CHAPTER 1
INTRODUCTION

1.1. Background

Indonesia is a tropical country with year-round of sunlight, Indonesia is also located on the equator which allows exposure to high-intensity sunlight. Although sunlight is a beneficial energy source for human life, it is not always beneficial because excessive exposure to the ultraviolet rays contained in sunlight can have adverse effects on the skin. As stated by Badan Meteorologi, Klimatologi, and Geofisika (*BMKG)* by monitoring the UV Index, health officials can warn the public of the risks of overexposure to the sun and offer advice on how to protect themselves from harmful UV rays. The negative effects of excessive sun exposure can cause sunburn, premature aging, photoaging, and skin cancer. (al Robaee, 2010).

Naturally, the skin has its own protective functions, such as stratum corneum thickening and skin pigmentation, but this alone seems to be insufficient to protect the skin from the harmful effects of ultraviolet rays, and chemical protection is required. One way of chemical protection against the skin by using what is often known as sunscreen, but it can also be physical protection such as covering the body and skin with long clothes, hats, or umbrellas. (Turner, 1998). Sunscreens are topical preparations that can provide long-term protection for the skin from UV exposure. Sunscreen is designed to prevent or minimize the effects of radiation from overexposed sunlight on human skin without any side effects.

With the dangers of UV rays and the need to protect our skin, we must use sunscreen as a layer of protection against UV rays. Sunscreen is a substance or material capable of protecting the skin from ultraviolet rays. Cosmetic sunscreens come in many forms, including lotions, powders, creams, gels, and sprays that you can apply to your skin. Cosmetics that contain sunscreen are often labeled with a specific SPF (Sun Protection Factor) level. SPF values range from 30 to 100, and this number indicates how long a product can protect or block UV rays that cause sunburn. (Petersen & Wulf, 2014). A product's duration of action can be easily

calculated by multiplying the SPF value by the time it takes for the skin to irritate without sunscreen. A properly applied sunscreen with SPF 50 blocks 98% of UVB rays. SPF 100 blocks 99%. When used correctly, a sunscreen with an SPF value of 30 to 50 will provide adequate sun protection. Sunscreen is therefore a self-protection solution and a preventive option to avoid the harmful effects of UV rays.

According to a final project survey of 210 civil engineering students conducted in 2020 by Edlia Fadilah Mumtazah of Airlangga University, 180 out of 210 respondents used sunscreen. Accurate sunscreen use is still considered inadequate, and knowledge of how to choose an appropriate sunscreen and how to use it is still low. Civil engineering students need sunscreen education, including the appropriate sunscreen selection and to remind to reapply the sunscreen, as indicated by many respondents who did not reapply (78.4%). (Fadilah Mumtazah et al., 2020). There are currently very limited resources to research and warn against reapplying sunscreen.

In our evolving and technology-dependent life, we rely on gadgets, especially smartphones. Today everyone has a smartphone. This gives us the opportunity to better use technology to make it work for us. And it plays an important role in our daily life and serves as a reminder to use sunscreen in different ways each time. The remarkable problem is that most people forgetting to reapply it at the right time in the right ratio to your sunscreen's SPF (Ameta et al., 2015). Several reminder and tracker applications based on the Android (Play Store) and Apple (App Store) operating systems are also present as alternative media for reminders in several ways, such as reminding to drink more interactive water, such as the *Plant Nanny Water Tracker Log*, *WaterMinder*, *Drink Water* applications, *Reminder N Tracker*, and much more.

However, not many applications are designed to remind the use of sunscreen, as if the use of sunscreen is not too important. There are several kinds of applications that warn us about the UV index, such as the *UV Index Now*, *UVLens*, *My UV Index* applications, and even in the weather application on our cellphones we are notified about awareness of the UV index, only a few of these applications have not implemented edutainment and are in the form of a more varied reminder feature besides including the daily UV index and some words that people don't even

understand. In addition, the three existing UV index applications do not yet have an attractive user interface and still seem stiff for a reminder and awareness application for people.

Media Reminders can be a powerful tool to promote sunscreen use and protect people from the harmful effects of UV rays. However, further research and innovation are needed to develop effective and culturally appropriate media strategies and to address privacy and user experience issues.

Looking at the phenomena that occur, the author will focus on designing a UI design prototype application for a reminder of the use of sunscreen by informing the daily UV index.

1.2. Problem Identification

From the description on the background written above, the identification of problems that arise are:

1. The dangers of UV rays on the skin can lead to several skin problems.
2. The increasingly negative effects of sun exposure from not using sunscreen at a young age
3. Most UV index applications still lack an attractive user interface and are very difficult for some new users to understand.

1.3. Research Question

With the problem identified above, the problem questions are formed. These formulations of problems found related to are as written below:

How to design an interactive visual media (UV Index and Sunscreen Reminder application) that most people can understand to convey the importance of sunscreen and the dangers of UV rays?

1.4. Research Scope

The scope of limitations or the focus on the problem in this study is as follows:

1. What

   Designing a user interface of an application that can help people easily understand the importance of using sunscreen, reminder to reapply sunscreen, and can be educated about the dangers of UV rays.
2. Who

The target user of the application is *female* with an *age range of 19 – 23 years* because the phenomenon of problems is attached to people in their teens to adults.

3. Where

   The scope of this research application is in *Indonesia*, especially in *Bandung* areas.

4. When

   The research to develop this application started from October 2022, develop in June until August 2023, and finalize in August 2023.

5. Why

   To be aware of the dangers of UV rays and to make it easier for people to track the use of sunscreen per day, as well as to provide alternative sources and implementing edutainment regarding the UV index that is easy for people to understand.

6. How

   Design a user interface design including the result in the form of a design prototype for a media application to facilitate understanding and recognition of the importance of using sunscreen in daily life.

1.5. Research Goal

The purpose of this research is to design an application UI/UX that is effective in helping people easily understand what is being conveyed, easy to use and engaging for young adult.

1.6.Research Benefit

This research will benefit academics, writers, and the general public. The benefits that will be received are as follows:

1. For the Academics

a. This research can be used as a reference for issues involving UI/UX design principles of Visual Communication Design.

b. As a means of knowing the quality of education in study programs and faculties at *Telkom University* to prepare students to enter the process of working on theses and final assignments.

2. For the Writer

a. To enable critical thinking by applying the knowledge that has been learned and be able to solve problems in the experience of learning Visual Communication Design.
b. For further research so that it can be developed for the better
c. To fulfill one of the requirements to complete her bachelor's degree at *Telkom University*.

3. For the Public

a. To provide information to the public about the dangers of UV rays and the importance of using sunscreen.
b. To be used as a resource to understand the process of developing and designing UI/UX of an application.

1.7. Research Method

The authors use two methods of data collection and data analysis, both of which can be determined by some of the research methods used in this study as follows:

1.7.1. Data Collection

a. Questionnaire Method

In this method, the authors created a questionnaire using a *Google Form* as an intermediary that included questions about the importance of sunscreen use and questions about sunscreen use experience and understanding of UV exposure. The questionnaire is being distributed to 30 Indonesians from the age of 19 to 23 across Indonesia, but the author will be focusing *Bandung* areas and for female college students and the results of this method are qualitative data.

b. Observation Method

This method is carried out by examining existing applications and analyzing their weaknesses and strengths by the author. The data from this method will later be used as a reference when the author designs the application that intends to develop. This method is also used to observe the behaviors, preferences, and needs of many college students who want to be more conscientious about using sunscreen daily to avoid the associated risks. The results of this method are included in the qualitative data.

c. Interview Method

The method is carried out by asking several questions related to the problems to college student who often forget to use sunscreen and asked about some interactive designs and media that are suitable for college students within the age range of 19 - 23. This method results in qualitative data. Interviews will be conducted via meeting in person and with the use of communication platforms such as *Zoom* and *WhatsApp Messenger*.

d. Literature Method

This method requires researching and reading various literature such as journals, books, and research papers related on How to design an interactive media that most people can understand to convey the importance of sunscreen and the dangers of UV rays.

This method aims to help the authors create a solid theoretical foundation on the topic that the author is discussed in order to accurately answer the questions of this study.

1.7.2. Data Analysis

a. S.W.O.T Analysis

This author will use the S.W.O.T analysis technique to look for strengths and weaknesses from the other similar projects to get a reference solution to achieve the optimal design strategy and collect data and describe what is included in the four elements, namely:

1. Strength
   Same media features that set it apart from its competitors
2. Weakness
   Characteristics that give the same media an unfair competitive advantage
3. Opportunity
   Environmental factors that allow the same media to be used
4. Threat
   Environmental factors that can be problematic for the same media

b. Matrix Analysis

Matrix analysis is a juxtaposition or comparing several things through juxtaposition using the same benchmark to see the differences. The process of data analysis is a form of combining the problem formulas in the research and the theoretical framework used based on data from previous research results to achieve the author's research objectives and refine previous research (Soewardikoen, 2019: 104). This study uses visual data analysis, namely the stages of describing and interpreting images step by step.

1.8. Design Framework

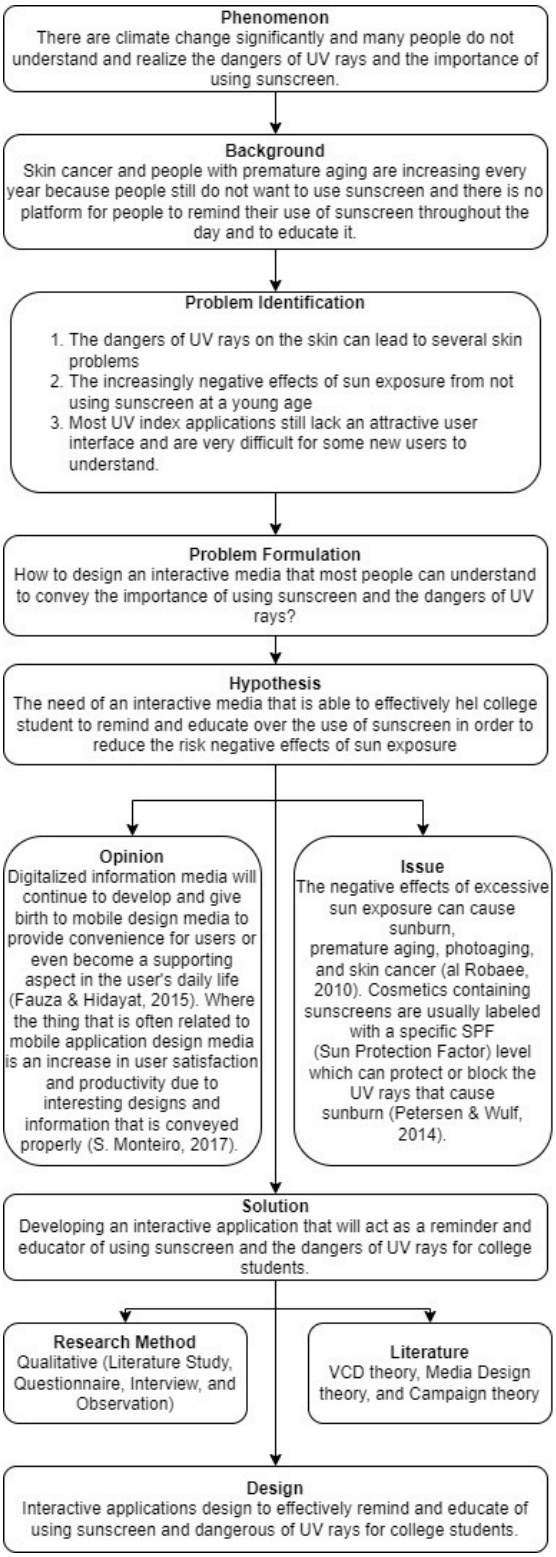

Figure 1. 1 Design Framework
(Source: Personal Documentation, 2023)

1.9. Writing Systemic

The systematic of writing study research consists of:

A. Chapter I Introduction

It contains background to the problem and provides a general description of the problem raised considering observed phenomena. It also discusses problem identification, problem formulation, scope, research objectives, methods of data collection and analysis, the framework of thought, and the goals of this research. This chapter also provides an overview of each chapter, an overview of the data collection techniques used, and how the design framework can be used to guide the design process.

B. Chapter II Literature Review

A description of the rationale for the theoretical basis relevant to the topic of research that should be used as a research guide.

C. Chapter III Data and Problem Analysis

This chapter provides detailed information data from three visual aspects along with an analysis of each data.

D. Chapter IV Concept and Design Results

Describe research ideas such as concept ideas, design methods, media, and visuals. Furthermore, application design results, including sketches and media visualization, are presented as conclusions from the data analyzed in Chapter 3.

E. Chapter V Conclusion and Suggestion

In this chapter, the conclusions from the research report will be presented.

Bibliography

A list of references used by the author as data sources or references.

Attachment

All attachments used by the authors during the study are included.