Implementation of User Interface in Mobile Aplication for a Museum in Bandung

Ria Fathya Luqman[1*]
Department of Visual Communication Design, Faculty of Design
Universitas Komputer Indonesia, Jalan Dipati Ukur 102-106, Bandung, INDONESIA
ria.fathya@email.unikom.ac.id

Irma Rochmawati[2]
Department of Visual Communication Design, Faculty of Design
Universitas Komputer Indonesia, Jalan Dipati Ukur 102-106, Bandung, INDONESIA
irma@email.unikom.ac.id

Mochammad Didan Rizky[3]
Department of Visual Communication Design, Faculty of Design
Universitas Komputer Indonesia, Jalan Dipati Ukur 102-106, Bandung, INDONESIA
didan.51919044@email.unikom.ac.id

ABSTRACT

As a case study, the Bandung Geological Museum holds a large collection of animal, plant, and rock fossils, but currently, no media can provide information about the collection, especially dinosaur fossils outside the museum. The lack of information limits the reach of the public. To overcome these problems, it is necessary to develop an interactive multimedia design through mobile applications to provide information about dinosaurs to the public. The implementation of the user interface is very important for media developers to measure the success of an interactive multimedia design and should be able to function as planned and meet the needs of its users. This research provides an overview of the implementation of the user interface with the prototype method. This prototype aims to equalize the perception of the user interface developed by developers to users, especially users of mobile applications for the Bandung Geological Museum

Keywords: User Interface, Mobile Application, Museum

L. Warlina and S. Luckyardi (eds.), *Proceedings of the International Conference on Business, Economics, Social Sciences, and Humanities - Humanities and Social Sciences Track (ICOBEST-HSS 2024)*, Advances in Social Science, Education and Humanities Research 854,
https://doi.org/10.2991/978-2-38476-269-9_12

1. INTRODUCTION

Dinosaur is the name for giant animals, especially large lizard species that dominated the Mesozoic Era, the name dinosaur itself was proposed by Sir Richard Owen in 1842 (English, *dinosaur)* the name dinosaur comes from the Greek *δεινός(deinos*) "terrible, strong, great" and *ζαῦρος(sauros*) "lizard" then called *dinosaur* or dinosaur. The term dinosaur is often overused to describe or name other prehistoric animals, but judging by the name itself, not all prehistoric animals can be said or named as dinosaurs. Dinosaurs have thousands of species that have been discovered, but there are only a few hundred that can be validated based on scientific descent. Dinosaurs themselves have a classification to divide what species fall into a category with 7 main types, namely Theropoda, Sauropoda, Ankylosaurus, Ceratopsian, Ornithopoda, Pachycephalosaurus, and Stegosaurus.

Bandung Geological Museum is a museum that has at least 60,000 collections of fossils and rocks that can be observed or not. The Bandung Geological Museum is part of the Ministry of Energy and Mineral Resources. Seeing the large number of collections owned by the Bandung Geological Museum, is directly proportional to the enthusiasm of the community, especially among students who visit for recreation or to increase knowledge about ancient dinosaurs and things about prehistoric times. However, with the data listed above, the Geological Museum does not have much media that can provide information online so visitors are required to visit the Bandung Geological Museum to find the information needed, so this design can support the needs of the Bandung Geological Museum.

Students from elementary school, junior high school, and high school often use the Bandung Geological Museum as a place for learning outside of class, especially in junior and high school who have subjects about prehistoric times and dinosaurs. The lack of media options that visitors can get can make visitors less interested in information about ancient dinosaurs. In addition, with the many options that can be taken as a supporting reference for dinosaur information, it becomes one of the problems that occur at the Bandung Geological Museum by not having any of these options and also educational institutions that only provide media in the form of encyclopedia books.

2. LITERATURE REVIEW

Below is a list of studies with some of them described:

1. Purnomo, D. (2017). Model *Prototyping* Pada Pengembangan Sistem Informasi. JIMP – Jurnal Informatika Merdeka Pasuruan Vol.2 No. 2 Agustus 2017. http://ejurnal.unmerpas.ac.id/index.php/informatika/article/view/67
2. Rochmawati, I. (2022). Implementasi User Interface Pada Multimedia Interaktif Cerita Rakyat Dari Kalimantan Barat. *Visualita Jurnal Online Desain Komunikasi Visual, 10*(2), 31-44. https://ojs.unikom.ac.id/index.php/visualita/article/view/6703

3. METHODOLOGY

This research uses the prototype method to answer design problems in the form of artifacts. Prototype is a software development method, in the form of a physical model of system work and serves as an early version of the system. According to Ogedebe, et al (2012), the prototype is a software development method in the form of a physical model of system work and serves as an early version of the system. In this research, prototypes are

made for interactive multimedia-based design in the form of mobile applications. This method is expected to produce mobile application media that can be improved and can be used according to user needs, namely getting information about the collection of dinosaur ancient animals at the Bandung Geological Museum.

According to Ogedebe (2012), the steps in prototyping are as follows:

a. Needs Gathering
   Consists of making design needs that will be made such as determining illustrations, colors, fonts, layouts, and so on.
b. Fast design process
   Make a design according to the concept to get a basic picture of the prototype media that was built.
c. Building prototypes
   Producing prototype media as initial media to be tested to the public.
d. Evaluation and improvement
   Adjusting the input from the user audience so that it can produce the final work.
e. Design Implementation
   Implementation of designs that are ready to be published to the public and there is still evaluation in technical and operational terms as well as interaction from design media users.

4. DISCUSSION

The analysis methods used include:

4.1 Target Audience

According to McQuail (2010), audiences are consumers who have personal interests. Active target audiences are those who are actively involved in processing the information received and have their own experiences. The selected target audience is 30-45 years old, female and male, all ethnic groups, and the economic and social status is targeted at the middle to upper middle class. The targeted area of place is urban and sub-urban in the Bandung area or nationally.

4.2 Communication Strategy

To achieve the acceptance of messages from teenagers and early adults, a communication approach is carried out that aims to provide messages to the target audience. The choice of communication approach must be adjusted to the purpose of communication, the intended target audience and the context of a particular situation. This approach prioritizes two aspects, namely the verbal approach and the visual approach.

a. Communication Objectives and Approach
   In this design, the main communication objective is to educate the target audience about dinosaurs. In addition, this design aims to provide interesting things and convenience in providing education about ancient dinosaur animals.
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b. Mandatory

The design of dinosaur ancient animal information application media is made based on data from related parties. The party that has the data as reference material for designing this application is the Bandung Geological Museum and the official website of the Bandung Geological Museum itself. Mandatory as a provider of data used in designing media to remain in accordance with existing directions without any data left behind.

4.3 Creative and Media Strategy

The creative strategy carried out in designing information through interactive media based on this application is to provide an overview and education along with the type of dinosaur chosen and treated to illustrations as an illustration of that type. Also, target audience interaction is carried out in the form of cards that will provide additional information about the selected dinosaur.

Media strategy is the stage of determining the choice of suitable and appropriate media to reach the target audience. Media selection is very influential on the smooth delivery of messages, so effective media is needed and media that can provide communication with the target audience. Based on the design solution, application-based interactive media becomes familiar and interesting learning used by the community.

Applications are made with the aim of being able to solve problems that exist within a certain scope and are developed to perform general and specific tasks.

4.4 Design Format

The design format used in the design of dinosaur ancient animal information through interactive application media is made using at least 4 software namely Adobe Photoshop, Adobe Illustrator, Figma and Flutterflow. The design format that has been designed has the following format:

a. Illustration
   - Resolution : 2100x1500
   - Extention Format : PNG, WEBP, AI and SVG
   - Type : Vector

b. Application
   - Resolution : Adaptive
   - Language : Flutter and Dart

The resolution used is Adobe's native resolution, with an ideal ratio ranging between letterbox and widescreen. The extension of the illustration itself has many types, making it easier for designers to recreate them as needed.

Meanwhile, the application runs with the Flutter programming language. Flutter is the result of the development of the more widely known Javascript programming language. With better flexibility than previous languages, Flutter can adapt to user needs both now and in the future.

c. Layout

On the main page or main menu, the target will be presented with a headline and also several choices of dinosaurs that he can see. In addition, the navigation on the main page contains some initial information that will introduce the material briefly and easily. Hierarchy in design is a way to direct the reader's attention to something (Rochmawati, 2019).

Apart from the type F used, the layout creation process uses a modular method that is used to separate each component owned by the application (Samara , 2023).

Figure 1: Wireframe of the homepage

Source: Personal Document

The search page contains all the dinosaurs that have been entered, this page will be the bridge between the target and the dinosaur ancient animal information. This page also contains the name, image and type of dinosaur that will be selected.

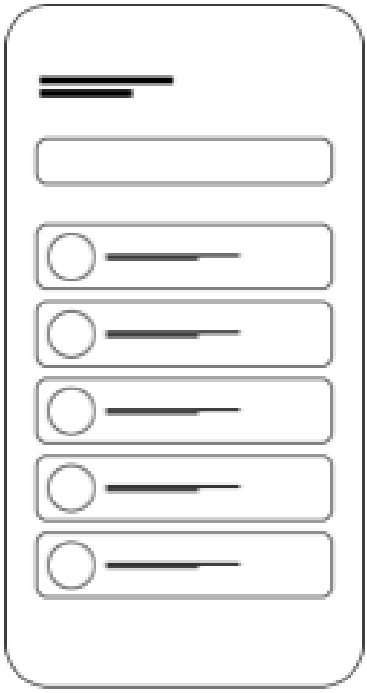

Figure 2: Wireframe searchpage
Source: Personal Document

On the material page, the target will focus his attention on the dinosaur illustration that takes up almost half of the phone screen, but given the design of the application that uses an adaptive system, the size of the components in the application can change according to the type of screen being used. After the illustration, the name and type of dinosaur will be listed. Then it goes into a brief information session about the selected species, information in the form of a brief description and the characteristics it has. In the last session, there will be a flipable card that the target can touch to flip the card. Where the front card contains questions and the back contains answers.

Figure 3: Wireframe contentpage

Source: Personal Document

d. Typography

To present a clear and efficient User Interface and content, typography is needed. Choosing typography in the User Interface must consider the level of readability of letters and scalability, it is also recommended to use text that is responsive and can be read on various devices and screen sizes (Chakrabarti & Singh, 2023).

There are two typographies taken in the User Interface of the mobile application 'Dinosite', namely using Montserrat as the main family and Poppins as the second family. Montserrat and Poppins are Sans typefaces. The two typefaces are taken based on the visuals that appear. In addition, these two typefaces also have a free license so that it does not hinder the completion of this application design.

Figure 4: Typefaces
Source: Personal Document

Montserrat will be used for headlines such as titles and opening materials. While Poppins will be used for bodytext in all application components.

e. Illustration

The illustrations use Flat Vector format with Stylized style. This style is carried out by considering the ease of providing information as well as changing the type of media. Each body part of the dinosaur is separate which allows for rigging for animation needs.

In addition, the reference used in the illustration study in this design is an animation work from a studio called Kurzgesagt. A studio that focuses on making interactive scientific animations on the Youtube page.

f. Color

Color selection focuses on the level of color contrast itself. The colors taken have a fairly high level of contrast, being in the middle of the colors in the color wheels between false and contrast.

The level of contrast is taken by focusing on the ease of the target to focus its attention on the material, besides that the colors in the part taken have a high level of combination so that the colors that can be used will be more diverse.

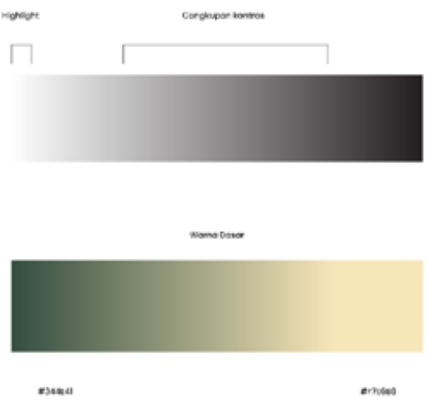

Figure 5: Color selection
Source: Personal Document

g. Property Study

The property study used is the ecosystem of the dinosaurs raised. This ecosystem is the environment where the dinosaur lives. In addition to properties based on the ecosystem, it will also be raised based on the category of dinosaurs, carnivores and also herbivores.

Figure 6: Ecosystem property study
Source: Personal Document

h. Character Study

Character study is done by utilizing references on the Natural History Museum website page to get the data needed in the designed application.

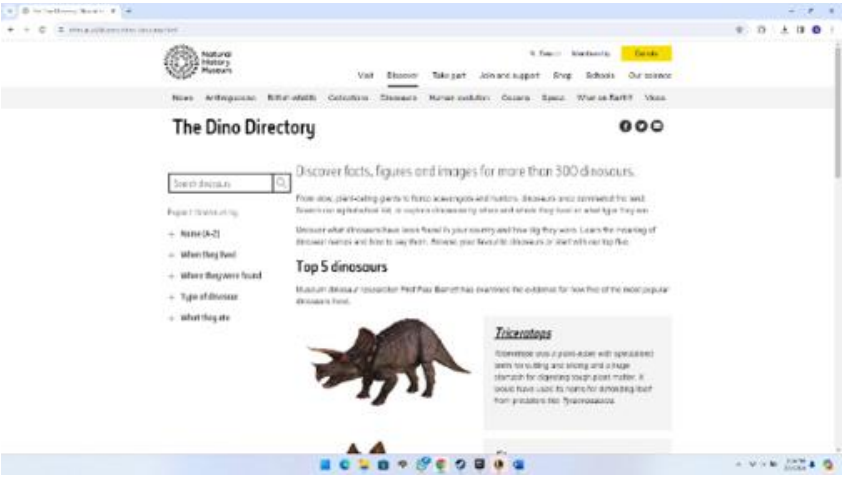

Figure 7: Natural History Museum page
Source: Personal Document

After obtaining the data from the source, a study was carried out on the skeletal parts of the selected dinosaurs. References were taken from the Skeletal Drawing page.

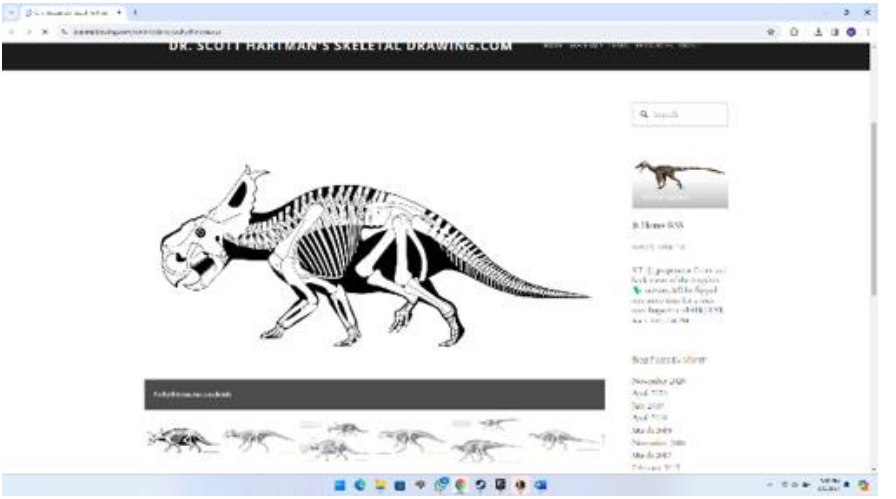

Figure 8: Skeletal Drawing Page
Source: Personal Document

After the required data, then proceed to the production session which starts from sketching to finishing.

i. Main Media

The main media of this design is android application media. Media that is a solution to the problems described above. This media runs with the Flutter and Dart programming languages which are advanced programming languages from the widely recognized programming language Javascript, so that possible changes in any case will be easier to do.

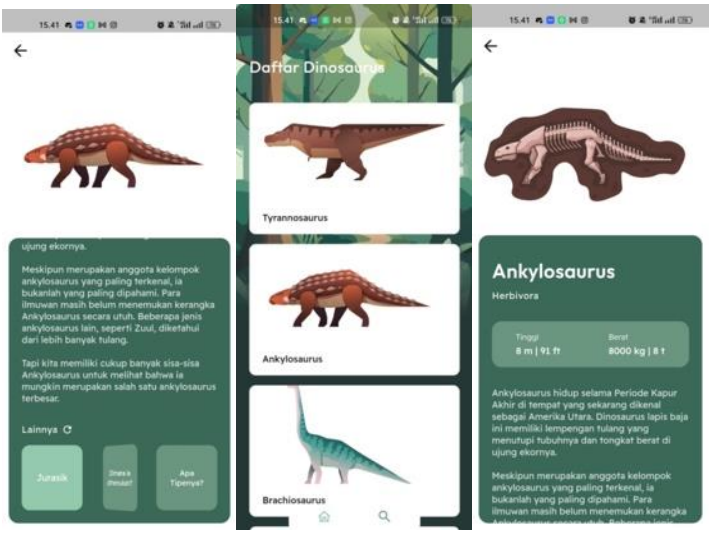

Figure 9: User Interface in Mobile Aplication of Museum

Source: Personal Document

5. CONCLUSION AND RECOMMENDATION

In this mobile application user interface design, the designer creates an information media in the form of an Android mobile application called 'Dinosite' to facilitate visitors to the Bandung Geological Museum, especially students, in getting complete information about dinosaurs. The design focuses on seven main types of dinosaurs, each with unique characteristics, to help the target audience understand the fundamental differences between dinosaurs. The app is designed using sans serif fonts with regards to the readability of the fonts on various screen sizes used by users. Then the dinosaur illustration used by this application is using a flat vector format with a stylized style to make it easier to provide information and change media types. The colors in this mobile application use contrasting

colors so that users can focus attention on the information presented. For layout, this application uses type F and Modular with the aim of separating the components owned by the application. This mobile application is designed as an alternative information media that is more flexible for visitors and as a liaison between the Bandung Geology Museum and visitors to make it easier to get information about the museum collection.

ACKNOWLEDGEMENT

Thanks to Universitas Komputer Indonesia for funding this research to be published, as well as to the organizers, committee and the entire team who have designed the user interface design of this mobile application.

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