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APPLICATION OF KAWAII USABILITY EVALUATION QUESTIONNAIRE ANALYSIS (CASE STUDY: JALASI AND AIRPORT GUARDIAN APPLICATION)

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PENERAPAN ANALISA EVALUASI KAWAII USABILITY KUESIONER (STUDI KASUS: APLIKASI JALASI DAN AIRPORT GUARDIAN)

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ABSTRAK

Hingga saat ini, masih tidak banyak penelitian yang berfokus pada penerapan evaluasi *kawaii* design yang berhubungan langsung dengan sisi usabilitas produk sendiri. Sebagian besar jurnal internasional masih membahas tentang bagaimana penerapan kawaii design secara umum dan umumnya relasinya dengan aktivitas manusia. Studi terabaru tentang kawaii design dan usabilitas sendiri dilakukan terfokus di kasus kesehatan gigi untuk anak-anak dengan menggunakan KUE atau *Kawaii Usability Evaluation Questionnaire*. Dengan KUE sendiri yang menjadi salah satu media yang sangat baru yang langsung terkait dengan aspek *kawaii* dan usabilitas produk, penelitian KUE pada kesehatan gigi masih terbilang dalam kaitan yang sempit dan lebih mengarah pada tailored tool atau media yang sangat terkait dengan objek yang spesifik. Untuk menyempurnakan desain KUE *Questionnaire* agar lebih bias digunakan untuk produk yang bersofat umum, diperlukan adanya modifikasi bentuk KUE *Questionnaire* sendiri agar dapat diaplikasikan untuk mengevalusi produk di kehidupan sehari-hari.

Hasil penelitian mengunakan evaluasi KUE *Questionnaire* di 2 applikasi baru bernama JALASI (Jaga Laut Indonesia) dan *Airport Guardian* menunjukkan bahwa KUE Questionnaire yang telah didesain ulang bersifat valid dan reliable dibuktikan dengan test *Pearson's correlation* dan *Cronbach's alpha*. Disamping itu pula, dengan adanya data tambahan dalam kuesioner sendiri, dengan tes yang berbeda menunjukkan hasil yang bersifat valid dan reliable juga. Hasil keseluruhan test KUE *Questionnaire* juga menunjukkan bahwa kedua aplikasi hanya membutuhkan perbaikan minor dengan hasil KUE masing masing 3,67 untuk JALASI dan 3,56 untuk *Airport Guardian*.

Kata Kunci: kawaii, usabilitas, KUE, JALASI, *Airport Guardian*

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APPLICATION OF KAWAII USABILITY EVALUATION QUESTIONNAIRE ANALYSIS (CASE: JALASI AND AIRPORT GUARDIAN APPLICATION)

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ABSTRACT

To this day, not many researches specifically focused on the evaluation of kawaii design related to the usability of the product itself. Most of international journal only focused on the basic kawaii assessment or mostly related to the human behavior part of kawaii study. The latest research of kawaii design evaluation is research about the usability evaluation for an application about dental care for child undergo the research to analyze the usability of the product with the tool called KUE or Kawaii Usability Evaluation Questionnaire. As one of the new research related to the kawaii design method that related to the usability of the product itself, specifically design the KUE as a tailored tool and only designed the tool for mixed reality improvement which in reality is rarely used in the real life. For the future improvement and to broaden the usability of the KUE itself, it is a need to do further analysis to improve the current KUE especially that directly related to the more common kawaii design applications. To identify this case, it is needed to analyze a kawaii media that more common to the people daily application.

Research result on KUE evaluation test on 2 new applications which are JALASI (Jaga Laut Indonesia) and Airport Guardian shows that the new designed KUE questionnaire is valid and reliable proven by Pearson's Correlation and Cronbach's alpha value. Moreover, with additional data from questionnaire with different approach of validity testing, the new designed questionnaire proven to be valid and reliable. This result also shown in the observation result which shows that based on the new KUE questionnaire that both applications only need minor improvements which based on the average KUE result which is 3,67 for JALASI and 3,56 for Airport Guardian.

Key Words: kawaii, usability, KUE, JALASI, Airport Guardian

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PREFACE

With all due respect to Allah SWT, because of his blessings and grace that the writer could finish this final project in time. The writer could finish this final project also with the help and contribution from various parties who gives the writer continuous support. Therefore, in this opportunity, the writer wants to express the gratitude towards,

1. Mr. Dr. Adithya Sudiarno, S.T, M.T, as author's supervisor who guided and give a lot of advice for the author to complete and improve this final project report.
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The author realized that this final project report is far from excellent, therefore comment and advices are accepted for future improvements. The author also apologizes if there is any mistakes that exists in this report.

Surabaya, July 2018

Ridho Hidayaturrochman

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CHAPTER I
INTRODUCTION

In this chapter, there will be the explanation about the research background, problem formulation, research objective, research benefit, problem limitation, assumption, and research report systematics.

1.1. Background

Nowadays, with the growth of study of usability test method, the study around the world also continue to improve the method that will be used in the research. This improvement not only to solidify the process but also to maximize the research result for people to understand the meaning of the research thoughtfully. Be as it is to continue from previous research or to build the method from the scratch, the need to of improvement is always there and one of the study that affected by this development is ergonomic study. In an ergonomic study, a way to improve the current method is to specifically made a research to be in line with the research result itself. In a recent year a lot of new study in ergonomic field started to be developed with a modern approach, one of most recent development is one of the branch in kansei engineering called Kawaii Design. Kawaii design started to bloomed in early 2000 with the study of kansei engineering start to develop, the study starts to branch off to other study materials that related to it and one of it called kawaii. *Kawaii* is one of Japanese word that basically directly translated to “cute” in English. In term of Kansei Engineering, kawaii term applied to a product that designed to be attractive to customer as it is defined as an adorable or cute product.

To this day, not many researches specifically focused on the evaluation of kawaii design related to the usability of the product itself. Most of international journal only focused on the basic kawaii assessment or mostly related to the human behavior part of kawaii study. The latest research of kawaii design evaluation is research from (Nugroho, 2018) about the usability evaluation for an application about dental care for child. (Nugroho, 2018) undergo the research to analyze the usability of the product with the tool called KUE or Kawaii

Usability Evaluation Questionnaire. As one of the new research related to the kawaii design method that related to the usability of the product itself, Fachreza specifically design the KUE as a tailored tool and only designed the tool for mixed reality improvement which in reality is rarely used in the real life. For the future improvement and to broaden the usability of the KUE itself, it is a need to do further analysis to improve the current KUE especially that directly related to the more common kawaii design applications. To identify this case, it is needed to analyze a kawaii media that more common to the people daily application.

With the application of kawaii method itself that do not specifically rely on the boundary of physical design, a lot of intention to apply the kawaii design to more common public product increased. With the rapid development of technology especially in mobile phone technology and application, it is easy nowadays to design a kawaii based application. One of the result for this intention is several applications that can help understanding the important of nautical resources with addition to help people in their destination to the nautical tourism. Designed by STTAL with ITS Surabaya to design an application named "JALASI" or extended to "Jaga Laut Indonesia" as an interactive educational media that implement nautical preservation and interactive media such as Mini-Game as the purpose. One more educational media related to the topic is Airport Guardian. As the destination supposes is a travel destination, it is important to not only rely on conventional safety method in your destination process in this context airplane method. This opportunity taken by (Wiguna, 2017) to design the non-conventional educational media named "Airport Guardian" to help the traveller to understand the important of safety in travel process specifically in airplane.

As the new educational media that based on the kawaii design, it is a certain that the value of kawaii of the 2 educational media and usability until now have not yet to be measured with proper tool. Moreover, as one of the new educational media in the market, the quality and reliability is one of the aspect that will attract the user of the educational media. As conclusion, it is needed to analyse the KUE tool of the previous research to be streamlined and be able to reach more common application of kawaii design as for the future research the Kawaii and Usability Evaluation method specifically to be able to analyse the kawaii and reliability value of educational media JALASI and Airport Guardian.

1.2. Problem Formulation

Based on the background explained in previous sub-chapter, this research will focus to evaluate the current KUE to be able to be used to more common application in this case, will be focused on 2 educational media which are JALASI and Airport Guardian educational media.

1.3. Research Objectives

The objectives of this research are:

1. To improve the current KUE questionnaire to be more streamlined with common medias.
2. Validity and reliability check of KUE questionnaire.
3. Evaluating usability of each educational media in term of design usability
4. Proposing an improvement for each educational media.

1.4. Research Benefits

The benefits of this research are:

1. Making the KUE Questionnaire more applicable to common kawaii and reliability research.
2. Proving the validity and reliability of KUE questionnaire.
3. Educational media improvement in kawaii and reliability aspects.
4. Making the educational media more kawaii and reliable based on the result of the KUE Questionnaire test.

1.5. Research Limitation

This research is done with some limitations as purpose to be focused on insight of the results. The limitations is the research for educational media materials only from two media which are JALASI and Airport Guardian.

1.6. Research Assumptions

This research is done with some considerations on the limitations to focused on the research area. The limitations of this research are:

1. There's no change in the educational media version in the play store
2. All the participants are common people that familiar with mobile application

1.7. Writing Systematics

This research consists of several systematics chapters and sub-chapters that used as the guide to record the research progress. The chapters used in this report are explained below:

CHAPTER I INTRODUCTION

This chapter consists of the introduction to the report including the research background as the foundation of this report, problem formulation to list the current problem in the process, research objective which consists of several main objectives of the research, research benefits, research limitations, and writing systematics.

CHAPTER II LITERATURE REVIEW

This chapter consists of the brief explanation of each theories and research materials that used in the research process. Materials that taken from several references such as book and journal also recorded here such as theories in ergonomic fields including the reliability testing, kansei engineering, and kawaii method in general.

CHAPTER III RESEARCH METHODOLOGY

This chapter consists of detailed method for this research simplified in flowchart form. The flowchart will be used as reference to conducting research process including every step of each processes.

CHAPTER IV DATA COLLECTION AND PROCESSING

This chapter consists of the data collected from the research and will be processed based on the data collection using suitable method for this research.

CHAPTER V DATA INTERPRETATION AND ANALYSIS

This chapter consists of the data interpretation and analysis processes based on the result from previous chapters. The analysis will be related to the usability context of each educational media.

CHAPTER VI CONCLUSION AND SUGGESTION

This chapter consists of the conclusions and suggestions based on the research objectives that has been formulated in the CHAPTER I, this chapter also consists of suggestions for the continuity of the research in the future.

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CHAPTER II
LITERATURE REVIEW

This chapter consists of the brief explanation of each theories and research materials that used in the research process. Materials that taken from several references such as book and journal also recorded here such as theories in ergonomic fields including the reliability testing, kansei engineering, and kawaii method in general.

2.1. Educational Media

Education in its broadest, general, sense in them means through which the aim and habits of a group of people lives on one generation to the next. Generally, it occur through any experience that has a formative effect on the way one thinks, feels or acts, in its narrow, technical sense, education is the formal process by which society deliberately transmits its accumulate knowledge (Upasana, 2014). Traditional education system means the earliest & ancient system which was developed on how to get education and how to impart education system to other. Traditional education system consists of one-way communication system by the teachers to the students, which consist of imparting education to the student in best possible way (Upasana, 2014). While traditional education is good in its own way. Not all subject or learning materials can be applied in traditional education. Formal school materials such as mathematics, literature, and science are more suitable for traditional education method while informal material such as trends and recent information tend to be unsuitable for traditional education method.

With that problem, there comes the non-conventional or e-learning method. E-learning has been variously defined, depending on the needs of particular organizations and circumstances. The evolving definition of e-learning describe e-learning as the instructional content or learning experiences delivered or enabled by internet technology to enhance an individual's knowledge and performance (Pantazis, 2002). With the current technology development, e-learning also evolved into several branches based on the platform of each e-learning media such as internet learning and with the rapid development of smartphone

application, e-learning nowadays can be accessed as simple as operating a small board on your hands, the term now called mobile learning. An interactive learning, by using Mobile learning is something to make learning more interesting and not monotonous. A new trend nowadays is known as Mobile Learning, the use of portable media such as Smartphone either using the Android system, IOS or Windows Phone. The use of Mobile Learning to support the learning process is considered important to add the flexibility in the activity of teaching and learning. Thus, the learning process can be done anywhere and anytime.

Mobile learning as an intersection of Mobile computing and E-Learning providing resources that can be accessed in anywhere has capability in an excellent searching system, rich interaction and full support towards an effective learning and performance-based assessment. In addition, it has a characteristic of not being dependent on time and space. The application of mobile learning can be used through the android operating system that is chosen in consideration to that android has been dominating the Smart phone market and is an open-source operating system that is easily developed (Joshi Kaustubh A., 2017).

Android is the world's most popular mobile operating system, powering billions of devices ranging from phones to watches, tablets, TVs, and more (Google, 2018). Android is a software platform and operating system for mobile devices, based on the Linux kernel, and developed by Google and later the Open Handset Alliance. It allows developers to write managed code in the Java language, controlling the device via Google- developed Java libraries. Android is available as open source. Android is a freely downloadable open source software stack for mobile devices that includes an operating system, middleware and key applications based on Linux and Java. Google purchased the developer of Android in 2005, and Android was unveiled in 2007 (Kirthika.B, 2012). The history of android platform could be seen below.

Table 2. 1 Android Version

Version	Name	Explanation
1.5	Cupcake	Technologically Android 1.5 wasn't the first version, but versions earlier don't appear to have

Version	Name	Explanation
		gained any codenames. Stories were explained it absolutely was supposed to be version 1.2, but Google decided to transform it into a significant revision and made it 1.5 instead. Among the numerous adjustment with Cupcake, third-party pc style keyboard as well as Widgets were enabled and phone could possibly upload straight to YouTube and Picasa.
1.6	Donut	Android V1.6, codenamed "Donut," was actually released in September 2009. It resolved restart flaws in the OS, refurbished graphic as well as digital video features (i.e. camera interface), and introduced much better search integration.
2.0	Éclair	Google android 2.0 was released in October 2009, by having a bug fix version (2.0.1) being released in December 2009. Android 2.1 was released in January of 2010. The majority of people contemplate them a single release. Additional features include Bluetooth 2.1 support, flash and digital zoom for the digital camera, multi-touch influence, live wallpapers, and more.
2.2	Froyo	Google android 2.2 primarily improved speed by adopting the JavaScript "just-in-time" compiler engine from Google's browser, Chrome. Additionally, it improved browser support with the addition of animated GIF support and Flash 10.1 plug-in support, in conjunction with Universal

Version	Name	Explanation
		serial bus tethering as well as Wi-Fi Hotspot functionality
2.3	Gingerbread	Gingerbread was technologically released in December 2010. On December 6th, 2010, Google officially proclaimed the very first mobile phone with Android OS 2.3 Gingerbread. The mobile phone was the Nexus S, which Google codeveloped alongside Samsung.
3.0	Honeycomb	Honeycomb was introduced in February 2011, and was aggressively followed by 3.1 and 3.2 in July and August of 2011. Google published plenty of previews as well as highlights on Honeycomb. Honeycomb was developed for tablets.
3.1	Ice Cream Sandwich	Ice Cream Sandwich was Google's endeavor to synthesize Honeycomb, usually tablet-only platform, with its mobile platform. Released in October 2011, it highlighted an innovative new design and standard font, as well as the opportunity to monitor and throttle mobile data usage along with other upgrades.
4.0	Jellybean	Jelly Bean came out in 2012. Most significant adjustment incorporated "Google Now," an Artificial Intelligence associate that anticipates your requirements and much better, even more interactional notifications. Jelly Bean also permits "voice typing," a built-in speech-to-text engine that doesn't depend upon Internet or data.

Version	Name	Explanation
4.4	Kitkat	Google proclaimed that Android 4.4 is going to be titled KitKat on September 3, 2013. KitKat's parent company, KitKat procured the Google Now feature and took it one step deeper with "Ok Google." Ok Google gives people the ability to access Google Now without even touching their phones— just vocally expressing the phrase opens up the artificial intelligence.
5	Lollipop	Google android 5 is referred to as Lollipop, and it highlighted a brand new runtime called ART that eliminate on the older DALVIK runtime (which is nearly based on Sun/Oracle specs). Lollipop also incorporates other UI advancements and has now an outstanding battery-life on some devices
6	Marshmallow	Android 6: Marshmallow is already out for the Nexus devices and is also believed to be coming soon to all primary devices prior to end of the season, and also to other devices by mid 2016. Marshmallow unveiled a number of modifications that can have considerable influence.
7	Nougat	Version 7.0 of Google's mobile operating system launched in the fall of 2016. Before Nougat was revealed "Android N" was referred to internally by Google as "New York Cheesecake." Nougat's many new features included better multi-tasking functions for the growing number of smartphones that have bigger displays, such as split-screen mode, along with quick switching between apps.

Version	Name	Explanation
8	Oreo	In March 2017, Google officially announced and released the first developer preview for Android O, also known as Android 8.0. As far as its features, Android Oreo packs in lots of visual changes to the Settings menu, along with native support for picture-in-picture mode, notification channels, new autofill APIs for better management of passwords and fill data, and much more

2.2. Kansei Engineering

Kansei is a Japanese term used to express one's impression towards artefact, situation and surrounding. Deeply rooted in the Japanese culture, direct translation of Kansei to other language is rather difficult. Having various interpretations by different literature, Kansei is generally referred to sensitivity, sensibility, feeling and emotion (Mitsuo, 1995). Psychologically, Kansei means the mental state where knowledge, emotion, and sentiment are harmonized, and people with rich Kansei is people who is rich in emotion and sentiment, adaptive, warm and responsive (Mitsuo, 1995). He asserted that the more people try to describe Kansei in different way the harder they can attain the true meaning. Thus, today the word "Kanse" is being used as it is. According to him as being the founder of KE, the closest interpretation of Kansei is "psychological feeling" people have with some product, situations or surroundings. (Harada, 2003)described Kansei as a mental function, and more precisely as being a higher function of the brain, and therefore it is implicit. The process of Kansei begins with gathering the sensory related functions such as feelings, emotions and intuition, by means of the five senses. Figure 1 shows the process of Kansei and the five senses within the structure of the brain.

感　性 ⇨　感　＋(心 ＋ 生)

Kan *Sei* feel, touch, tactile heart, mind be born, alive
sensitivity, sensibility sensation, emotion soul dynamic
impression, admiration impression, appreciation

知　性 ⇨(矢 ＋口)＋ (心 ＋ 生)

Chi Sei
Understanding arrow month heart, soul be born, alive
Intellectual acute soul dynamic

Figure 2. 1 Kansei Engineering Philosophy

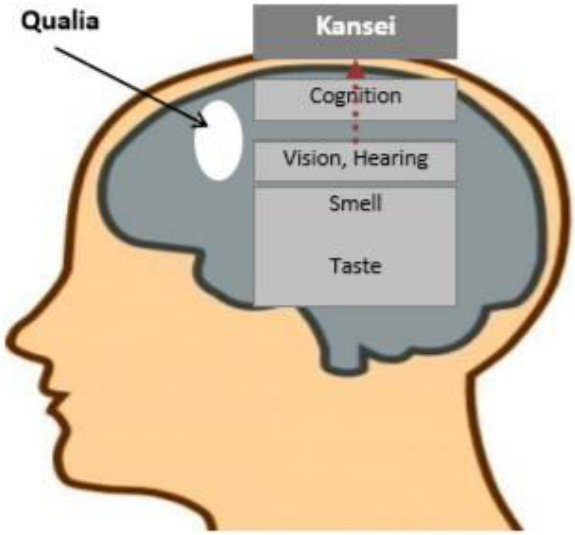

Figure 2. 2 The Process of Kansei *(Lokman, 2010)*

When these senses are triggered, psychological cognition concerned with perception, judgment and memory will surface. In the scenario of going into an unfamiliar restaurant, your vision, smell, taste and cognition would judge whether the restaurant is "very friendly" and or provide "good service". These are "Kansei". The Kansei emerges through cognition with several contributing sensations in place (Lokman, 2010).

2.2.1. Kawaii Design

Kawaii is one of Japanese word that basically directly translated to "cute" in English. In term of Kansei Engineering, kawaii term applied to a product that designed to be attractive to customer as it is defined as an adorable or cute product (Ohkura, 2016).

In Japan, the cute aesthetic is widely used by many organizations and for many purposes, including police mascots and warnings for dangerous areas. Although using cute to motivate and inform might seem strange, cute offers potential. (Cheok, 2010) at the National University of Singapore argued that Japanese kawaii embodies a special kind of cute design that reduces fear and increases the appeal of dreary information. Various Japanese kawaii characters such as Hello Kitty and Pokemon have become popular all over the world. The cuteness of those characters is called kawaii, which is a Japanese word that represents an affective value that has such positive meanings as cute, lovable, and small.

2.2.2. Kawaii Value

The first description of the value of kawaii appeared in the Pillow Book written by Sei Shonagon, a famous, 11th century female Japanese essayist. Her examples of kawaii objects included the behaviour of a chirping sparrow, a small hollyhock leaf, and a sky-blue jar. Recent works on kawaii include "Kawaii Ron" by Inuhiko Yomota, a Japanese researcher, "Hello Kitty: The Remarkable Story of Sanrio and the Billion Dollar Feline Phenomenon" by two American male journalists, and "Cuties in Japan" by a female researcher in Britain. These works recognize the following as common attributes of kawaii: Emotional value of Japanese origin and Such positive meanings as cute, loveable, and small.

To check the kawaii as kansei value, (Ohkura, 2010) performed a simple experiment with 40 participants with four magnets of the same materials, metal and rubber with different shapes with several instructions and questionnaire. The instructions are:

- Please place these four magnets in order from most to least kawaii. If you can't determine the order for all or some of the magnets, write the reason.
- Please evaluate their kawaii degree on a 10-point scale, where ten is the maximum value. If you can't evaluate some or all of them, explain why.

- Please write the scores and their reasons. If you don't have a special reason, no comment is fine.

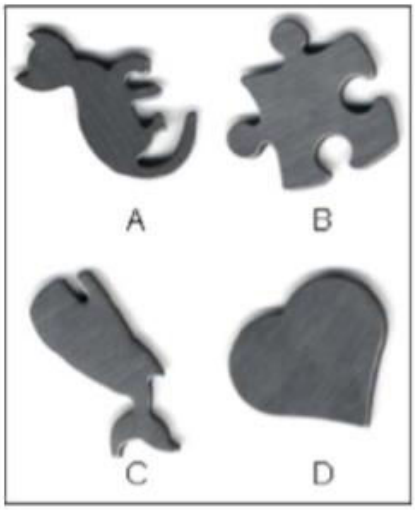

Figure 2. 3 Four magnets experiment *(Ohkura, 2010)*

Ten male and female participants their early 20s and 10 more in their early 50s served as volunteers. The numbers of participants who couldn't prioritize or evaluate some of the magnets are shown in Table 2.1. Assuming these evaluations received 0 points, the average scores for each magnet were calculated as shown in Table. 2.2

Table 2. 2 Numbers of participants who can't place in order or evaluate some magnets (Ohkura, 2010)

	50s Men	50s Women	20s Men	20s Women
A	0	0	0	0
B	3	2	2	2
C	0	0	0	1
D	2	0	2	0

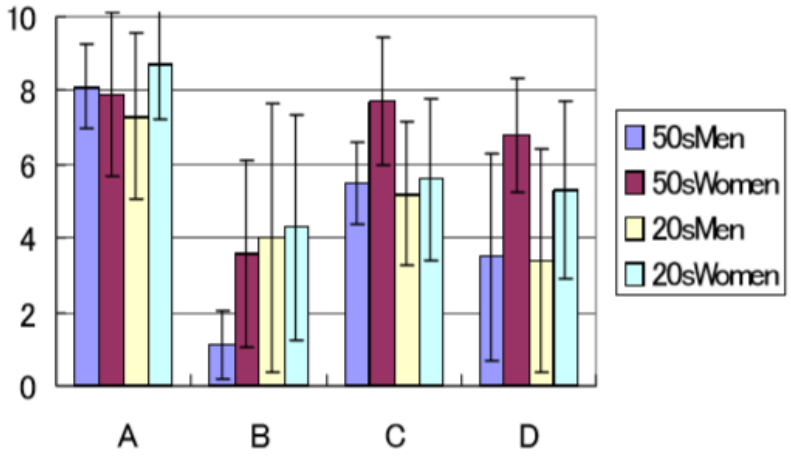

Figure 2. 4 Averaged kawaii scores for each magnet *(Ohkura, 2010)*

From these results and the reasons written on the answer sheets, Ohkura concluded the following:

- Magnet A, which resembled a cat, got high kawaii scores from all categories of participants. The reasons, which were common among the young and old, and men and women, included “I like cats” and “Cats are kawaii.”
- Magnet B, which resembled a puzzle piece, got the lowest kawaii scores of the four, especially from the male participants in their early 50s. As for men and women in their early 20s, the evaluation was divided into two groups, high and low. The reasons for the high scores were “It is good because it is orthodox” and “It looks kind of exquisite.”
- Magnet C, which resembled a whale, got the second highest scores on average, and especially female participants in their early 50s rated it high. The reasons for the relatively high scores were “Because it is an animal” and “Because it is a whale.”
- Magnet D, which resembled a heart, got the most different scores between men and women. The scores of male participants were very low. The reason was the same whether the score was high or low: “Because it is a heart.” An early 50s male complained that it is hard to tolerate a heart shape at his age.

Male participants in their early 50s only gave high scores to the cat and the whale-shaped magnets, implying that they felt kawaii only for living creatures. As for male participants in their early 20s, although the kawaii scores for the heart-shaped magnet are low, the kawaii scores for the puzzle-piece-shaped magnet resemble those of the female participants, implying that male participants in their early 20s have different tendencies with male participants in their early 50s. On the other hand, female participants gave high kawaii scores to the cat, the whale and the heart-shaped magnets. In particular, female participants in their early 50s gave relatively high kawaii scores to all magnets. As for female participants in their early 20s, their kawaii scores of the whale and heart-shaped magnets were similar, and some male and female participants in their early 20s and female participants in their early 50s gave high scores to the puzzle-piece-shaped magnet. From these results, except men in their early 50s, participants felt kawaii not only for animal-shaped magnets but also for artificial-object-shaped magnets.

This suggests that Japanese young people embrace kawaii products despite the resistance of middle-aged Japanese men. Therefore, even if kawaii products do not become popular relatively soon, a strong possibility exists that their popularity will spread in the future as young people in their 20s grow older.

2.2.3. Kawai Shapes and Colors

Ohkura performed another experiment to reconfirm the kawaii value. Ten basic hues from the Munsell Color System with the addition of white and black samples were presented to volunteers, who were comprised of twenty female and twenty male students in their 20s. They were asked to choose the most kawaii color from 12 candidates on a sheet shown in Fig. 2.5. If they couldn't choose, the answer was "no color." Then they were asked to choose the most kawaii shape from the 12 candidates shown in Fig. 2.5. If they couldn't choose, the answer was "no shape." Ohkura then employed the 12 basic shapes of the Adobe Photoshop. Finally, they were asked to make the most kawaii combination of a color and a shape using the same color sheet shown in Fig. 2.5 and a sheet with the cutout shapes shown in Fig. 2.6.

If they couldn't choose, the answer was "no combination." Figures 2.7 and 2.8 show the experimental results for the first and second questions. In both figures, the vertical axes show the number of participants who chose the color or the shape in the horizontal axes.

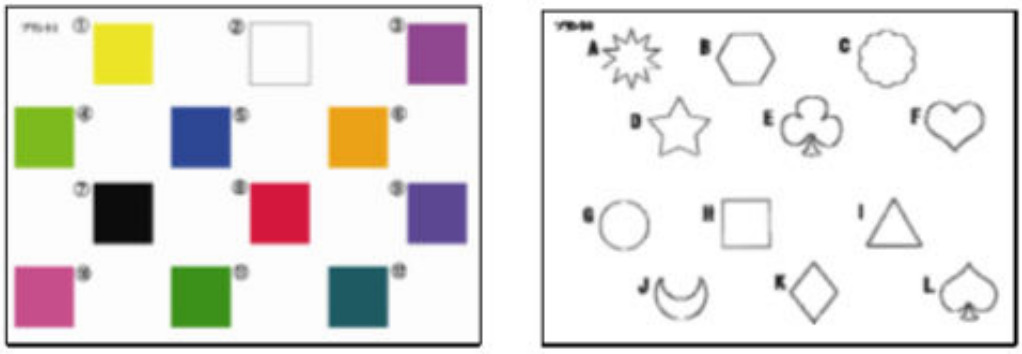

Figure 2. 5 Colors and Shapes Experiment *(Ohkura, 2010)*

Figure 2. 6 Shapes and Colors Combinations *(Ohkura, 2010)*

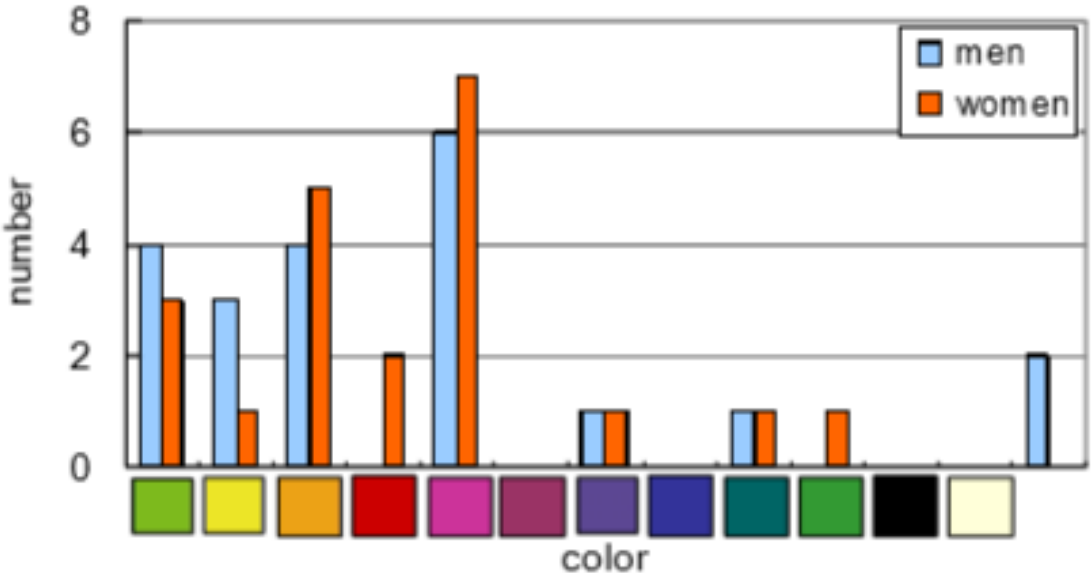

Figure 2. 7 Result of Choosing most kawaii color *(Ohkura, 2010)*

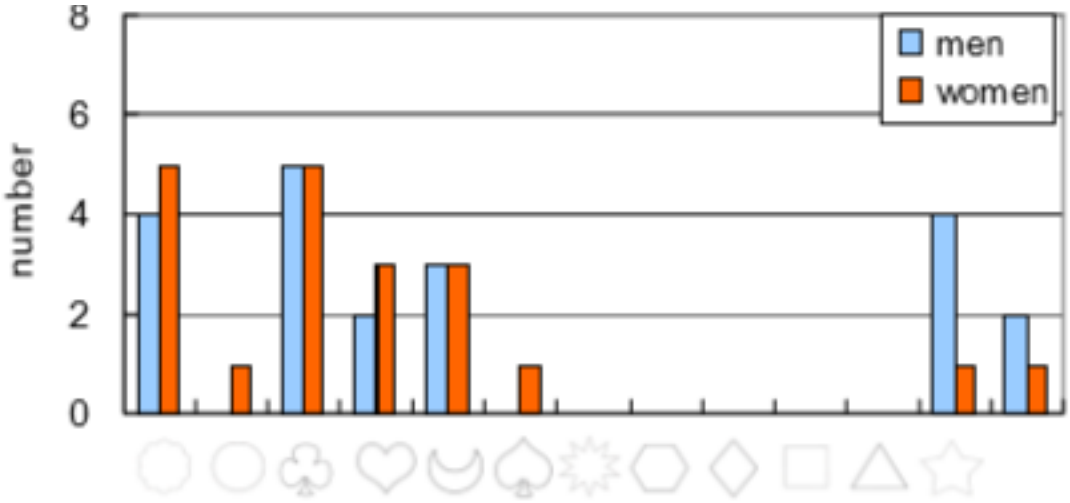

Figure 2. 8 Result of choosing most kawaii shape *(Ohkura, 2010)*

The following were obtained from the experiment that all participants except two could choose a kawaii shape. Warmer colors tended to be chosen for the most kawaii more than colder colors and all participants except three could choose a kawaii shape. Curved shapes tended to be chosen for the most kawaii more than shapes with straight lines.

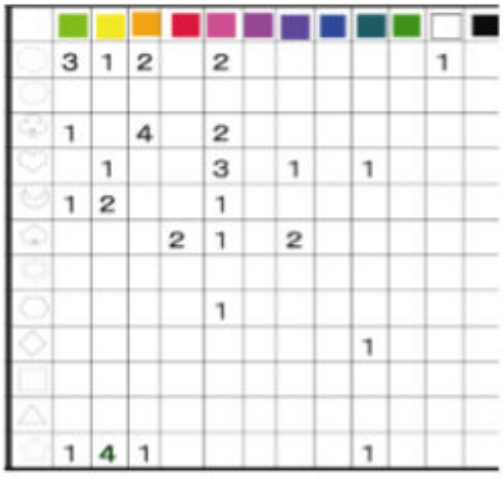

Figure 2. 9 Result of choosing most kawaii combination *(Ohkura, 2010)*

For the final question, the results are shown in Figure 2.9, in which each number shows the number of participants who chose that color and shape combination. The color and shape combination chosen as the most kawaii was not necessarily the same as the results of the most kawaii color and the most kawaii shape chosen by each participant. However, the tendencies to choose warmer colors and curved shapes as the most kawaii did not change. Thus, these tendencies are considered consistent. This simple experiment reconfirmed that the kawaii value for artificial objects is acceptable to Japanese men and women in their 20s.

2.3. Usability Evaluation

Usability Evaluation focuses on how well users can learn and use a product to achieve their goals. It also refers to how satisfied users are with that process. To gather this information, practitioners use a variety of methods that gather feedback from users about an existing site or plans related to a new site (Usability.gov, 2010). Based on ISO 9241:11 (1998) there are several factors that affects usability. The factors are:

1. **Learnability** defined as How easy is it for users to accomplish basic tasks the first time they encounter the design?
2. **Efficiency** defined as Once users have learned the design, how quickly can they perform tasks?

3. **Memorability** defined as When users return to the design after a period of not using it, how easily can they reestablish proficiency?
4. **Errors** defined as How many errors do users make, how severe are these errors, and how easily can they recover from the errors?
5. **Satisfaction** defined as How pleasant is it to use the design?

2.4. Previous Researches

As this research aims to improve the previous method of kawaii and usability method, it is needed to analyse the previous study in the field to deepen the knowledge about kawaii method in kansei engineering.

Table 2. 3 Previous Researches

Researcher	Title	Year
Kyoko Koma	Kawaii as Represented in Scientific Research: The Possibilities of Kawaii Cultural Studies	2013
Maury Elizabeth Brown	A Usability Study of Google Apps for Education	2015
Fachreza Reynaldi Nugroho	Incorporating Kawaii Design into Usability Evaluation Special for Children Participants (Case Study: Mr. SIWA)	2018

The first research by Kyoko Koma is one of study that emphasize the kawaii design and it popularity in more common participants and the possibility of the kawaii study in the future. The research itself is more common to be an understanding of kawaii design in common population but also culture and scientific approach in kawaii design.

The second research by Maury Elizabeth Brown is one of the common usability study for one of the Google based learning application called Google Apps for Education (GAFE). The research itself discussed about the usability of the current study design in the application

which divided into several applications inside the main GAFE name and finally decided to focus more on Google Drive application. Maury Elizabeth also analyse the number of user per each application, the detailed browser setup, account, and other specific features inside the application.

Last research is by Fachreza Reynaldi Nugroho and as one of the basic study about KUE, it emphasises the KUE in general but with more specific participants which is children participants. The research also based on Mr.Siwa education media which based on mixed - reality technology

As the two previous researches complement each other, this research will be used both approach in kawaii design and usability method which are in more common participant but in accordance to the KUE method in second research. The case study for this research also directed to the more common participants and hoping that for the future, kawaii design specifically in KUE questionnaire tool will be more applicable in common participants.

CHAPTER III
RESEARCH METHODOLOGY

In this chapter will be made a research framework as the foundation of every research steps including the brief explanations of every steps and methodology necessary to fulfil the steps.

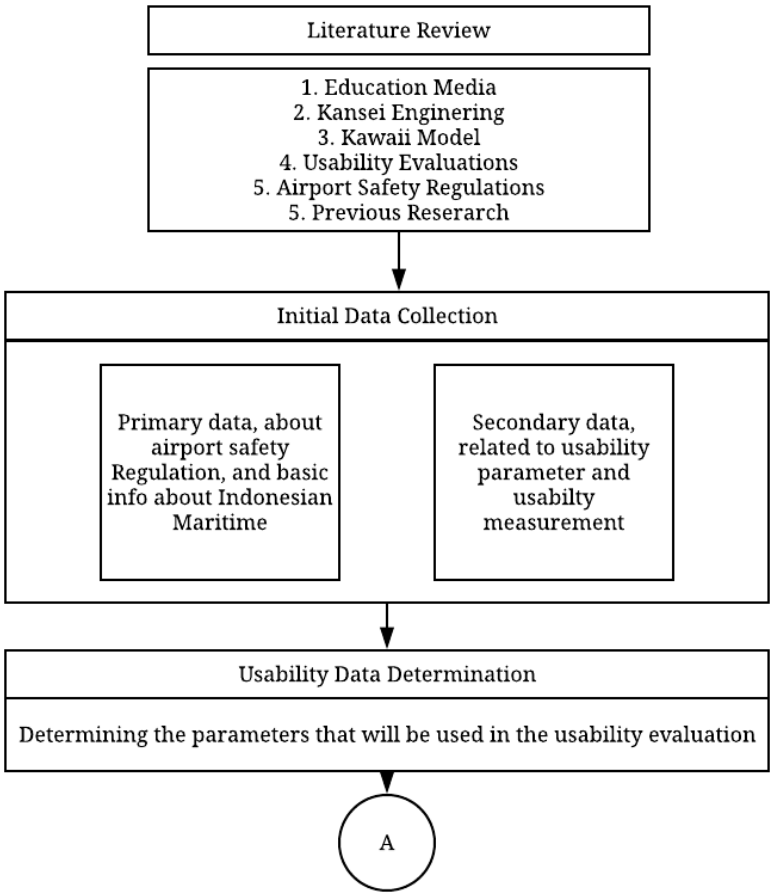

Figure 3. 1 Research Methodology

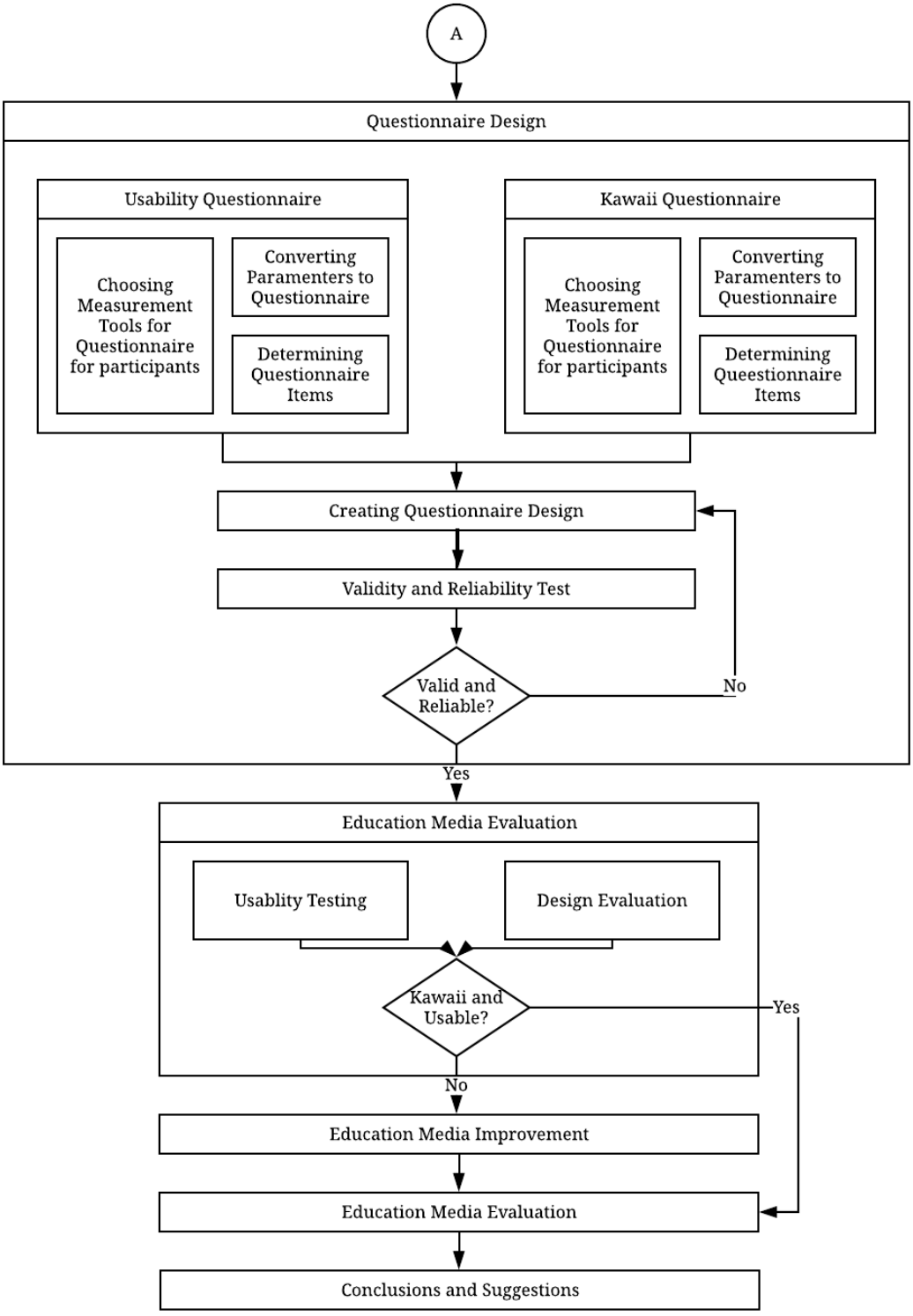

Figure 3.1 Research Methodology (Cont')

3.1. Literature Review

As the start of the research, literature review is one of the foundation of the research cause the basic material to analyse, basic theory, and the other basic understanding on previous research will be consisted in literature review.

3.2. Initial Data Collection

Initial data collection is the next step for the research. The data inside the data collection process will be divided into two which are primary and secondary data. Primary data for this research are about safety regulation data which will be used as basis to analyse Airport Guardian learning media and Indonesia maritime basic to analyse JALASI learning media.

3.3. Usability Parameter Determination

Next step is to choose the parameter that will be used as the tools in evaluation phase, for this parameter, kansei and kawaii data parameter will be used, also the reliability data analysis.

3.4. Designing Questionnaire

After determine the parameter that will be used, the participants then need to be offered a questionnaire as data collection method. To make this questionnaire, several steps needed and because there will be two methods that will be used, the questionnaire also will be divided into two which are usability questionnaire and kawaii design questionnaire.

The questionnaire design also listed in the process to determine the content of the questions to which will be questioned to the participants. Recheck the questionnaire to determine whether its is valid or not and if questionnaire valid. The questionnaire can be use to collect the data from the participants.

3.5. Education Media Evaluation

To determine whether the education media is reliable or not, the test then conducted, the participants will be given mobile phone which has been installed by the applications which are JALASI and Airport Guardian. After participants do the task in the applications based on the instructions, the participants will be given questionnaires that need to be filled based on the experience with both the applications.

There's also design evaluation which will be analysed based on the application interface design.

3.6. Education Media Improvement

After the test with participant, next step will be to determine whether the current state of the education media need an improvement or not. Based on the analysis on usability and design evaluation, there will be analysis based on the score in the KUE questionnaire.

3.7. Conclusions and Suggestions

After all the improvement analysis has been done, the next step is to compose the conclusions and suggestions based on the analysis that has been done to make an improvement for future research.

CHAPTER IV
DATA COLLECTION AND PROCESSING

This chapter will provide an explanation for the data collection and processing phase that related to the educational media.

4.1. About Educational Media – Jaga Laut Indonesia (JALASI)

Jaga Laut Indonesia or JALASI is one of the upcoming educational media that aimed to educate people about the important of nautical resource of Indonesia. From first screen, JALASI directly guide the user to choose what to play based on the specific mini games which are:

Figure 4. 1 JALASI main screen

1. Shooting

   Shooting game directly bring the user to choose between 2 nautical resources in Indonesia which are Natuna and Sebatik. Inside each option, there are several levels to choose which represent each difficulty of the minigame. The shooting mechanics is simple where the user aim the target based on the touch input the

location of the targets. The content of each location is relatively the same with the exception of the information on each loading screen.

Figure 4. 2 Shooting Game Preview

2. Fishing

Fishing game also bring the user to 2 nautical resources in Indonesia which are Morotai and Tanimbar. Inside there are level of difficulties from 1-2 similar to shooting game and informative explanation about each resource in the loading screen. The difficulty represents the speed of each fishes in the game which related to the game mechanics to fish the 3 types of fishes.

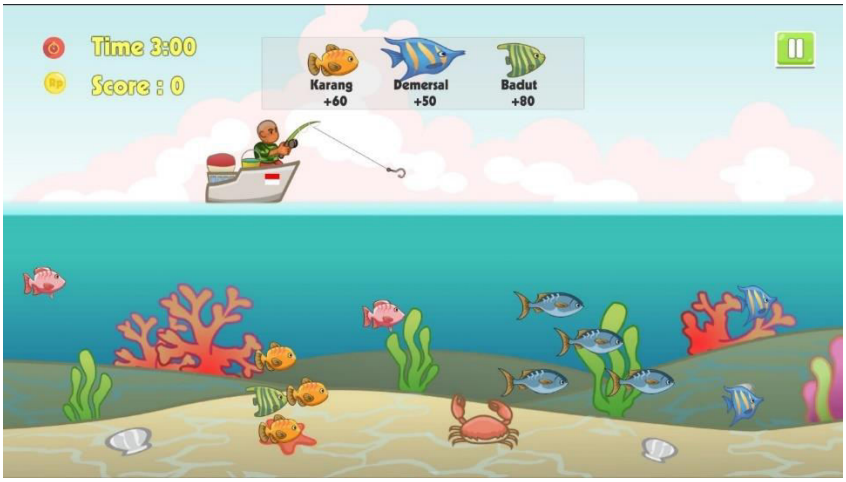

Figure 4. 3 Fishing Game Preview

3. Diving

As the other minigame, Diving also make the user to choose between two spots in Indonesia's nautical resources which are Bunaken and Raja Ampat. Similar to other games, the brief information about each spot also explained in the loading screen. The diving game mechanics is a guide system to guide the submarine to specific area to rescue the fish based on the input touch method of the user. There's no specific difficulties in diving minigame.

Figure 4. 4 Diving Game Preview

4. Racing

Racing game is a different type of minigame compared to other minigame, this game came up with additional joypad or arrowpad below the screen to navigate through the screen based on the position of user motorboat. In the middle of the race, the user will be given several questions related to the nautical knowledges with bonus points as reward if the answer is correct.

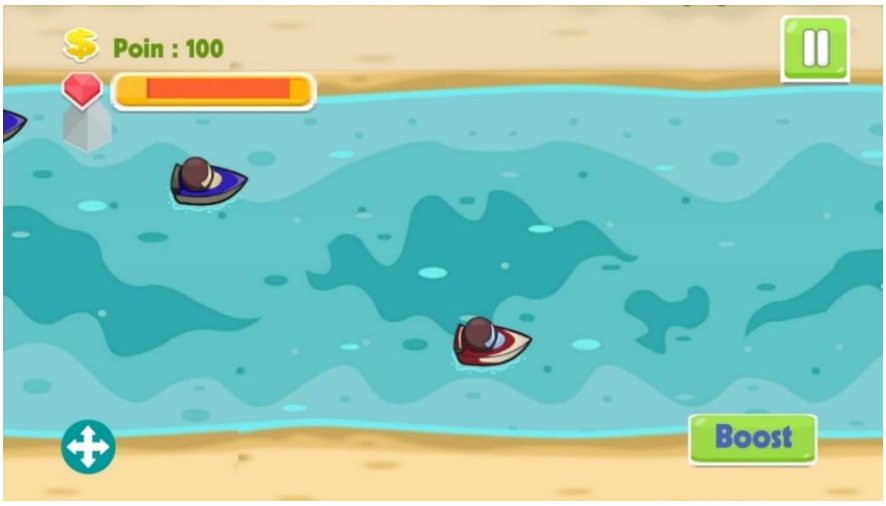

Figure 4. 5 Racing Game Preview

5. Defending

   In defending game, the user again will need to choose the location based on 2 options which are Komodo and Derawan. The mechanics of defending game is to eliminate the enemy based on the location sensor which is touch input to pinpoint the location of the enemy. The user can upgrade the equipment or weapon number by answering questions after specific points reached.

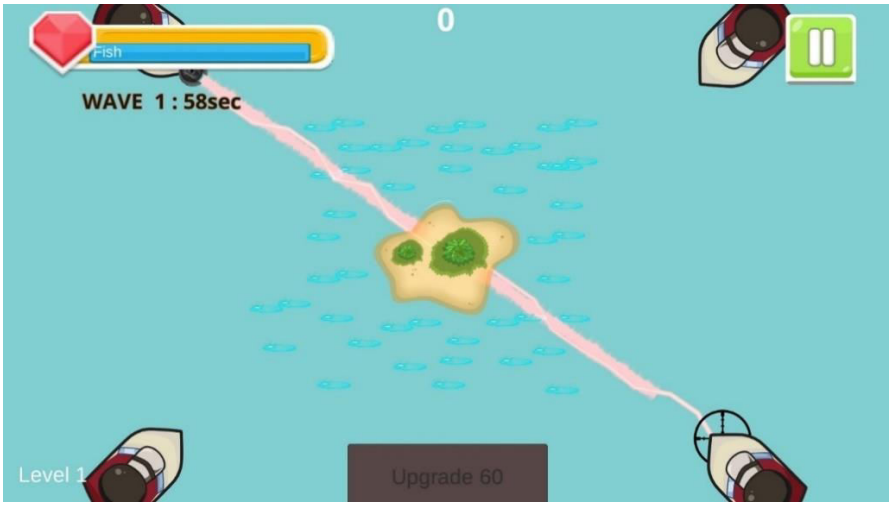

Figure 4. 6 Defending Game Preview

4.2. About Educational Media – Airport Guardian

Airport Guardian also one of the upcoming application about safety and regulation inside airport and airplane. The form of the application itself is an informative explanation about each safety and regulations inside each option in the main menu. The application follows linear steps inside each option which you can't skip until the explanation is done or a minigame which explains the basic knowledge about safety regulation. The sections inside the application are:

Figure 4. 7 Airport Guardian Main Screen

1. Seleksi Barang Bawaan

   In this section, the user will choose between 10 main airports in Indonesia which then allows the user to play the minigame inside each option. The minigame mostly about the baggage safety selection based on the common knowledge about whether the goods inside the baggage is safe or not to be able to stay inside baggage or separated to two sections which are listed baggage or banned from the baggage.

Figure 4. 8 Seleksi Bawang Bawaan Preview

2. Implementasi Safety Induction

In this section, the user will follow the instruction of each step of safety induction inside the airplane. There's also a figure representative of the user and steward to do the explanation. There's no skip option in this section so the user need to follow the instruction until the end or back to main menu.

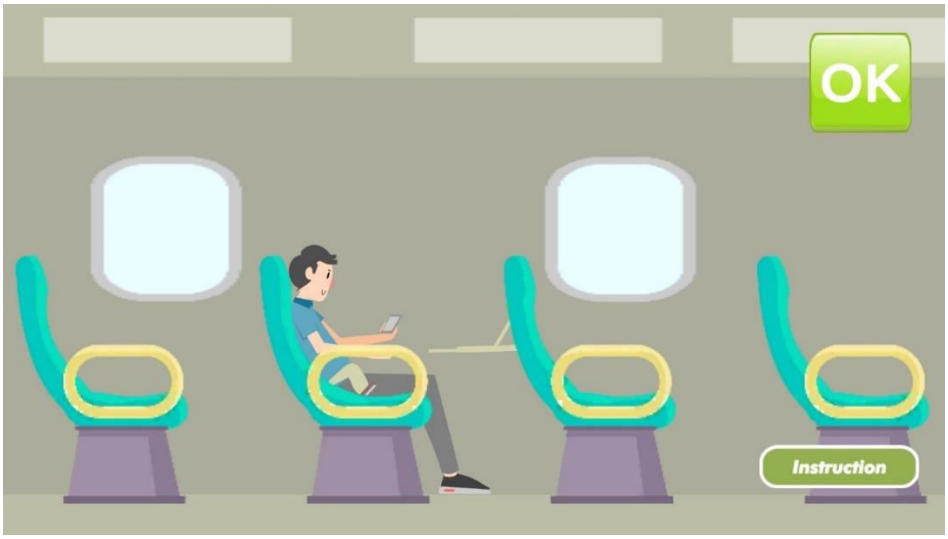

Figure 4. 9 Implementasi Safety Induction Preview

3. Kategori Barang Bawaan

   In this section, the user will choose two options which are mainly about baggage categories inside the airport. The categories explain with figure representative which goods that categorized in fully restricted or goods that can be placed in listed baggage.

Figure 4. 10 Kategori Barang Bawaan Preview

4. Peraturan Perilaku Penumpang

   In this section, the user will be guided to informative steps for restricted behaviour inside the airport or airplane. There are 8 instructions which user can follow through navigation arrows in the application.

Figure 4. 11 Peraturan Perilaku Penumpang Preview

4.3. Questionnaire Design

This sub-chapter will explain about the development of KUE questionnaire, which include the design and parameter that used in the KUE questionnaire.

4.3.1. Questionnaire Parameter

This sub-chapter will explain about the parameters that will be used in KUE Questionnaire for JALASI and Airport Guardian. Each parameter will be divided into two categories based on the explanation in literature review chapter which are Usability Parameter and Kawaii parameter.

1. Usability

   To measure on how user to be able to understand the media mechanism for satisfactory result, it is needed to analyse the usability parameter of the educational media based on the 5 primary usability parameters which are:

   a. Memorability

      Memorability explained as how the system should be easy to learn so that the user can rapidly start getting some work done with the system in some period of time. This parameter will be measured by asking the user how easy to remember the content of educational media even after several time of use.

   b. Error

      Error explained as how many disturbance or flaw inside the system when user inside it whether caused by the user or the system itself. To measure the error rate, the user will be asked on how many errors that occurred when using the educational media.

   c. Learnability

      Learnability explained about how easy it is for users to accomplish basic tasks the first time they encounter the design. With high learnability, efficiency and effectivity will be achieved. This parameter will be measured by asking how easy to use the educational media.

   d. Efficiency

Efficiency explained as how quickly the user to perform the task after they learn the system. This parameter will be measured by asking how much the user understand the educational media content and the effort of the result.

e. Satisfaction

Satisfaction explained as how pleasant the user to use the system design. This parameter will be measured by asking opinion of the users how good the design of the educational media or will they use it again for another time.

2. Kawaii Factors

Kawaii factors cover several design aspects that could be emotionally affect the user when using the educational media. In this research several factors will be measured to determine the connections of reliability of the educational media. The detailed explanation of each factors that will be used in this research will be explained below:

a. Color

Color is one of the main kawaii factors that related to the educational media which will also related to the usability factors. Color questions will be detailed on how the current design color pallettes affect the user whether they like it or not thus its relation to the usability measurements.

b. Motion

Motion also one of the main kawaii factors that related to the educational media which directly related to the usability factors. The factors also direct related to the educational media cause most of the content of educational media is motion based mini game so the user can determine whether they satisfied with the current motion factors inside the educational media.

c. Sound

Sound also directly related to educational media and usability factor of the system. The measurement will be focused on the whether the user satisfy with the current audio inside the educational media.

d. Size and Proportion

Size and proportion also one of the important kawaii factor that related to the usability that needs to be measured in the educational media. Each educational media use designed model to represent the real situation which need to be measured whether the size and proportion of the model will satisfy the user.

e. Shape and Form

Shape and form also mostly found in the design of the educational media which mainly for navigation inside the option of educational media. In this case, the factor will first be analysed which usability factors related to this kawaii factor and the measurement will be based on the user score.

The factors of Kawaii design then will be integrated to usability parameters so that it can be measured in KUE Questionnaire. The assignment of each parameters will be listed below:

Table 4. 1 Parameters and Measurements Used in KUE Questionnaire

Parameter	**Measurement**		**Questionnaire**	
	Usability	**Kawaii**	**Usability**	**Kawaii**
Memorability	System easy to Remember	Memorable Character Design	1	2
Error	Error Occurrence		3	
Satisfaction	Want to try every mode	Eye-catching Design	5	4
	Want to revisit the system	Motion	13	7
	Achievement	Color	11	8
Learnability	Easiness when using the media	Design Helps in using the Media	6	9

Table 4. 2 Parameters and Measurements Used in KUE Questionnaire (Cont')

Parameter	**Measurement**		**Questionnaire**	
	Usability	**Kawaii**	**Usability**	**Kawaii**
Efficiency	Content Comprehension	Additional design helps to understand the content	12	10

Table 4. 3 Improvement Result based on Questionnaire Result

Score	Level Improvement
1-2	Major Improvement
3-4	Minor Improvement
5	No Improvement

4.4. Questionnaire Design

Figure 4. 12 Questionnaire Kawaii Parameter

The Figure 4.12 shows the parameter that will be used to analyse the kawaii and usability value from the questionnaire. The questionnaire design will be represented by this parameter. There are also several questionnaire design aspects that will differentiate between the KUE questionnaire and normal questionnaire, the aspects are:

1. Use the Images and Visual Representation

The use of image and visual representation is one of the important aspects of the questionnaire that will follow the term kawaii in its design. Not only the researched objects that need to be designed to be kawaii, the questionnaire to represent the kawaii and usability value should have several kawaii design elements that will help the respondent to understand the questions better. Based on the figure 4.12, there 5 images that will represent the respondent value from 1-5. The images designed based on the hue that usually represent the expression of each value such as red represents angry or disappointment, yellow as normal expression and blue as lighter color to represent happiness or like.

The other visual representation also related to the section of the questionnaire as the number of observed educational media, the section needed to separate between each questionnaire for each educational media. As to make the respondent easy to separate between 2 educational media in each section, it is needed to include the banner or picture that represent each section belong to which educational media or application.

2. Sections

The section is important in the questionnaire design because the research will be conducted for 2 educational media or applications. Based on the number of educational media in the research, the sections will be divided into 3 sections where first section will be introduction of the questionnaire including respondent name, age, and occupation, section 2 which will be a main questionnaire for JALASI application and section 3 which will be main questionnaire for Airport Guardian application. Also do not forget to include the name of educational media to several questions as reminder to the respondent that the section belong to the selected educational media.

3. Simple Questions

Simple Questions represent on how easy the respondent to understand the questions that will be given. The questions will be no more than 15 for parameter questions and will be no more that 20 for additional questions such as a more need in understanding questionnaire such as the overall value for each application.

4.5. Questionnaire Result and Data Processing

This sub-chapter will contain about the result of questionnaire after the participants downloaded and done to analyse the educational media. The data will be presented in full data and summary or the organized data that has been gathered.

4.5.1. Data Collection Result

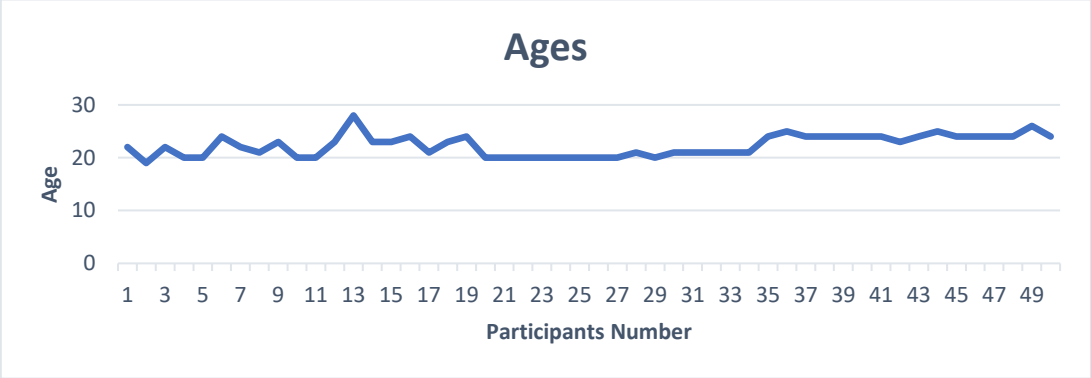

Figure 4. 13 Participants Age Range

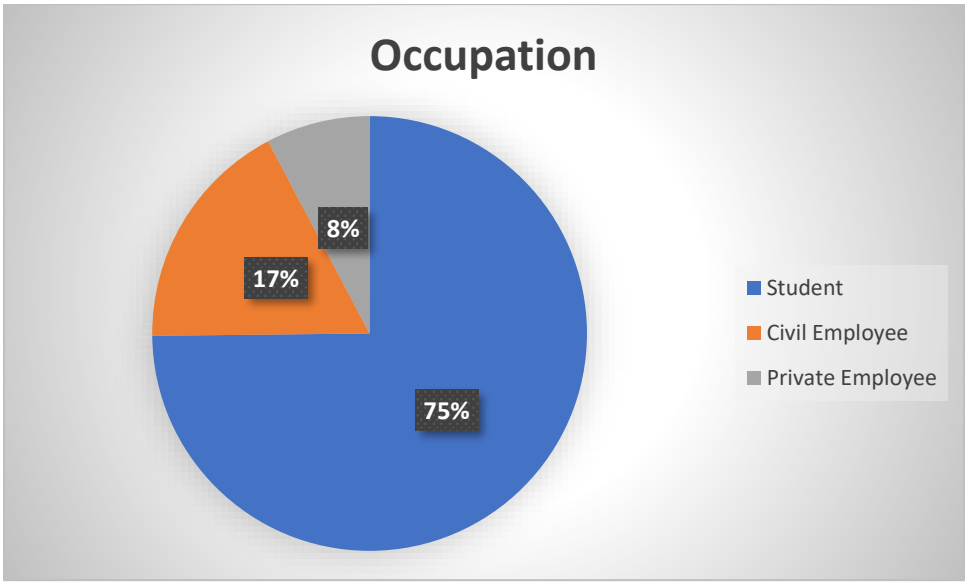

Figure 4. 14 Participants Occupation

Table 4. 4 Summary of Questionnaire Result for JALASI apps (1)

No	Name	Questions Number Value													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	Krida Dwi Anggraeni	4	4	4	5	5	5	4	4	4	4	4	4	4	3
2	Rachmad Irvan S	3	4	4	2	4	3	3	3	2	3	4	2	2	3
3	Fanniyya	3	4	5	3	5	3	3	4	3	3	4	4	3	3
4	Citra Wulandari	2	3	5	4	5	4	3	5	3	5	5	3	4	5
5	Farrel Naufal	3	4	5	4	3	4	4	4	2	2	2	2	2	3
6	Jesilia	5	5	5	3	5	5	3	5	3	5	5	4	5	5
7	M Alif H.	3	4	4	2	3	4	4	4	4	4	5	3	1	4
8	Radifan	4	4	5	4	5	4	5	4	2	4	5	2	4	5
9	Mohammad Iqbal Kinasih Gusti	4	4	4	4	4	4	3	4	3	5	3	4	3	3
10	Aulia Sukma Ayu Narendra	4	4	4	4	3	4	4	4	4	4	4	4	4	4
11	Monica	5	4	4	3	2	3	2	4	3	4	3	3	3	3
12	I ketut wira santanu	4	3	5	4	4	4	3	3	4	3	4	3	3	3
13	Endra Ade Gunawan Sitohang	4	5	5	3	4	5	4	5	5	5	4	5	4	4
14	Aldhama	4	2	5	3	5	4	1	4	3	5	3	5	4	4
15	Adrian S	4	4	4	4	3	4	4	4	4	4	4	3	3	3
16	Febrian Setiawan	5	3	3	3	3	4	4	4	4	4	3	3	3	3
17	M. Ari S.	4	4	3	3	3	4	3	4	4	4	4	3	3	4
18	Riyadi Rizkia	4	3	5	3	4	4	5	4	4	4	4	4	4	4
19	Yuli Andari	4	4	5	4	4	4	4	4	4	4	4	4	4	5
20	Gusti Rahman Fariska Ajitama	4	3	4	4	4	4	4	4	4	3	4	3	4	5
21	L. Gede Rifky Azhari	4	5	5	4	4	4	3	4	4	4	4	4	3	4
22	Fu'ad Mulya Noorcholish	3	4	3	5	3	3	4	5	3	2	1	3	2	1
23	Nune Elga Purnama Aji	4	5	5	3	3	4	3	3	4	2	3	2	3	3
24	Teguh Adrian Samudra	3	3	5	3	3	2	3	3	3	3	3	2	3	2
25	I Made Saditha Putra	4	3	4	3	3	2	3	3	3	3	3	3	3	3

Table 4. 5 Summary of Questionnaire Result for JALASI apps (2)

No	Name	Questions Number Value													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
26	Anang Adityo Eka	4	4	5	4	4	4	4	4	3	4	4	3	3	3
27	Khilal Aura Maulana	4	4	5	4	3	3	3	4	3	3	4	3	3	3
28	L. Yusril Wahyudi	4	3	5	3	3	3	4	3	3	3	3	3	3	3
29	Jihan Auliha	4	4	5	4	4	4	3	4	3	4	4	4	3	3
30	Annisa Rahmawati	4	4	5	4	4	4	3	4	3	4	3	3	4	3
31	Indri Sabwan	4	4	5	4	4	4	3	4	3	3	3	3	4	4
32	Bq. Umi Ziyadati	4	3	5	4	4	3	3	3	3	4	3	3	3	3
33	Lola Inanta Nadya	4	4	5	3	4	4	4	4	3	3	3	3	3	3
34	Diah Larasati Rahil	4	4	4	4	4	4	3	4	4	3	3	4	3	4
35	Kukuh Riksamba	4	4	5	4	4	3	4	4	3	4	4	4	4	4
36	Mansur Suryadi	4	4	5	4	3	3	3	4	3	3	3	3	3	3
37	M. Tamin Tantawinata	4	4	5	4	3	4	3	3	3	3	3	3	3	3
38	L. Hilman Alfarisyi	4	4	5	4	4	4	4	4	3	4	4	4	4	4
39	L. Syahrial Putrawijaya	4	4	5	4	3	4	3	3	3	3	3	3	3	3
40	Dedi Prasetyo H.	4	4	5	4	4	4	4	3	3	4	4	4	4	4
41	Fatiya Hidayati	4	4	4	4	4	4	4	4	3	4	4	4	4	4
42	Rozian Hidayat	4	4	4	3	3	4	4	3	3	3	4	4	4	4
43	Ririn Novitasari	4	4	5	4	5	4	4	4	4	4	4	4	4	4
44	Dwiky Harlie N.	3	3	5	2	3	2	3	3	2	3	3	3	3	3
45	Alvin Fajri Y	4	5	5	4	4	4	4	4	3	4	4	4	4	4
46	Ennis Novianti	4	4	5	4	4	4	4	4	4	4	4	2	4	4
47	Prayoga Tri Sagita	4	4	5	4	4	4	5	4	4	4	4	3	4	4
48	Ahmad Baihaqi	4	4	5	4	5	4	4	4	2	3	3	3	3	3
49	L. Haris Septiadi	3	4	4	4	4	4	4	4	4	4	4	3	3	3
50	Danu Kurniawan	3	3	4	3	3	2	2	3	3	3	3	3	3	3

In final question, participants also asked to summarized the value of satisfaction from using the application. The summary of the value scaled from 1-100 will be listed below:

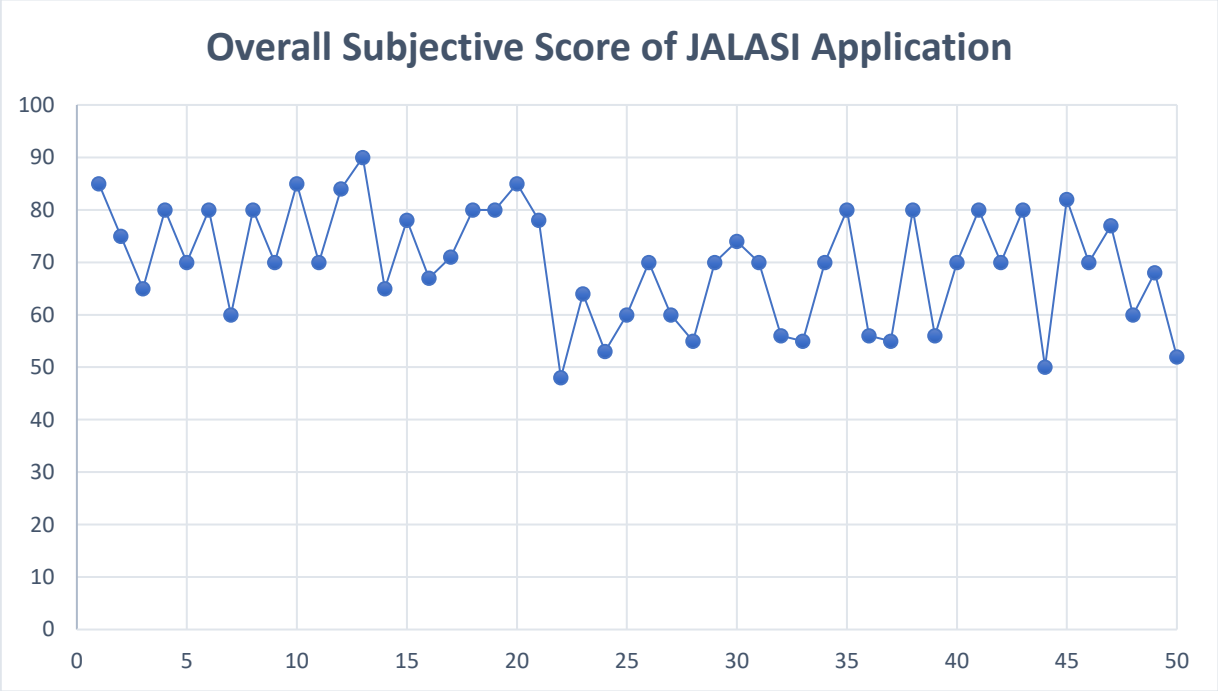

Figure 4. 15 Overall Subjective Score of JALASI Apps

Table 4. 6 Summary of Questionnaire Result for Airport Guardian apps (1)

No	Name	Questions Number Value													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1	Krida Dwi Anggraeni	3	4	3	4	2	4	3	4	3	3	3	4	4	3
2	Rachmad Irvan S	4	3	3	2	4	3	2	2	2	2	3	3	2	3
3	Fanniyya	4	3	5	3	3	2	3	3	3	3	4	3	3	3
4	Citra Wulandari	2	4	5	3	1	2	2	3	1	1	1	3	2	4
5	Farrel Naufal	5	3	3	3	2	4	3	4	2	3	3	2	3	3
6	Jesilia	5	3	5	4	5	5	3	3	4	5	5	4	5	5
7	M Alif H.	2	1	4	3	4	2	4	1	2	2	4	5	2	4
8	Radifan	2	1	2	4	2	4	4	2	4	4	2	4	5	5
9	Mohammad Iqbal Kinasih Gusti	4	4	3	4	4	4	3	4	3	4	3	4	3	3
10	Aulia Sukma Ayu Narendra	4	4	4	5	4	4	4	4	4	4	4	4	4	4
11	Monica	4	4	4	4	3	4	3	4	4	4	2	3	2	2
12	I ketut wira santanu	4	4	5	4	4	4	3	4	3	4	3	5	4	3
13	Endra Ade Gunawan Sitohang	5	5	4	4	4	4	4	5	5	5	4	5	5	4
14	Aldhama	3	3	5	2	5	2	2	3	2	5	3	5	4	5
15	Adrian S	4	4	4	4	3	4	3	4	4	4	4	5	4	3
16	Febrian Setiawan	4	4	3	3	3	3	2	3	3	3	3	3	3	3
17	M. Ari S.	4	4	5	3	4	4	3	3	4	4	4	4	3	3
18	Riyadi Rizkia	4	4	5	4	4	3	3	4	2	3	3	4	4	3
19	Yuli Andari	4	4	5	3	4	4	3	4	3	4	3	4	3	3
20	Gusti Rahman Fariska Ajitama	4	4	5	3	4	3	4	4	4	4	5	4	3	4
21	L. Gede Rifky Azhari	4	3	5	4	4	4	3	5	4	4	4	4	4	4
22	Fu'ad Mulya Noorcholish	3	3	5	3	3	1	4	4	1	1	2	3	2	3
23	Nune Elga Purnama Aji	3	3	5	4	4	4	3	3	2	3	3	3	3	3
24	Teguh Adrian Samudra	3	3	4	4	3	2	3	3	2	3	3	2	3	3
25	I Made Saditha Putra	3	3	4	3	3	3	2	3	2	3	4	4	3	3

Table 4. 7 Summary of Questionnaire Result for Airport Guardian apps (2)

No	Name	Questions Number Value													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
26	Anang Adityo Eka	3	3	5	4	3	3	3	3	2	3	3	3	3	3
27	Khilal Aura Maulana	4	4	5	4	4	3	3	3	3	4	4	4	4	4
28	L. Yusril Wahyudi	3	3	5	4	3	4	3	4	3	3	3	4	3	3
29	Jihan Auliha	4	3	5	4	4	4	3	4	3	3	3	4	3	3
30	Annisa Rahmawati	4	4	5	4	3	4	3	4	3	3	3	3	3	3
31	Indri Sabwan	4	3	5	4	4	4	3	3	3	3	3	4	4	4
32	Bq. Umi Ziyadati	4	4	5	4	3	3	3	3	3	4	3	3	3	3
33	Lola Inanta Nadya	4	3	4	4	3	3	3	3	3	3	3	3	4	3
34	Diah Larasati Rahil	4	4	5	4	4	3	3	4	4	3	3	4	4	4
35	Kukuh Riksamba	4	4	5	4	3	4	3	3	3	3	3	3	4	4
36	Mansur Suryadi	4	3	5	3	3	3	3	4	3	4	4	3	3	3
37	M. Tamin Tantawinata	4	4	5	4	3	3	3	4	3	3	3	3	3	3
38	L. Hilman Alfarisyi	4	4	4	4	3	4	3	4	3	3	3	3	3	3
39	L. Syahrial Putrawijaya	4	4	5	4	4	3	3	3	3	3	3	3	3	3
40	Dedi Prasetyo H.	4	4	5	4	4	4	3	3	4	4	4	4	4	4
41	Fatiya Hidayati	4	4	4	4	3	4	3	2	2	3	2	3	3	3
42	Rozian Hidayat	4	4	5	4	3	4	4	4	3	5	4	5	4	4
43	Ririn Novitasari	4	4	4	4	5	4	5	5	3	4	4	4	4	4
44	Dwiky Harlie N.	4	3	5	3	4	4	3	3	3	3	2	3	3	3
45	Alvin Fajri Y	4	4	5	5	4	3	3	4	2	4	4	4	4	4
46	Ennis Novianti	4	4	5	4	4	4	4	4	4	4	3	4	4	4
47	Prayoga Tri Sagita	4	4	5	3	4	3	3	4	3	4	4	4	4	4
48	Ahmad Baihaqi	4	4	5	5	5	4	4	4	4	4	4	4	4	4
49	L. Haris Septiadi	4	4	5	5	5	4	4	4	4	3	4	4	4	4
50	Danu Kurniawan	4	4	5	4	4	3	2	4	3	3	3	3	3	3

In final question, participants also asked to summarized the value of satisfaction from using the application. The summary of the value scaled from 1-100 will be listed below:

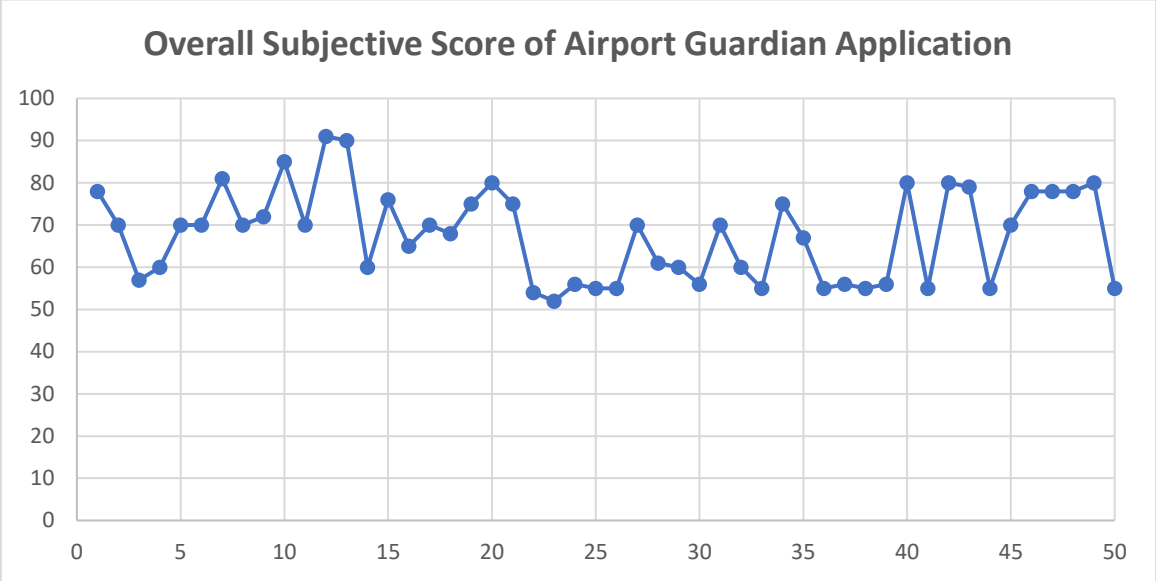

Figure 4. 16 Overall Subjective Score of Airport Guardian Apps

4.5.2. Data Adequacy Test

Data Adequacy Test done to ensure that the data that has been collected and presented is objective enough. Ideally the measurement must be done in large number to infinite to ensure the data is enough for the analysis, but because of the limited resource, the number of data selection will be based on the statistical measurement in data sufficiency test. The data adequacy test will be conducted in SPSS software with Kaiser-Meyer Olkin (KMO) method to analyse how suited the data to for further analysis. The test will follow certain rules which whether the test value need to reach certain value to determine the adequacy of the data. The conditions are when the value:

Table 4. 8 KMO Value *(Kaiser, 1974)*

Value	Condition Statement
0,00-0,49	**Unacceptable**
0,50-0,59	**Miserable**
0,60-0,69	**Mediocre**
0,70-0,79	**Middling**
0,80-0,89	**Meritorious**
0,90-1,00	**Marvellous**

Based on that statement, the test then conducted with result for JALASI application

Table 4. 9 JALASI Application KMO and Bartlett Test Result

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.675
Bartlett's Test of Sphericity	Approx. Chi-Square	269.494
	df	91
	Sig.	.000

Table 4. 10 Airport Guardian Application KMO and Bartlett Test Result

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	315.932
	df	91
	Sig.	.000

Based on that result on the sampling adequacy test, it is concluded that both data is adequate for further analysis with both value **0,675** and **0,705** which mediocre and middling value based on the Kaiser-Meyer-Olkin value of the sampling adequacy.

4.5.3. Validity Test

Validity test is essential in research data collection. Therefore, the correct data will be determining true of the results quality. While true or not data is highly dependent on true or not the research instrument. Validity is a measure of the degree of the research instrument. A research instrument is said to be valid if it is to be able to measure what is to be measured or desired. An instrument said to be valid if it can reveal the data of the variables studied.

The validity test of the questionnaire was conducted using Pearson Product moment correlation in SPSS using bivariate method. The validity test done by correlating each item questionnaire score with totally score. The decision then will be made based on the value of significance. If significance value < 0,05, then the instrument declared valid and where the value > 0,05 the instrument will be declared invalid

Table 4. 11 JALASI Apps Validity Test Result

		SCORE			SCORE
Q1	Pearson Correlation	.380**	Q2	Pearson Correlation	.410**
	Sig. (2-tailed)	,007		Sig. (2-tailed)	,003
	N	50		N	50
Q3	Pearson Correlation	,269	Q4	Pearson Correlation	.368**
	Sig. (2-tailed)	,059		Sig. (2-tailed)	,009
	N	50		N	50
Q5	Pearson Correlation	.639**	Q6	Pearson Correlation	.780**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q7	Pearson Correlation	.411**	Q8	Pearson Correlation	.571**
	Sig. (2-tailed)	,003		Sig. (2-tailed)	,000
	N	50		N	50
Q9	Pearson Correlation	.443**	Q10	Pearson Correlation	.694**
	Sig. (2-tailed)	,001		Sig. (2-tailed)	,000
	N	50		N	50

Table 4. 12 JALASI Apps Validity Test Result (Cont')

		SCORE			SCORE
Q11	Pearson Correlation	.658**	Q12	Pearson Correlation	.579**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q13	Pearson Correlation	.733**	Q14	Pearson Correlation	.725**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50

Table 4. 13 Airport Guardian Apps Validity Test Result

		SCORE			SCORE
Q1	Pearson Correlation	.597**	Q2	Pearson Correlation	.466**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,001
	N	50		N	50
Q3	Pearson Correlation	.301*	Q4	Pearson Correlation	.527**
	Sig. (2-tailed)	,034		Sig. (2-tailed)	,000
	N	50		N	50
Q5	Pearson Correlation	.633**	Q6	Pearson Correlation	.597**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q7	Pearson Correlation	.484**	Q8	Pearson Correlation	.567**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q9	Pearson Correlation	.762**	Q10	Pearson Correlation	.783**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q11	Pearson Correlation	.658**	Q12	Pearson Correlation	.585**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,000
	N	50		N	50
Q13	Pearson Correlation	.748**	Q14	Pearson Correlation	.444**
	Sig. (2-tailed)	,000		Sig. (2-tailed)	,001
	N	50		N	50

4.5.4. Reliability Test

Reliability is a measure to indicate that a reliable instrument to be used as a means of collecting data for the instrument considered good. Good instrument will show a similar result when it is used on repeated trials. The reliability test is done by using SPSS software using Cronbach's alpha value method. If Cronbach's alpha > 0,90 then the instrument is very high in reliability. If Cronbach's alpha from 0.70 to 0.90 the instrument is high reliability. If Cronbach's alpha 0.50 to 0.70 that means the reliability is quite high, and if Cronbach's alpha < 0,50 that means the instruments low in reliability. The reliability test result will be shown below.

Table 4. 14 JALASI apps Reliability Test result

Reliability Statistics

Cronbach's Alpha	N of Items
.826	14

Table 4. 15 Airport Guardian apps Reliability Test result

Reliability Statistics

Cronbach's Alpha	N of Items
.853	14

Based on the test result from the analysis it is concluded that both the application test result is high reliability with the result of **0,826** for JALASI apps result and **0,853** for Airport Guardian apps result. Based on this value. It is concluded that the questionnaire is reliable and could be used many times and still produce a similar result for each iteration.

4.5.5. Usability Value

The usability value was based on the average score in the questionnaire based on the specified question that covers every usability basic value. With the scale of 1-5 the overall average usability value will be shown in table 4.10 below.

Table 4. 16 Usability Value Summary

Usability Value	**JALASI**	**Airport Guardian**
System Easy to Remember	**3,84**	**3,78**
Error Occurrence	**4,6**	**4,52**
Want to try Every Mode	**3,76**	**3,56**
Want to Revisit System	***3,34***	***3,42***
Achievement	**3,6**	**3,82**
Easiness when using the Media	**3,72**	**3,44**
Content Comprehension	**3,3**	**3,66**
Average Score	**3,73**	**3,74**

4.5.6. Kawaii Value

Similar to usability value, kawaii value will also base on the average score of every participant for every question score that related to the kawaii factors which also represent each kawaii value. Also, with scale of 1-5 the overall average kawaii value based on the educational medias will be shown in table 4.11 below

Table 4. 17 Kawaii Value Summary

Kawaii Value	**JALASI**	**Airport Guardian**
Memorable Character Design	**3,84**	**3,56**
Eye-catching Design	**3,62**	**3,74**
Motion	**3,5**	**3,12**
Color	**3,82**	**3,52**
Design Helps in using the Media	**3,28**	**3**
Additional design for Content	**3,62**	**3,42**
Average Score	**3,61**	**3,39**

4.5.7. Reliability Test of Average KUE Score and Participants Subjective Score

In this sub-chapter will be discussed about the comparison between the Average KUE score per participants to Subjective Score in the additional question in the KUE questionnaire.

Table 4. 18 Score Comparison KUE vs Subjective per Participant for JALASI application

Participants No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Average Score	4,14	3,00	3,57	4,00	3,14	4,50	3,50	4,07	3,71	3,93
Subjective Score	58	42	50	56	44	63	49	57	52	55
Participants No.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Average Score	3,29	3,57	4,43	3,71	3,71	3,50	3,57	4,00	4,14	3,86
Subjective Score	46	50	62	52	52	49	50	56	58	54
Participants No.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Average Score	4,00	3,00	3,36	2,93	3,07	3,79	3,50	3,29	3,79	3,71
Subjective Score	56	42	47	41	43	53	49	46	53	52
Participants No.	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Average Score	3,71	3,43	3,57	3,71	3,93	3,43	3,43	4,00	3,43	3,93
Subjective Score	52	48	50	52	55	48	48	56	48	55
Participants No.	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Average Score	3,93	3,64	4,14	2,93	4,07	3,93	4,07	3,64	3,71	2,93
Subjective Score	55	51	58	41	57	55	57	51	52	41

Table 4. 19 Score Comparison KUE vs Subjective per Participant for Airport Guardian application

Participants No.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Average Score	3,36	2,71	3,21	2,43	3,07	4,36	2,86	3,21	3,57	4,07
Subjective Score	47	38	45	34	43	61	40	45	50	57
Participants No.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Average Score	3,36	3,86	4,50	3,50	3,86	3,07	3,71	3,57	3,64	3,93
Subjective Score	47	54	63	49	54	43	52	50	51	55
Participants No.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Average Score	4,00	2,71	3,29	2,93	3,07	3,14	3,79	3,43	3,57	3,50
Subjective Score	56	38	46	41	43	44	53	48	50	49
Participants No.	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
Average Score	3,64	3,43	3,29	3,79	3,57	3,43	3,43	3,43	3,43	3,93
Subjective Score	51	48	46	53	50	48	48	48	48	55
Participants No.	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
Average Score	3,14	4,07	4,14	3,29	3,86	4,00	3,79	4,21	4,14	3,43
Subjective Score	44	57	58	46	54	56	53	59	58	48

The validity test also will be conducted to ensure there's correlation between the average KUE score per participant and the objective score to ensure the validity of the collected data.

Table 4. 20 Correlation Test Result KUE vs Objective for JALASI Application

Correlations

		OBJ	AVG
OBJ	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	50	50
AVG	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. 21 Correlation Test Result KUE vs Objective for Airport Guardian Application

Correlations

		OBJ	AVG
OBJ	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	50	50
AVG	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	50	50

**. Correlation is significant at the 0.01 level (2-tailed).

4.5.8. Summary of Questionnaire Result and Test

Based on the questionnaire result based on the observation, it is needed to compare the result for each educational media for further analysis. The comparison will be conducted based on the overall kawaii and usability value of each educational media to be able to show the comparison for the improvement of educational media.

Table 4. 22 JALASI Average Score per Question Item

Question Item	1	2	3	4	5	6	7
Average Score	**3,84**	**3,84**	**4,6**	**3,62**	**3,76**	**3,72**	**3,5**
Question Item	8	9	10	11	12	13	14
Average Score	**3,82**	**3,28**	**3,62**	**3,6**	**3,3**	**3,34**	**3,5**

Table 4. 23 Airport Guardian Average Score per Question Item

Question Item	1	2	3	4	5	6	7
Average Score	**3,78**	**3,56**	**4,52**	**3,74**	**3,56**	**3,44**	**3,12**
Question Item	8	9	10	11	12	13	14
Average Score	**3,52**	**3**	**3,42**	**3,28**	**3,66**	**3,42**	**3,46**

Table 4. 24 Educational Media Comparison

	Usability	Kawaii	Usability Kawaii Factors
JALASI	**3,737142857**	**3,613333333**	**3,675238095**
Airport Guardian	**3,742857143**	**3,393333333**	**3,568095238**

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CHAPTER V
DATA INTERPERETATION AND ANALYSIS

This chapter will explain about the data interpretation and analysis based on the data collection and analysis that done in previous chapter. The final analysis will also conclude the result of the research and whether there's improvement for the education media or not.

5.1 Analysis on Questionnaire Result

Before the data being processed in SPSS software it is needed to analyse the value of each questionnaire item result specifically in several KUE value that less than other in certain question item in the KUE questionnaire. Based on table 4.3 to 4.6 there're several results that shows the different value in KUE questionnaire in one participants. For example, participant no.7 with question item no 13, it is shows value 1 in scale 5 for question that related to whether the participant will replay the application in other time. This indicates that different person will have different value on each question item that related to individual sense of value. This example shown in other participant no. 22 which have several 5 KUE value but there's one with only 1 value. All this phenomenon will be analysed in SPPS software to determine whether this kind of data is acceptable for further analysis.

Data processing process that done in SPSS software shows several values in the result of the validity and reliability test. First value is Pearson Correlation Value. Pearson correlation value will differ based on the correlation on each parameter in this test which is the correlation between the question result in KUE questionnaire. When Pearson's r-value close to 1 this means that there is a strong relationship between your two variables. This means that changes in one variable are strongly correlated with changes in the second variable. In the data example, Pearson's r is 0.780. This number is very close to 1. For this reason, we can conclude that there is a strong relationship between Question 7 and and Average Score. However, we cannot make any other conclusions about this relationship, based on this number only. To be able to conclude that there's correlation between the data, it need to look at the Sig (Two-Tailed) value. If the value is more than .05 it can be concluded that there is no statistically significant correlation between your two variables. That means,

increases or decreases in one variable do not significantly relate to increases or decreases in the second variable. If the value is less or equal to .05 it can be concluded that there is a statistically significant correlations between your two variables. That means, increases or decreases in one variable do significantly relate to increases or decreases in the second variable. For this example, please look at the Table 4.10 for correlation between Q1 and average score, the score is .07 which less than .05 that means that there's a strong correlation between 2 variables. From the result also show that several Sig (Two-tailed) value is .00. this value means actually the result still significant with each other and most statistician will assume this value as .001

Based on this value and also the value of the first validity test for JALASI application which value only 0,009 more that specified standard value, the instrument will be stated reliable cause in next iteration the value is slightly less than 0.05 value which is 0,034. This statement also supported by the Cronbach's alpha value which is 0,826 which indicate that all the instrument concluded very reliable which means the variance in each iteration will be small.

The data adequacy test also performed to ensure all the data that has been gathered is enough for further analysis. The adequacy test also done SPSS software using KMO and Bartlett's method specifically the Kaiser-Meyer-Olkin Measure of Sampling Adequacy test. The test which resulted in a passable score for each educational media data which are 0,675 on JALASI application and 0,705 for Airport Guardian Application. The result which not that significant with each other was shown because all the participants for each educational media are same which resulted in not too much different in the adequacy test value. The test also based on the statement which if the value of the test more that 0,6 it is stated that the data is enough for further analysis.

The average result on test also show that the value is good which resulted in 3,67 average value for JALASI application and 3,53 average value on Airport Guardians application. That means for overall result, it is not needed to do major improvements on the applications. Although major improvement will not have conducted. The minor improvement will be conducted based on the result of each questionnaire items that related to kawaii and usability value of the educational media or each application.

5.2. Analysis on the Usability and Kawaii Value

Based on the summary on table 4.10 from previous chapter, it is shows that the usability value will vary based on the educational media. For system easy to remember value, the JALASI application score higher that Airport Guardian, this value is possible because the different in the approach for the educational purposes of each educational media. The JALASI approach was using more mini-game approach which will be more attractive than usual edu-presentation that used in Airport Guardian. More complex the application, the error occurrence rate will be higher, this represents in the value. The JALASI application which more complex because of the several mini-games attached to the educational media purposes gives more complicated system design which resulted in higher error occurrence rate than Airport Guardian. The want to try every mode usability aspect also shows the relation between the basic design approach for each educational media. The JALASI application which more into playable aspects will attract the participants more that Airport Guardian. The different value shows in the Want to revisit the system and achievement questions. The average score shows that Airport Guardian excels in deliver this usability value to the respondent, this result also related to the basic design of the educational media which Airport Guardian will be used more in future cause the content which related to the repeatable actions which is education for travelling which more of odds to be repeatable than specific approach on JALASI applications.

The kawaii value based on the data gathered also resulted in similar manner to usability value. Based on the summary in table 4.11, it is shows that in all kawaii factors questions except for eye-catching design the JALASI educational media higher that Airport Guardian. This data is possible because JALASI still excels in most of kawaii basic features such as basic character design and motion because JALASI was based on the education in form of mini-game applications. Although the data itself shows quite satisfaction on the respondent which resulted in above average value on all the of the kawaii aspects, for the future improvements, it is needed to specify the improvement also based on the kawaii factor value.

For the overall result of the Usability and Kawaii factor that done in table 4.13 and 4.14 from previous chapter. It can be seen that for the average result for each question items

and overall result, the JALASI application scored better than Airport Guardian. With the average usability value difference 0,053 JALASI application doing slightly better than Airport Guardian in usability aspects. This value happened because as the basic design of the application, the JALASI application delivers more usability value than Airport Guardian because in most of the usability aspects such as Learnability, Memorability and Efficiency, JALASI application delivers better than Airport Guardian application. For overall kawaii value, JALASI application also excels in most of the basic kawaii factor that related in the questions. With the difference for 0,224 in kawaii value, JALASI application also still excels in most of basic kawaii factors that related in the questions such as Design, Motion, and Color. It is directly related to the application itself where the JALASI includes more motion, animation, and more eye-catching design than Airport Guardian. With the result in each factor which resulted in JALASI application kawaii and usability value more than Airport Guardian, it is not surprise that for the overall Usability-Kawaii value resulted in JALASI application scored more than Airport Guardian with score 3,711 compared to 3,572 for Airport Guardian Score.

5.3. Educational Media Improvements

As the overall and specific value on each factor has been done, the improvement will be conducted based on the value on each factor than could be improved. Based on the table 4.10 which shows the average value of each questionnaire item, the improvement then could be performed based on the value of each factors in questionnaire items. Looking at the overall factor value, JALASI and Airport Guardian Application passed the second quartile which is 3 which concluded that both of the educational media only need minor improvements. From JALASI application, most of the questionnaire resulted in need for minor improvements for all the question item factors except for question item 3 which related to error occurrence. The improvements will be proposed first from the lowest score to the highest score. The lowest score for JALASI application is question item number 9 which related to the help of the design in relation with learnability of educational media. The solution then proposed for design relation with learnability with the improvement in the design that related to

informative aspects such as a better design for the mini-games tutorial. The lowest score for Airport Guardian application is question number 7 which related to motion of the kawaii basic value. The solution then proposed to improve the situation by adding more animation on the application or make the motion smoother so the user will find it more attractive in motion aspects. To detailed the improvement for the educational media, the table 5.1 below will list the improvement suggestions based on the KUE value.

Table 5. 1 Improvement Suggestions for JALASI Application

No	KUE Value	Score	Improvement Type	Improvement Suggestions
1	System Easy to Remember	**3,84**	**Minor**	Make a pop-up text to guide the player like “tap here to play” or similar guidance.
2	Error Occurrence	**4,6**	**Minor**	Error checking on related platform (Android Studio and Unity)
3	Want to try Every Mode	**3,76**	**Minor**	Make a follow up mini game on every mode such as the player can travel around Indonesia as an optional mode
4	Want to Revisit System	**3,34**	**Minor**	Do a regular update such as adding new content or new mode to play
5	Achievement	**3,6**	**Minor**	Connect to achievement system on Google Play Games so the player could track their best score or could be done inside the game.
6	Easiness when using the Media	**3,72**	**Minor**	Make more simplified interface design. Could make reference to more popular games.
7	Content Comprehension	**3,3**	**Minor**	Make short tutorial on every mini-games to make the player easy to understand the content of the game
8	Memorable Character Design	**3,84**	**Minor**	Improvement on character design on opening screen or inside the mini game to be similar to current popular character such as in movie or animation
9	Eye-catching Design	**3,62**	**Minor**	Make original character and layout design
10	Motion	**3,5**	**Minor**	Motion code improvement in Android Studio or Unity
11	Color	**3,82**	**Minor**	Use the certified Google material color palettes
12	Design Helps in using the Media	**3,28**	**Minor**	Improve the design to more user friendly, related to shape and color of the application
13	Additional design for Content	**3,62**	**Minor**	Make the tutorial content that could take the player interest

Table 5. 2 Improvement Suggestions for Airport Guardian Application

No	KUE Value	Score	Improvement Type	Improvement Suggestions
1	System Easy to Remember	**3,78**	**Minor**	Improve the main menu layout to Icon type to make the player easy to remember instead of more text.
2	Error Occurrence	**4,52**	**Minor**	Error checking on related platform (Android Studio and Unity)
3	Want to try Every Mode	**3,56**	**Minor**	Streamline the "Seleksi Barang Bawaan" and "Kategori Barang Bawaan" as one mode
4	Want to Revisit System	**3,42**	**Minor**	Do a regular update such as adding new content or new mode to play
5	Achievement	**3,82**	**Minor**	Connect to achievement system on Google Play Games so the player could track their best score or could be done inside the game.
6	Easiness when using the Media	**3,44**	**Minor**	Make more simplified interface design. Could make reference to more popular games.
7	Content Comprehension	**3,66**	**Minor**	Make short tutorial on mini game and instruction to make the player easy to understand the content of the application
8	Memorable Character Design	**3,56**	**Minor**	Improvement on character design on opening screen or inside the mini game to be similar to current popular character such as in movie or animation
9	Eye-catching Design	**3,74**	**Minor**	Make original character and layout design
10	Motion	**3,12**	**Minor**	Motion code improvement in Android Studio or Unity
11	Color	**3,52**	**Minor**	Use the certified Google material color palettes
12	Design Helps in using the Media	**3**	**Minor**	Improve the design to more user friendly, related to shape and color of the application
13	Additional design for Content	**3,42**	**Minor**	Make the tutorial content that could take the player interest

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CHAPTER VI
CONCLUSION AND SUGGESTION

This chapter will explain about the conclusions that could be taken form the research process and result. The suggestions also will be listed for the improvements of future research.

6.1. Conclusions

Based on the data processing and analysis in previous chapter, there are several conclusions that could be taken based on the objectives in the first chapter. The conclusions are:

1. The improvement for the current questionnaire design related on the usability and kawaii factors pairing for each questionnaire item. Based on the previous related research by (Nugroho, 2018), the number of each questionnaire item for usability and kawaii value did not match each other. In satisfaction usability value, while the number of kawaii factor related to the usability factors counted 4, number of the question related to the usability factor only 2 questions. This situation then improved for newly designed KUE questionnaire which streamlined the number of kawaii and usability factors each to 4 questions that related to the satisfaction factor of usability value.
2. The validity and reliability check done to the questionnaire sample result in chapter 4. With 50 sample number and validity and reliability check on SPPS software. It is concluded based on the number sig. 2-tailed in bivariate Pearson correlation test, all the question items are valid enough. The reliability test also concluded based on the Cronbach's alpha value for reliability statistics test resulted in 0,826 for JALASI application and 0,853 for Airport Guardian application. This value proved to be reliable enough based on the Cronbach's alpha value.
3. The design value on each educational media related to the kawaii factor and memorability, satisfaction, and learnability. Based on the questionnaire design, all questions related to this usability design factor except for question number 3 which related to the error value.

Based on the questionnaire result, the average value of design factor related to usability value is 3,59 on average for JALASI application and 3,45 on average for Airport Guardian application. This value concluded that the value for each educational media is above average and only need minor improvement.

4. Improvement of the educational media was based on the overall kawaii and usability value. Based on the result of data analysis on chapter 4. It is need to rank the aspect than dire to be improved to less dire to improved. Based on the analysis value, for JALASI application, the most in need for improvement is question number 9 which related to design of application related to help for using the educational media. The proposed improvement is to improve the design that directly related to the application explanation such as the tutorial design for the mini-games and improvement on the design to more user friendly, related to shape and color of the application. This improvement also supported by the participants suggestions which most of the participants confused to do the mini-games because the lack of tutorial. For Airport Guardian application, the most in need for improvement based on the kawaii and usability value is question number 7 which related to the motion for the educational media. The basic design on Airport Guardian mostly in fixed motion so the value is understandable because most of participants prefer fluid animation. The suggestion for this case is to make the character motion to be animated or use more fluid animation. This proposed improvement also supported by the participants suggestions such as to make the motion more fluid or add more animation.

6.2. Suggestions

This sub-chapter will list the suggestions for future research related to usability and kawaii value. The suggestions are:

1. For future improvement, it is needed to find the kawaii value that related to error value on usability analysis.
2. Conducting more research on another kawaii value such as sound value to complement all kawaii design value.

3. Adding more kawaii value also on questionnaire design to make the participants attracted to fill the questionnaire

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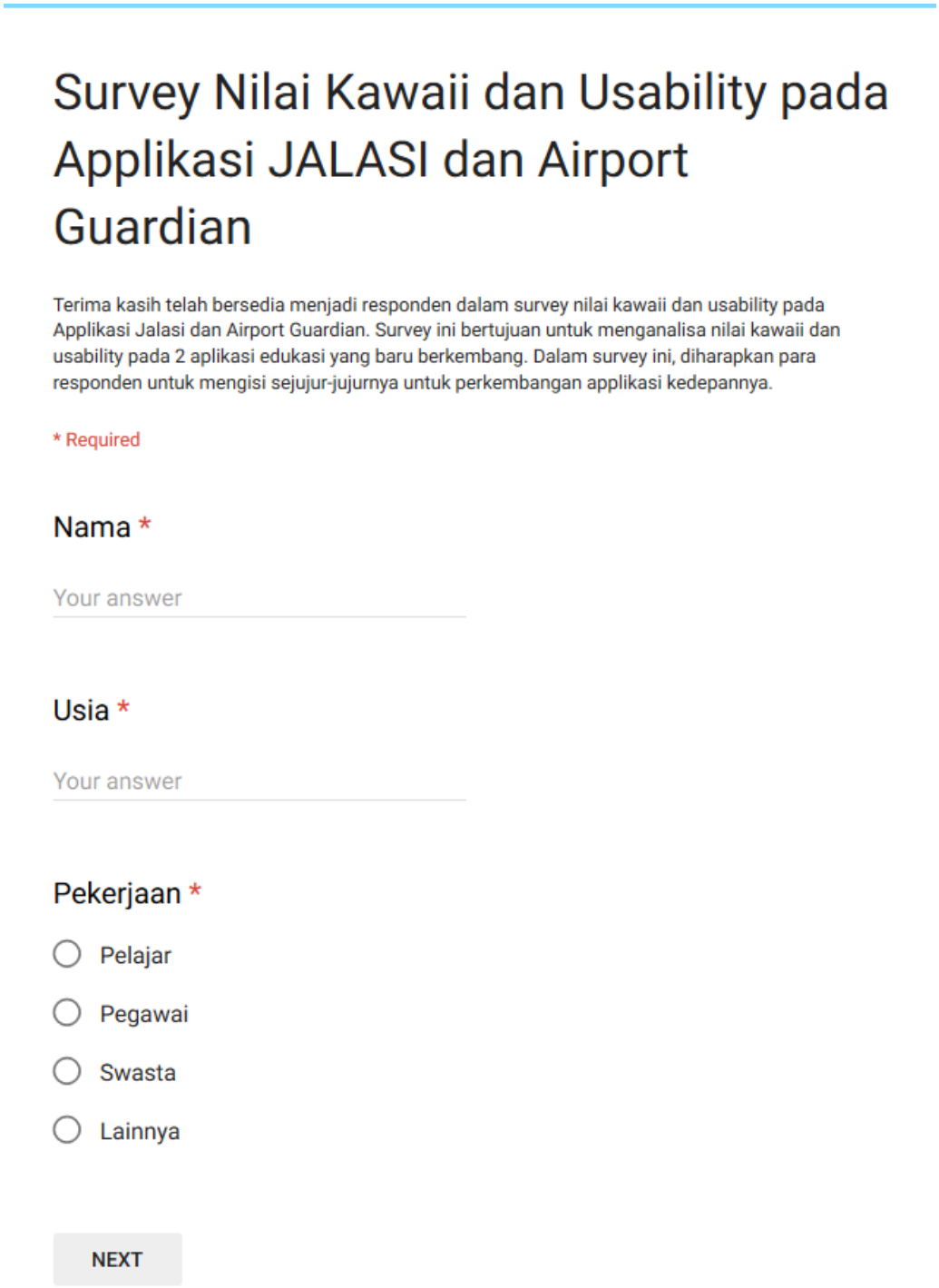
APPENDIX

1. KUE Questionnaire



Survey Nilai Kawaii dan Usability pada Applikasi JALASI dan Airport Guardian

Terima kasih telah bersedia menjadi responden dalam survey nilai kawaii dan usability pada Applikasi Jalasi dan Airport Guardian. Survey ini bertujuan untuk menganalisa nilai kawaii dan usability pada 2 aplikasi edukasi yang baru berkembang. Dalam survey ini, diharapkan para responden untuk mengisi sejujur-jujurnya untuk perkembangan applikasi kedepannya.

* Required

Nama *

Your answer

Usia *

Your answer

Pekerjaan *

- Pelajar
- Pegawai
- Swasta
- Lainnya

NEXT

Survey Nilai Kawaii dan Usability pada Applikasi JALASI dan Airport Guardian

* Required

Penilaian Kawaii dan Usabilty Factor pada Applikasi Jaga Laut Indonesia

Form ini ditujukan untuk menganalisa nilai Kawaii dan Usability dari Aplikasi JALASI

Apakah anda sudah mencoba applikasi JALASI? *

- ◯ Ya, saya sudah mencoba applikasi JALASI

Menurut anda, Cara menggunakan Aplikasi JALASI *

	1	2	3	4	5	
Sangat Sulit Diingat	○	○	○	○	○	Sangat Mudah Diingat

Menurut anda, design karakter dalam aplikasi JALASI *

	1	2	3	4	5	
Sangat Sulit Diingat	○	○	○	○	○	Sangat Mudah Diingat

Saat anda menggunakan applikasi *

	1	2	3	4	5	
Sering Crash/Error	○	○	○	○	○	Hampir tidak ada Crash/Error

Desain tampilan keseluruhan aplikasi ini *

	1	2	3	4	5	
Sangat Buruk	○	○	○	○	○	Sangat Bagus

Saya akan mencoba setiap mode di applikasi ini *

	1	2	3	4	5	
Sangat Tidak Setuju	○	○	○	○	○	Sangat Setuju

Desain tampilan applikasi ini sangat menarik dan mudah untuk digunakan *

	1	2	3	4	5	
Sangat Tidak Setuju	○	○	○	○	○	Sangat Setuju

Menurut anda, Gerakan dan Animasi dalam applikasi ini *

	1	2	3	4	5	
Sangat tidak menarik	○	○	○	○	○	Sangat Menarik

Menurut anda, pemilihan warna pada applikasi ini *

	1	2	3	4	5	
Sangat tidak menarik	○	○	○	○	○	Sangat Menarik

Menurut anda, Penjelasan gambar dan Text pada applikasi ini *

	1	2	3	4	5	
Sangat Sulit dimengerti	○	○	○	○	○	Sangat Mudah Dimengerti

Desain animasi dan gerakan sangat membantu dalam memahami konten dari applikasi JALASI *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Saya merasa sangat puas jika berhasil menyelesaikan minigame pada applikasi ini *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Secara keseluruhan, saya merasa desain aplikasi JALASI sangat membantu dalam memahami isi edukasi di dalamnya *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Apakah anda akan mencoba applikasi JALASI lagi di lain waktu? *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Apakah anda akan merekomendasikan Applikasi ini pada teman atau kerabat anda? *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Silahkan dalam skala 1-100 seberapa mudah aplikasi ini digunakan dan seberapa menariknya desain applikasi ini? *dalam bentuk angka 1-100 *

Tuliskan saran anda untuk perkembangan dan kemajuan applikasi JALASI? *

Your answer

Survey Nilai Kawaii dan Usability pada Applikasi JALASI dan Airport Guardian

* Required

Penilaian Kawaii dan Usabilty Factor pada Applikasi Airport Guardian

Form ini ditujukan untuk menganalisa nilai Kawaii dan Usability dari Aplikasi Airport Guardian

Apakah anda sudah mencoba applikasi Airport Guardian? *

- ◯ Ya, saya sudah mencoba applikasi Airport Guardian

Menurut anda, Cara menggunakan Applikasi Airport Guardian *

	1	2	3	4	5	
Sangat Sulit Diingat	○	○	○	○	○	Sangat Mudah Diingat

Menurut anda, design karakter dalam aplikasi Airport Guardian *

	1	2	3	4	5	
Sangat Sulit Diingat	○	○	○	○	○	Sangat Mudah Diingat

Saat anda menggunakan applikasi *

	1	2	3	4	5	
Sering Crash/Error	○	○	○	○	○	Hampir tidak ada Crash/Error

Desain tampilan keseluruhan aplikasi ini *

	1	2	3	4	5	
Sangat Buruk	○	○	○	○	○	Sangat Bagus

Saya akan mencoba setiap mode di applikasi ini *

	1	2	3	4	5	
Sangat Tidak Setuju	○	○	○	○	○	Sangat Setuju

Desain tampilan applikasi ini sangat menarik dan mudah untuk digunakan *

	1	2	3	4	5	
Sangat Tidak Setuju	○	○	○	○	○	Sangat Setuju

Menurut anda, Gerakan dan Animasi dalam applikasi ini *

	1	2	3	4	5	
Sangat tidak menarik	○	○	○	○	○	Sangat Menarik

Menurut anda, pemilihan warna pada applikasi ini *

	1	2	3	4	5	
Sangat tidak menarik	○	○	○	○	○	Sangat Menarik

Menurut anda, Penjelasan gambar dan Text pada applikasi ini *

	1	2	3	4	5	
Sangat Sulit dimengerti	○	○	○	○	○	Sangat Mudah Dimengerti

Desain animasi dan gerakan sangat membantu dalam memahami konten dari applikasi Airport Guardian *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Saya merasa sangat puas jika berhasil menyelesaikan minigame pada applikasi ini *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Secara keseluruhan, saya merasa desain aplikasi Airport Guardian sangat membantu dalam memahami isi edukasi di dalamnya *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Apakah anda akan mencoba applikasi Airport Guardian lagi di lain waktu? *

	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

Apakah anda akan merekomendasikan Aplikasi ini pada teman atau kerabat anda? *

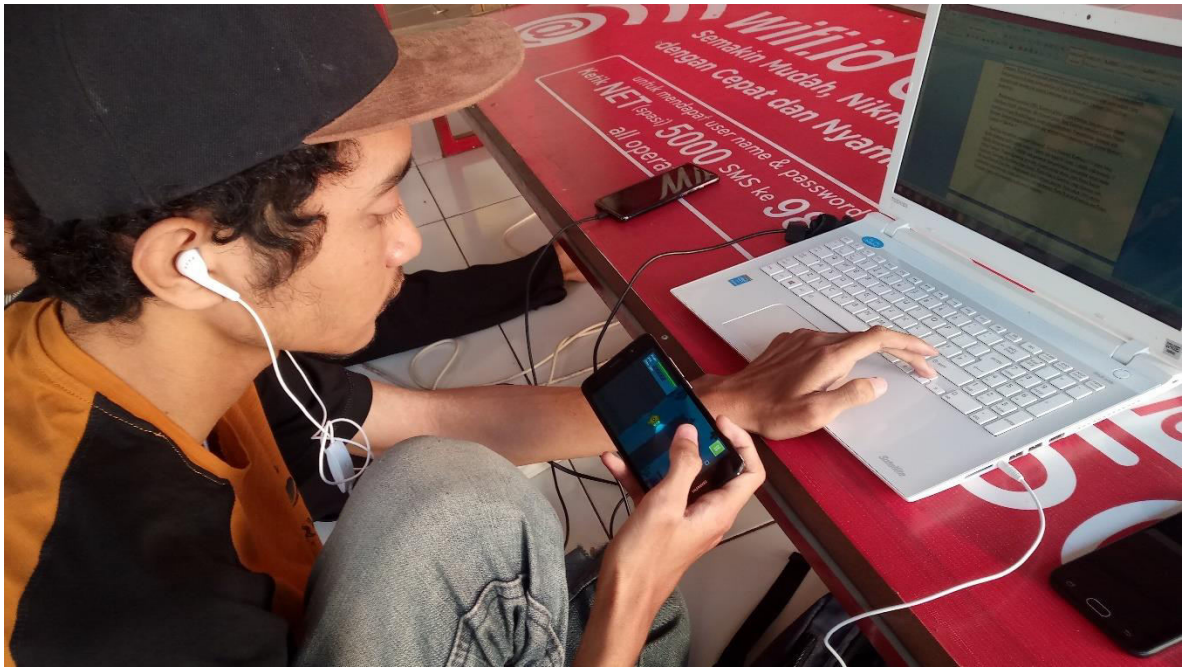
	1	2	3	4	5	
Sangat tidak Setuju	○	○	○	○	○	Sangat Setuju

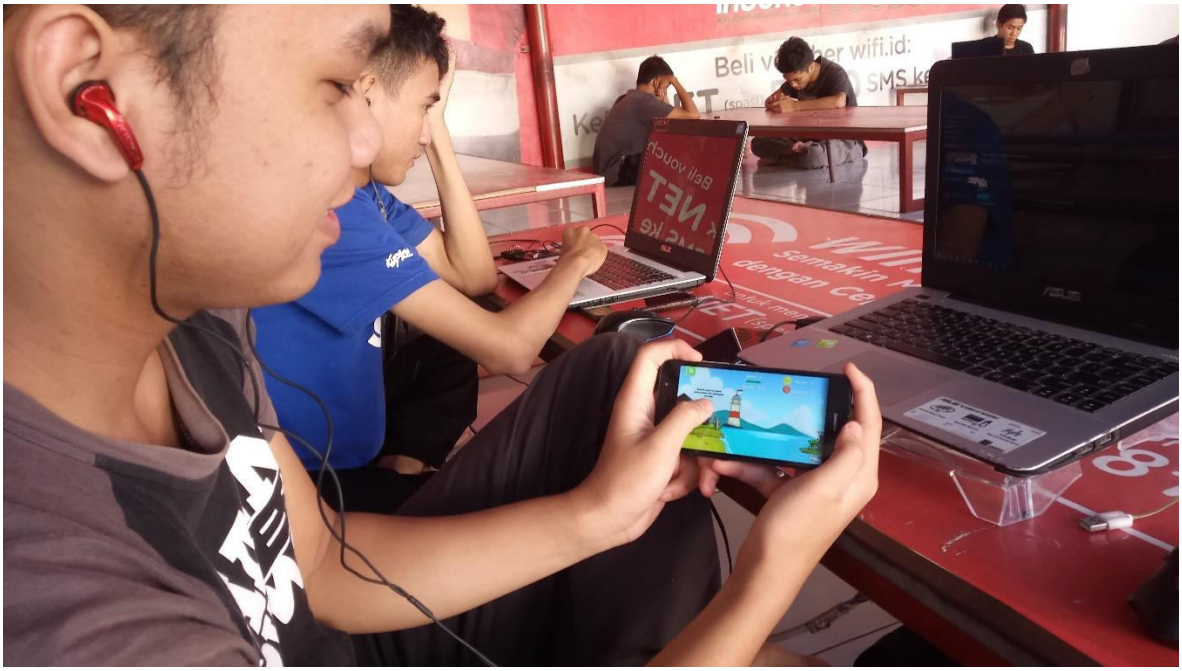
Silahkan dalam skala 1-100 seberapa mudah aplikasi ini digunakan dan seberapa menariknya desain applikasi ini? *dalam bentuk angka 1-100 *

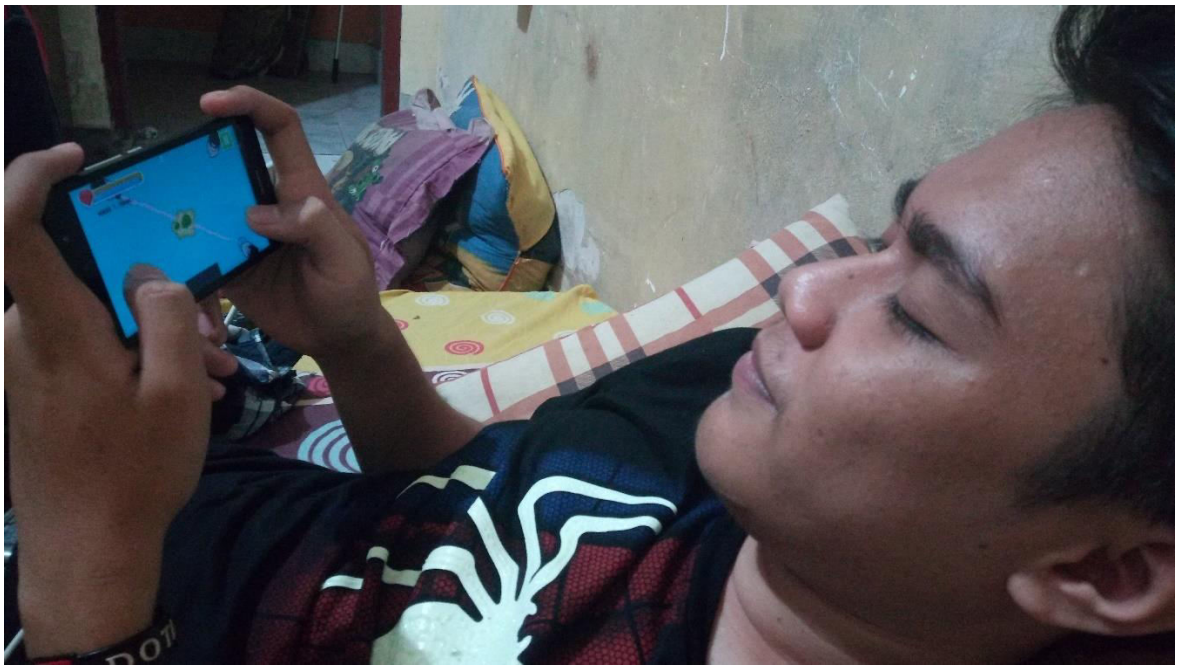
Tuliskan saran anda untuk perkembangan dan kemajuan applikasi Airport Guardian? *

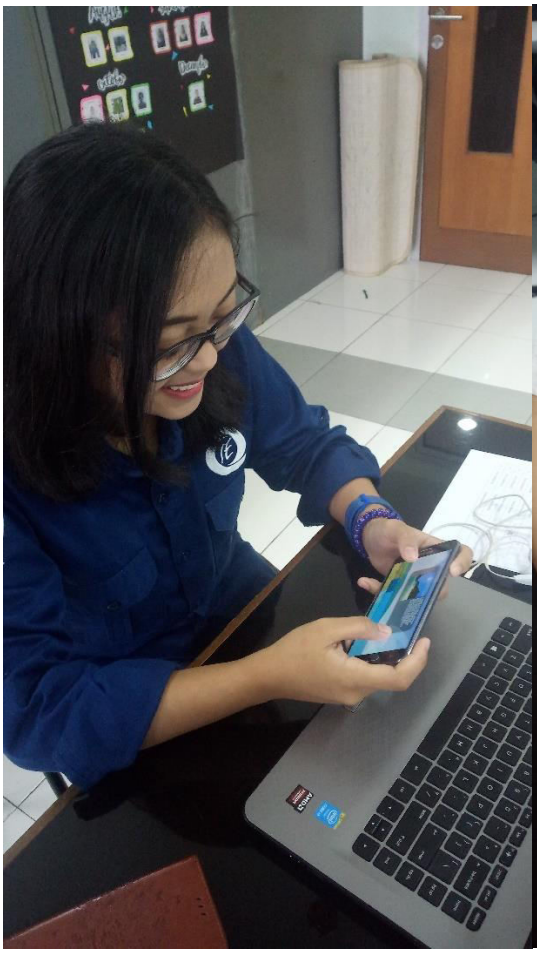
Your answer

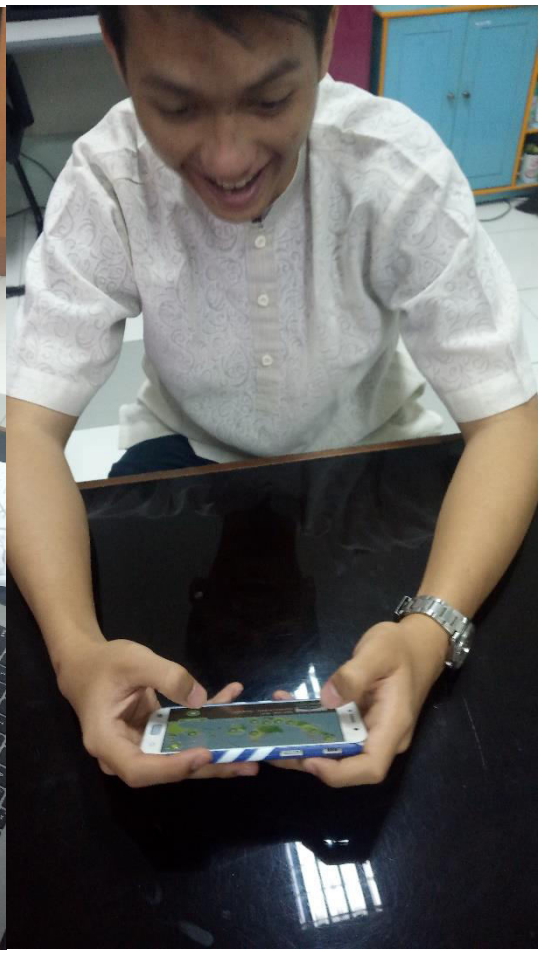
2. Documentations

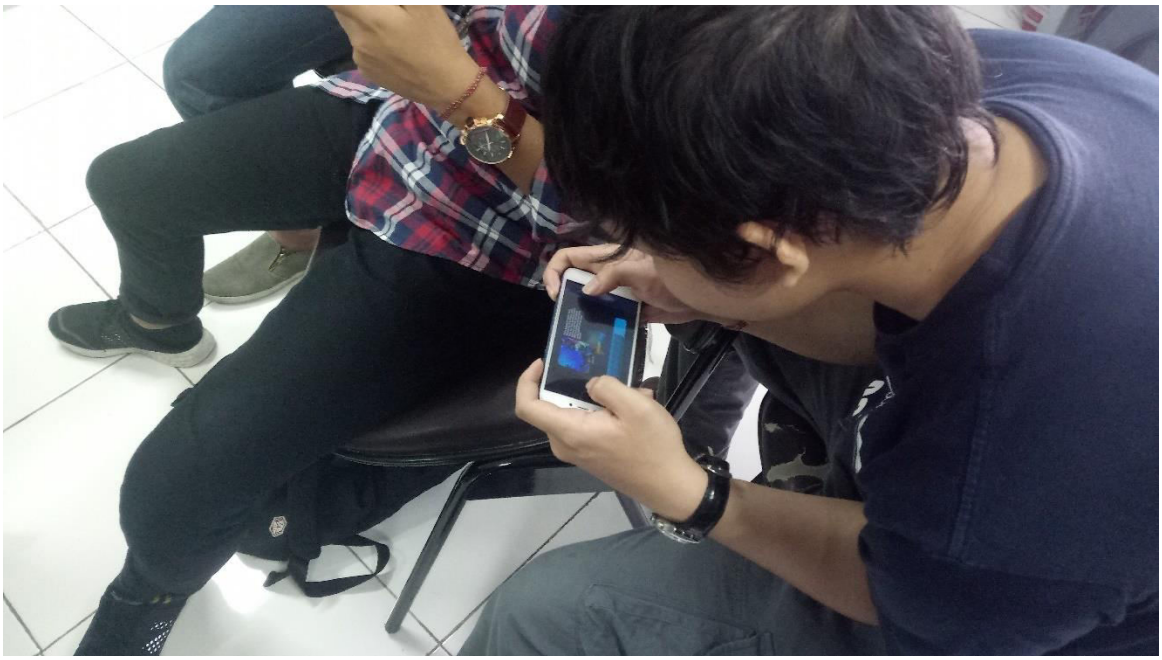


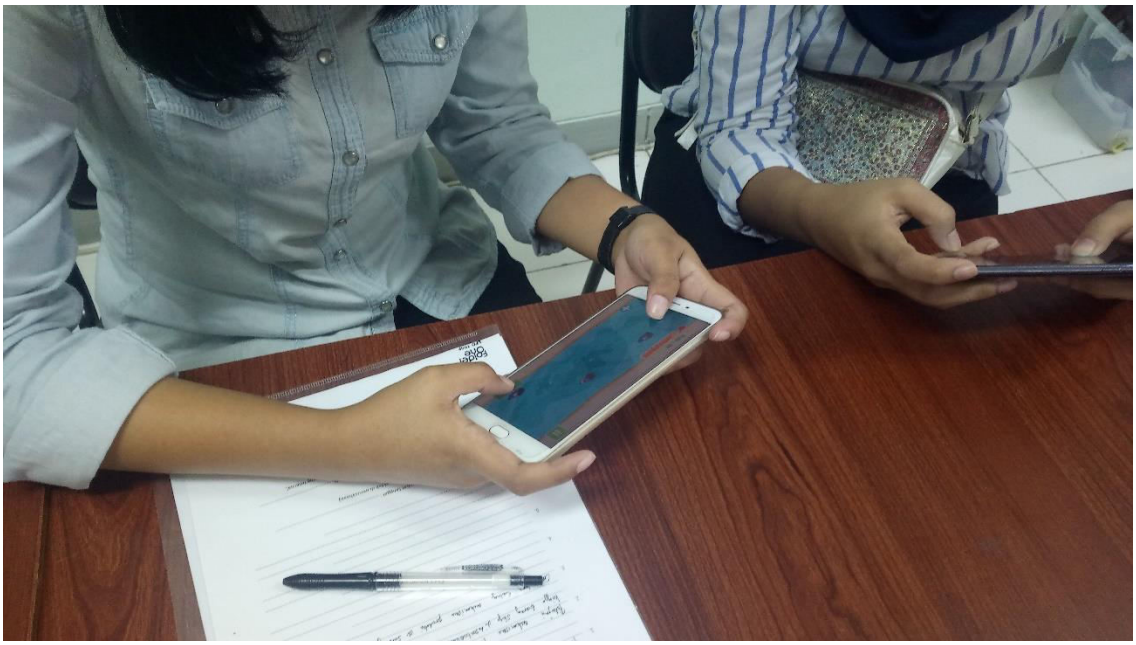


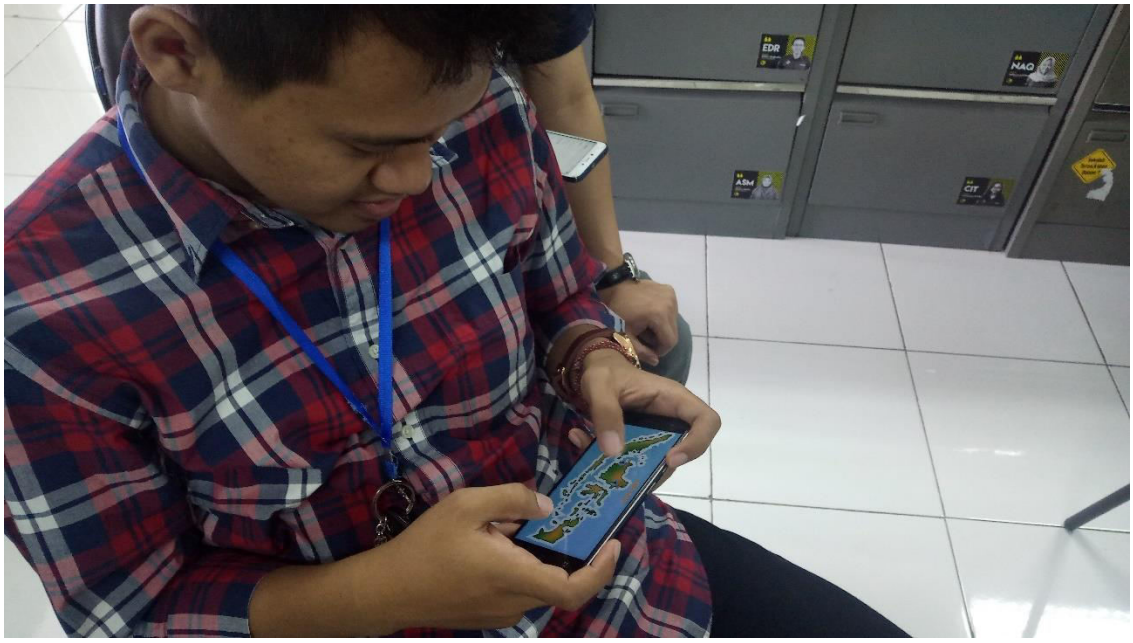








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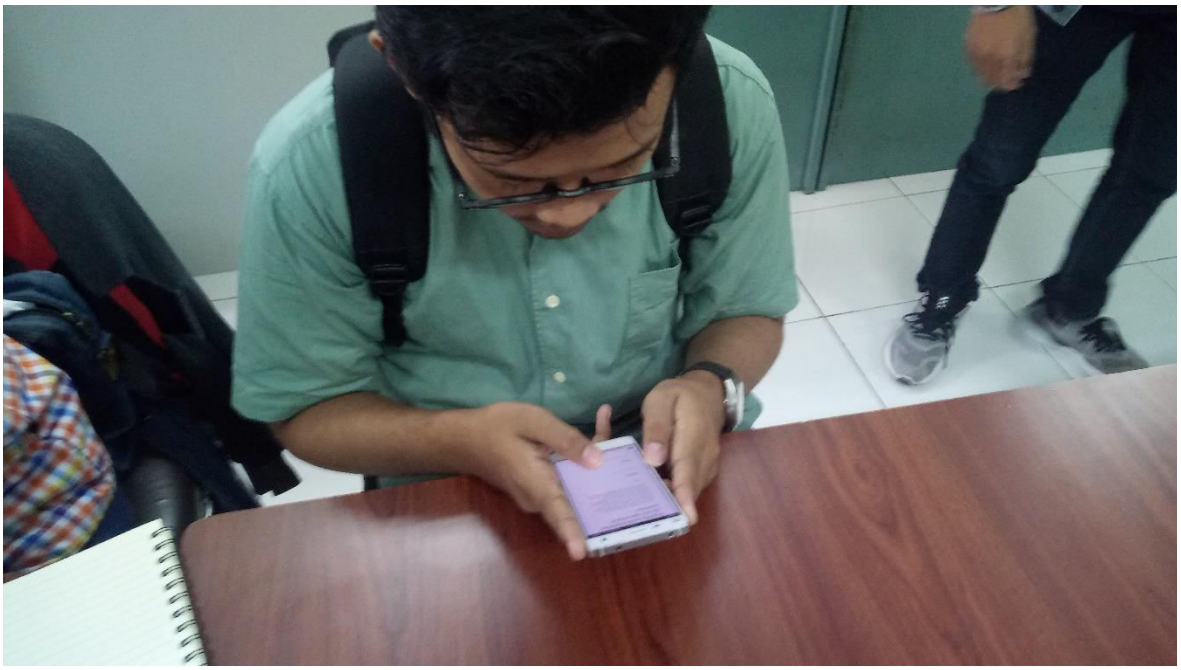

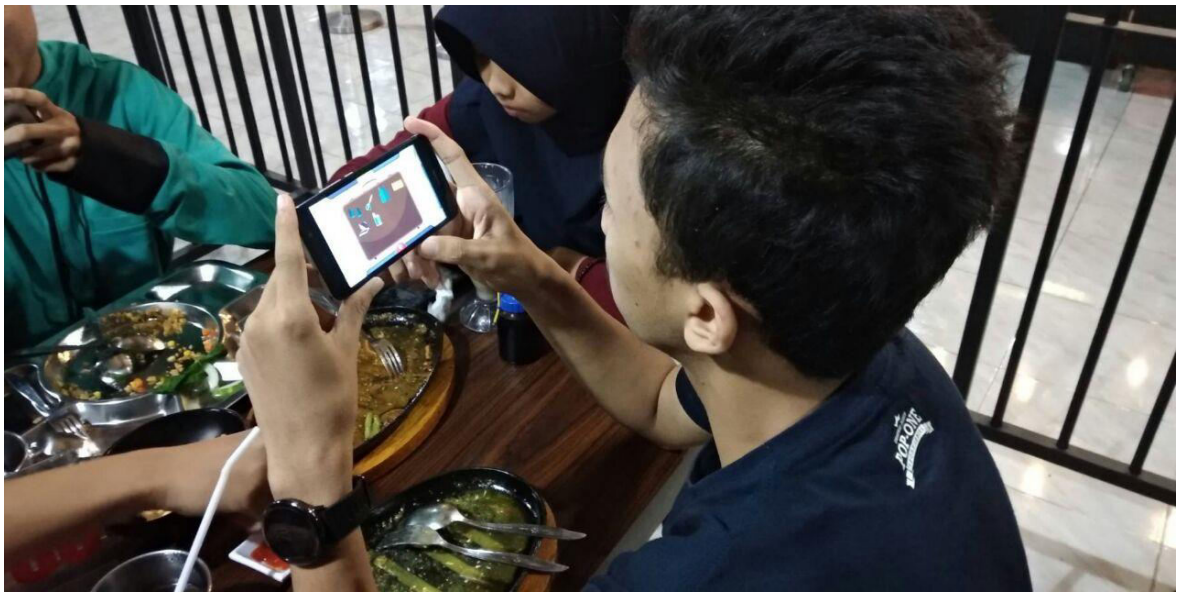

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