Design of Digital Interactive Encyclopedia "Palembang *Songket* Decoration" as Media Education Introduction *Wastra* Indonesia

Intan Permata Sari*, Fahmi Candra Permana, Feri Hidayatullah Firmansyah
Universitas Pendidikan Indonesia
Bandung, Indonesia
*intanpermatasari@upi.edu

Abstract—One of Indonesia's traditional fabrics that has its own distinctive and value is the Palembang *Songket*. Not only has an aesthetic value, but Palembang *songket* also has a philosophical value and a very deep meaning for each piece of fabric. Diversity decorative fabric traditional Indonesia is one of the cultural assets that must continue to be preserved and maintained their specifics. The diversity of ornamental Palembang *songket* fabric but not accompanied by the interest of the younger generation to get to know the traditional decorative fabric variety. Teenagers as the next generation of the nation have a big role in preserving and maintaining culture from generation to generation. One solution to protect and preserve the culture of Indonesia to the younger generation is to build a Digital Interactive Encyclopedia to introduce the diversity of ornamental *Songket* based mobile intended for junior high school students. This research uses the Design and Development Research method. The application design uses an encyclopedia format based on mobile devices, unity as the main application design tool using the programming language C#, Adobe Illustrator and Adobe Photoshop as a tool for designing graphics assets and illustrations in the application. The results of this research are mobile application products a digital interactive encyclopedia to introduce Palembang *songket* ornamental diversity as an Educational Media for the Introduction of Indonesian Literature for junior high school students.

Keywords: digital encyclopedia, Palembang songket, *mobile device, interactive media*

I. INTRODUCTION

Palembang is one of the regions that has a unique traditional fabric, namely Palembang *Songket*. Palembang *Songket* is one of the best textiles in the world. The specificity of Palembang *songket* contained in gold thread, refinement, and elegance in the diversity of motives. Based on the data from Balitbangovda Sumsel, there are currently 74 Palembang *songket* motifs recorded. *Songket* not only has aesthetic significance, but there are a philosophical value content and a very deep meaning for every piece of *songket*, especially on the old *songket* motifs. Disperindagkopi sumsel states that *Songket* has become the heritage of the archipelago which is recognized by the United Nations UNESCO.

Currently, some Palembang *songket* motifs do not meet the rules in the structure of the fabric. Craftsmen and *songket* entrepreneurs prefer the interest of consumers so that they appear motives that are no longer central philosophical value and meaning. Anna Komari, Palembang *songket* expert explained that the lack of young generation's interest in traditional *songket* fabrics today. If this is done continuously, then over time the values and meanings of Indonesian traditional fabrics will disappear along with the swift current of globalization. Therefore, to strengthen national identity, we have to maintain and preserve traditional Indonesian fabric. Teenagers as the next generation of the nation play a big role in maintaining cultural preservation from generation to generation, with the characteristics of today's youth, namely digital technology as a lifestyle, interested in visual information, and liking information in the form of interactive media.

Based on the results of Lindstrom's research that humans remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously [1]. So with the support of multimedia and digital interactive technology can provide a solution in the development of educational media. The Kominfo survey results explained that more than half of Indonesian people already have smartphones 66.31% and 65.34% of smartphone users are children aged 9-19 years and 59.89% are junior high school students. The results of this survey concluded that teenagers have been using smartphones (mobile devices) [2].

The digital encyclopedia is dictionary information is structured, in-depth information and equipped with visual information. Design of digital interactive encyclopedia based mobile devices can be one way to introduce, maintain, and preserve the traditional Indonesian fabrics so that the younger generation is motivated to find out. It can also be attributed to the Constitution of the Republic of Indonesia in 1945, articles 31 and 32 which stated that education and culture are the two elements support each other. If education is advanced, then culture will also advance.

Based on the facts and problems above, the researcher aims to create an Interactive Digital Encyclopedia of Palembang *Songket* Ornamental Variety as a Mobile-Based Education

Media Introduction to Indonesian traditional cloth for Junior High School Students. Interactive digital encyclopedia researchers chose because previously it had been done as a medium for the delivery of local cultural information.

As some previous research related to interactive digital media as an information delivery media culture, namely Bima, N., designed the Digital Interactive Encyclopedia Cirebon Wayang Kulit figures Mobile Device and JA Abubakar, about the digital media Effects interactive learning on architectural heritage [3,4]. The continued development of Interactive Digital Media with cultural content, so the researchers aim to develop interactive digital encyclopedia as a medium to deliver information about the local culture of traditional Indonesian fabrics. The application design uses an encyclopedia format based on mobile devices, unity as the main application design tool using the programming language C#, Adobe Illustrator and Adobe Photoshop as a tool for designing graphics assets and illustrations in the application.

II. LITERATURE REVIEW

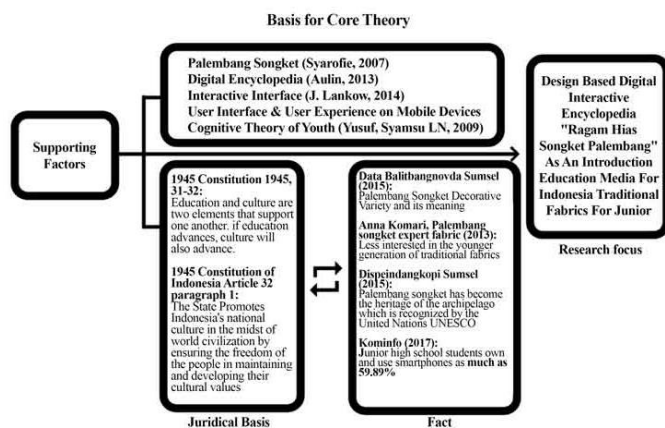The basis of this research can be seen in the following chart.

Fig. 1. Chart of platform (Source: Personal Doc).

Based on Figure 1 of the chart above, there are several supporting factors that influence the focus of this research, which are seen from the foundation of core theory, juridical foundation, and facts.

A. Palembang Songket

Palembang *Songket* is one of the best traditional weaving in Indonesia [5]. Researchers chose Palembang *songket* as digital content on the application to be made. Palembang *Songket* has high cultural values, especially in terms of technical abilities, aesthetics, levels of symbolic meaning and underlying philosophy. Palembang *Songket* has a philosophical value which is born from cultural meaning and becomes a strength in every accent and detail of its motives.

B. Digital Encyclopedia

Digital literacy is the ability to utilize information and communication technology to understand, discover, evaluate,

create, and communicate digital information [6]. Digital literacy skills are very important for educators and educated people to be productive in a democratic digital society [7]. Encyclopedias are usually shaped in a book. But along with advances in technology, the encyclopedia developed in digital format that can facilitate users in finding information with the data search feature. A digital encyclopedia is a visual dictionary that collects regular information, which is a literature that is not printed but is stored and presented in digital form [3]. In digital encyclopedias, multimedia technology can enrich the potential for encyclopedia development into a more interactive and interesting format, namely by presenting moving images (animation) and interactions in the form of navigation interfaces.

C. Interactive

One important characteristic of media is that users do not only pay attention to the media or objects, but are also required to interact while following the application. Interaction design must foster a designer's approach to education [8]. Interactive media not only hears and sees videos or sounds, but also provides active responses. This digital interactive encyclopedia actively involves user responses. There are three advantages of interactive media, namely 1) Stimulating users to find out more information, 2) growing user creativity, 3) Facilitating users in understanding information. User interaction consists of clicking, searching for specific data, actively forming the content presented, and choosing which information to access. Visual products that are more dynamic and more stimulating will be preferred over products that are plain and seem obvious. Researcher uses this interactive level theory as a reference to the interactive concepts used, so that the application can entice and motivate users to view content, then explore further data to find deeper information.

D. User Interface and User Experience

According to J. Lankow in the book explains, that the form of information delivery should be entertaining and simple that provides real and interesting knowledge for users, that is not only making a visual that entices the user, but also helps the user in living and maintaining the information. Thus presenting information in an attractive visual form and motivating users to dig deeper information. The main function of the user interface and User Experience is to create traction and comfort for solid users when using the application. *The user interface and User Experience are considered successful if it can provide convenience for the delivery of information to the user.* Mobile applications are personal, social and have a lot of interaction, for example, touch buttons on the screen, gestures, and voice input that can provide reciprocal responses quickly. *Mobile device researchers choose because seen from today's teenage characters who prefer flexible, instant, and mobile.*

E. Cognitive Theories and Youth Development

Cognitive theory is a theory that focuses on the formation of the concept of thinking, building knowledge (mental concepts) or central processes such as ideas, attitudes, expectations [9]. Researchers chose early and middle teens as the target user in designing applications, namely junior high

school students. Cognitive theory researchers choose to know the concepts of thinking and characteristics in teenagers.

III. METHODS

Researchers used the Design and Development Research (D&D) Method. D & D research has two characteristics, namely: produce (artifacts) and products produced through the research process. The research design used refers to the six stages of the D&D Research [10]. These stages are illustrated researchers through the following chart.
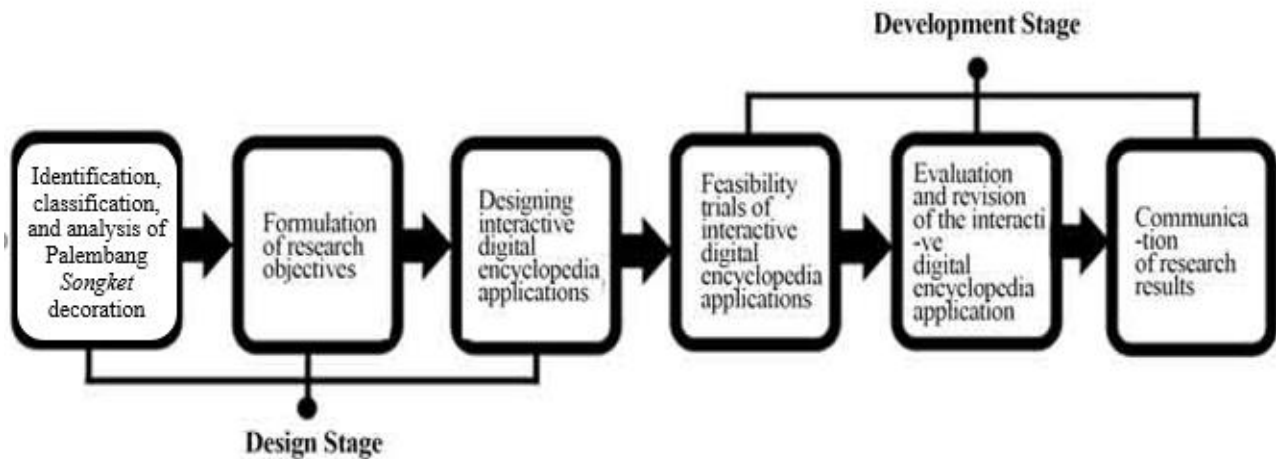

Fig. 2. D&D research design (Source: Personal Doc).

The following is an explanation of the statement above, among others.

- Identifying, classifying, and analyzing Palembang *songket* decoration as the core content of the application.

- Formulating research objectives, namely how to design digital interactive encyclopedia applications to introduce the variety of mobile-based Palembang *songket* decoration as an educational medium for the introduction of local culture.

- Designing graphic assets and creating digital interactive encyclopedia applications based on user characteristics focused on junior high school students.

- Test the app's eligibility to users to get feedback from users.

- Evaluate and revise applications that have been tested.

- Communicate the results of the evaluation and revision of the final results of research through seminars and national journals.

A. Research Data, Data Collection Techniques, Data Analysis, and Application Design Stage

Researchers use primary data and secondary data, namely data obtained from interviews and books / journals. Data collection techniques using document studies and collection of Palembang *songket* decoration data based on literacy from several books and previous research. In the analysis technique, the data collected is classified, analyzed, and concluded. Researchers reduce the data obtained by focusing on the old motif of Palembang *songket*. The results of the analysis are pursed as a benchmark to become the basis for making application content. The researcher also observed existing digital encyclopedia applications based on design, media, and communication design patterns. Researchers also conducted an initial review of adolescent characteristics based on adolescent cognitive theory. The application design stage is carried out in 3 stages, namely:

- Formulation stage of application design concepts

- Design Stage: Creation of content and graphic assets

- Programming stage

IV. RESULTS AND DISCUSSION

Human-computer interaction provides interaction between humans and computers more intuitive, deep and effective than using a computer mouse [11]. Multimedia applications are an effective way to provide Education material because multimedia provides information in a variety of media, in an interactive way and creates a multi-sensory learning environment [12]. The result of this research is a digital interactive encyclopedia application product to introduce Palembang *songket* ornamental diversity by utilizing smartphones (mobile devices). The results of the applications completed from this research:

A. General Concept

Based on the results of media analysis, researchers package Palembang *songket* information by combining multimedia components such as text, 2D illustrations, animation, traditional music, and sound effects, and mobile applications (offline) as a medium for delivering information. Researchers use the concept of simple animation, simplicity, clarity, attractiveness, and simplicity of applications which are the main points in the design of this application.

Fig. 3. Wireframe application.

The wireframe design that the researchers made as shown in Figure 3 displays more images and simplify information in the form of text. The goal is that users are more interested in knowing information and making it easier to receive information. Researchers also apply the characteristics of this encyclopedia that emphasizes complete information and deeper explanation.

B. Color

The colors used throughout this application are mixed colors from traditional colors typical of Palembang *songket* fabric, namely red (# cc0000), yellow gold (# cc9900), light brown (# 996633), green (# 006633) and dark brown (# 333300).

C. Sound Effects and Music

Several sound effects are used when an object is clicked. Researchers chose a traditional Palembang song namely the song instrument "*Gending Sriwijaya*" as the background music application, so that users feel inside Palembang *songket* gallery with a touch of traditional music.

D. Typography

The text contained in the application uses Arabic font types / group typesetting (regular) and *Utsaah* (regular) with black text color. Whereas Font set / group of letters used for *songket* titles and subtitles use Freestyle Script (Bolt) fonts. This font was chosen because the font style is 'hooked', so it is very suitable to form traditional nuances in the application.

E. Visual Concepts

The user interface as navigation in this application consists of a *songket* gallery background which displays a display of Palembang *songket* motifs.

Fig. 4. Display gallery settings on the main page.

The user interface as navigation in this application consists of a *songket* gallery background that displays a display of Palembang *songket* motifs. On the main page is made horizontally (left to right) as Figure 4 above. The appearance of this application uses the concept of gallery space as the main setting/setting of the application so that users feel like they are inside the *songket* gallery which contains a collection of Palembang *songket* decoration.

Fig. 5. Navigation display on the main page.

On the main page navigation, there is a display of 17 old motifs on display in the *songket* gallery. Users can click on one of the *songket* displays, after which they will get detailed information about the Palembang *songket* motif.

Fig. 6. Display navigation guess the quiz on the main page.

After clicking a few times on the brief description board, the quiz question "What Is This Motive?" Will appear. This quiz is useful to motivate users to remember the motifs displayed in the gallery space. If successful, the user will enter a new pop-up page that informs the *songket* motif in detail.
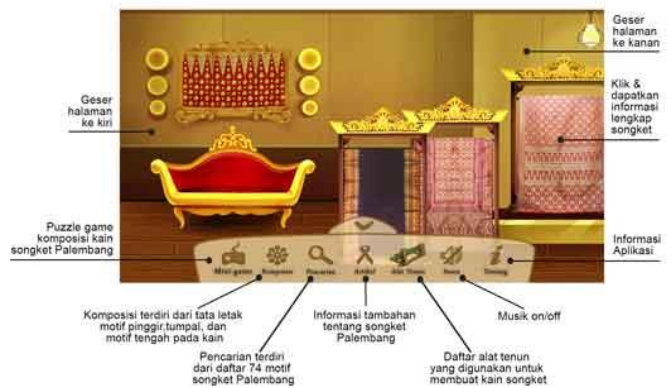

Fig. 7. Description navigation menu at home.

On the main page, the user can click on the arrow at the bottom of the menu. There are seven main menu applications, namely mini-games, composition, search, articles, looms, sound, and application information.

1) Mini game: Mini-games menu consists of three categories, namely lepus besaung Nago, Bungo Pacik, and the relay of the star lepus customized with the name of Palembang *songket* motifs. Features mini-game aims to let users quickly keeping in composition at Palembang *songket* cloth. As seen from the tendency junior high school students have been able to reason logically and draw conclusions from the available information, the feature mini-games will make indirect users learn and remember the composition of *songket*.

Fig. 8. Navigation display when playing on the mini game menu.

When the game starts, the display will feature games such as figure 8. Users are given 3 minutes to determine the layout/structure of *songket* motifs in the drag & drop format. Users can also color the motif fabric as desired and capture the motif when the game is finished.

2) Composition: Menu composition gives detailed information on the composition/structure of Palembang *songket* cloth, which is in the grip of making *songket*. On the composition of the menu consists of three main parts, namely the central motif, motive edge, and tumpal motif.
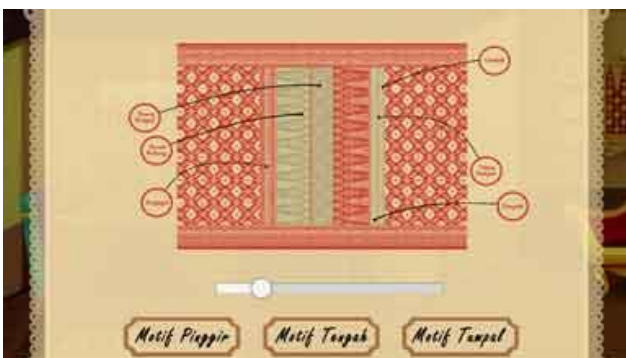

Fig. 9. Navigation display of tumpal motif in the composition menu.

If the user clicks on the edge motif, it will appear as shown above. if the user clicks on the parts in the form of a red circle, detailed information about the motif will appear.

3) Search menu: The search menu provides information on a list of 74 *songket* motifs.

Fig. 10. Display navigation on the search menu.

Users can search for the desired *songket* motif based on the search for 'names' and 'alphabets' via the search button as in figure 10 above.

4) Article menu: Menu article provides information relating to Palembang *songket*. The information consists of, *songket* history, uses, traditional clothes, traditional fabrics, manufacturing processes, manufacturing materials, and others.

5) Weaving tools menu: The looms menu provides complete information about tools for weaving *songket* fabrics.

V. CONCLUSION

The Digital Interactive Encyclopedia that researchers built, has been successfully built using Unity and the Programming Language C# as the main application design tool, then Adobe Illustrator and Adobe Photoshop as graphic asset design tools and illustrations in applications. This research resulted in a mobile application product that is a digital interactive encyclopedia to introduce Palembang *songket* ornamental diversity as an Indonesian Literature Introduction Educational Media for Junior High School Students. User Interface and User Experience was designed that was adjusted to the characteristics of junior high school students so that users could quickly receive and understand the information contained in the application. The application is also designed with an attractive and consistent display of a combination of text, color, images, layout and interactive. This study uses more visual concepts to get good user emotions. The design of digital interactive encyclopedias with local cultural content is expected to protect and preserve Indonesian culture as well as evidence of cultural travel from generation to generation as a contribution in the development of human life in the future.

REFERENCES

[1] R. Lindstrom, The Business Week Guide to Multimedia Presentations: Create Dynamic Presentations That Inspire. New York, NY: McGraw-Hill, 1994.

[2] K. Kominfo, "Survey penggunaan TIK 2017 serta implikasinya terhadap aspek sosial budaya masyarakat," Pusat Penelitian dan Pengembangan Aplikasi Informatika dan Informasi dan Komunikasi Publik, Kominfo RI, 2017.

[3] B.N. Aulan, I. Irfansyah, and A.Z. Mansoor, "Perancangan Ensiklopedia Digital Interaktif Tokoh Wayang Kulit Cirebon Pada Mobile Device," Wimba: Jurnal Komunikasi Visual, vol. 5, no. 2, 2015.

[4] A. Bakar, J. Aida, P.S. Jahnkassim, and M. Mahmud, "Effects of interactive digital media on architectural heritage learning," Jurnal Teknologi, vol. 78, no. 2-2, pp. 41-48, 2015.

[5] M. Uchino, "Socio-cultural history of Palembang *songket*," Indonesia and the Malay World, vol. 33, no. 96, pp. 205-223, 2005.

[6] A.L. Association, "Digital Literacy & Libraries. Am Libr Assoc Off Inf Technol Policy," [Online] Retrieved from http://www.districtdispatch.org/wp-content/uploads/2013/01/2012_OITP_digilitreport_1_22_13.pdf

[7] C.L. Al-Qallaf and A.S.R. Al-Mutairi, "Digital literacy and digital content supports learning: The impact of blogs on teaching English as a foreign language," Electron Libr., vol. 34, no. 3, pp. 522–47, 2016.

[8] E. Stolterman, "The nature of design practice and implications for interaction design research," Int J Des., vol. 2, no. 1, pp. 55–65, 2008.

[9] L.N. Yusuf Syamsu, Psikologi Perkembangan Anak & Remaja. Bandung: Remaja Rosdakarya, 2009.

[10] J. Ellis T and Y. Levy, "A Guide for Novice Researchers: Design and Development Research Methods," Proc 2010 InSITE Conf., 2010.

[11] C.M. Chen, J.Y. Wang and Y.C. Lin, "A visual interactive reading system based on eye tracking technology to improve digital reading performance," Electron Libr., vol. 37, no. 4, pp. 680–702, 2019.

[12] T.K. Neo and M. Neo, "Classroom innovation: Engaging students in interactive multimedia learning," Campus-Wide Inf Syst., vol. 21, no. 3, pp. 118–24, 2004.