PART I

INTRODUCTION

1.1. Background

Light pollution is an environmental issue caused by inappropriate use of artificial lighting at night. A photographic data from National Aeronautics and Space Administration (NASA) in 2011 highlights Indonesia as one of many countries exposed to light pollution, with the highest artificial light concentration in Java, especially in Jakarta.

Light pollution negatively affects the environment and many aspects of people's life such as distressing the body's Circadian Rhythm, depleting electricity reserve, boosting risk of accidents and crimes happening during night hours, and disturbing nature's night ecosystem. For example, one of the main negative effect caused by light pollution is creating setback to astronomical activities especially for aerial object observation. Mitton (1991) stated that light pollution cause problem which continues to grow within the world's astronomical community. Light Pollution has also caused a national scale demerit by forcing the national observatory site to relocate from Bosscha, Lembang to Kupang, NTT due to lack of astronomical visibility within the city limit.

Light pollution has many demerits, but people in Indonesia, especially in Jakarta as one of the most affected city, lacks information and awareness of the issue's impact in their daily life. According to Dark Sky Asssociation, one of the most common assumption about light pollution is that it takes all the lights in the

city to be turned off in order to prevent light pollution from happening. The true solution is to regulate and make efficient artificial light's usage, and not by completely abandoning any artificial lighting at night.

Many campaigns fighting against light pollution have been implemented in Jakarta, two of the most notorious are Dark Sky Campaign by LAPAN and the educational campaign by Planetarium Jakarta. All of these campaigns, while successful in execution still lacks social impact in Jakarta's society. According to *Pusat Sains Antariksa* (*Pussainsa*), the lack of impact is caused by Jakarta citizen's low awareness towards light pollution. There need to be a different approach for reaching out and giving information about what light pollution is to the mass. Also, according to Planetarium Jakarta's Light Pollution Expert, Mr. Widya Sawitar, younger campaign targets of teenage to early-adult-age need to be approached due to their open mindedness and flexibility to change their lifestyle in the future.

One of many approaches to inform the mass about light pollution is by implementing digital game as media. Aside from its ease of access by this project's targeted demographic group, digital game offers an interactive approach that stimulates people's main senses (vision, audio, touch) so players could better absorb the contents communicated by the game. In order to design and deliver the best result of the chosen media solution to the intended users, UI/UX design approach needs to be implemented. The purpose of practicing UI/UX approach in this project is to ensure that the targeted users have the best experience while playing and absorbing information when interacting with the design. Without an optimized

UI/UX design, players would easily abandon the game which leads to uncommunicated game message to the audience.

1.2. Problem Statement

How to deliver a UI/UX design as a support to introduce and give information about light pollution towards the targeted design users?

1.3. Problem Constraints

Due to the wide possibilty of design practice covered within this final project, problem constaints are needed to ensure that the design stays focused and could answer the problem statement. The constraints used for this final project are as the following:

1. Targeted Demography:
    a. Gender: male and female
    b. Age: 16-21 year-old
    c. Minimum Education: Middle-School-Level Education
    d. Economic Group: Middle to Upper-Middle

Piaget in Suparmo (2006) states that human cognition is fully developed at age 12 and above. It entails that people leaving their childhood years has the capability to think abstractly, understand contexts, and learn complex ideas, and hold a comprehensive argument. Age limit is an important factor to make a strategy for relaying information.

Design users aged 16 to 21 is chosen based on Indonesian's K13 School Curriculum system for High-School-Level education. According to Indonesia's

Ministry of Education and Culture on *Konsep dan Implementasi Kurikulum 2013* (2014), the K13 School curriculum put emphasis on scientific and environmental issues and awareness. Based on the targeted age group, there is a high chance that they possess a certain degree of familiarity towards environmental issues due experiencing the K13 school curriculum.

A minimum of middle-school-level education is chosen for demographic constraint as the designed game requires basic comprehension of English spoken language and understanding of urban environmental issues.

Middle to upper-middle age group is chosen with consideration of access towards a personally-owned mobile device as well as entertainment media preference.

2. Targeted Geography:
   a. Primary: Jakarta, Bogor, Depok, Tangerang, Bekasi.
   b. Secondary: Indonesia
3. Targeted Psychography
   a. Never heard or has misconceptions about light pollution.
   b. Showing interest in environmental issues.
   c. Enjoys playing mobile game either casually or as an enthusiast.
   d. Has been exposed to light pollution knowingly or unknowingly.
4. The Final Project Report is focused on the design process of producing a 2D-side scrolling mobile game for mobile device.

5. The design is constrained to UI/UX design for the game's opening sequence, landing page, information menu, main menu, and gameplay

6. The narrative and informational content within the project act to support the UI/UX design and not the other way around.

1.4. Mission Statement

Deliver a UI/UX design as a support to introduce and give information about light pollution towards the targeted design users.

1.5 Final Project Purpose

This final project is executed as a requirement to obtain a bachelor degree title from Multimedia Nusantara University. Another reason for executing this final project is to obtain higher knowledge and understanding within the UI/UX design field, as well as obtaining skills related to project management and game development.

This final projects value lies in its contribution to improve the understanding and awareness of light pollution and its effect to the environment for the targeted audiences which is Jakarta's population. Increasing understanding and awareness is part of an effort to tackle light pollution. Another secondary usage of this final project is to boost people's engagement with environmental issues happening in urban areas.

This final project contribues to Multimedia Nusantara University by providing literature and reference for future UI/UX design projects. Aside from UI/UX design, this final project report could be perused as mobile game design and final project reference.