by the developer is clear, organized and easy to understand by users as stated in the second question item until the fourth question. However, on the fifth question item and the sixth question experts agree that the background music used in this application is less suitable and less attractive to users to use this application. This is because experts feel developers should increase the number of animations as well as pictures suitable for children and target users i.e. parents as their mentors.

Next, the content of this application can meet the objectives of eye care for children agreed by experts that is on the seventh question item. Experts also agree that the language used by the developer in this application is easily understood by the user i.e., on the eighth question item. On the ninth question item, the expert disagreed with the ninth question item, the expert disagreed that the content on the nutrition page for the eyes was less clear because he felt that on the page the developer could present the content in the form of a mind map. Then, the experts agreed that the content in the introductory section is clear and the content arrangement in the section is displayed in accordance with the children, that is, on the tenth and eleventh question items. On the twelfth and thirteenth items the experts also agreed that the information content for each technique and steps such as zooming, rotate, diagonal and blinking shown in this application is accurate. Overall, the experts chose a "Yes" scale on ten of the thirteen items of the content expert review questions and were satisfied with the development of the eye care app for these children.

#### 4. Conclusion

In conclusion, the development of this app has successfully provided an interactive health knowledge medium that allows users to interact with applications that can help keep kids interested in eye health care using the latest technology. An android application focused on eye care for these children can be accessed via an android mobile device. The process of developing this application is not an easy one, but careful planning must be planned before it can be successfully developed. The use of a variety of multimedia elements in applications has successfully delivered content to users in a more structured and engaging way. The development of this application took about two semesters according to the Bachelor Project (PSM) planning. Therefore, the development of eye care applications for these children is expected to help bring awareness to parents and children clearly. Overall, as a result of the findings of this study, the application was developed based on the objectives and research questions. Comments and suggestions for improvement have also been taken into consideration in the development of this application to ensure it meets the needs and acceptance of users. In addition, receiving and responding from experts is also very positive and all experts agree that the development of childcare applications for children is attractive and appropriate for children.

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