CHAPTER I

INTRODUCTION

1.1. Background

Indonesia is an archipelago with a total area of approximately 1.9 million km² comprising more than 17,000 islands. Geographically, Indonesia is situated between two continents Asia and Australia and lies between two oceans (the Pacific and the Hindia Oceans). This geographical location makes Indonesia a natural migration route for various species of flora and fauna from other countries. These conditions support the formation of high biodiversity and make Indonesia one of the world's largest megabiodiversity nations after Brazil. A megabiodiversity nation is a country with an extremely high level of biodiversity, both in terms of the number of plant and animal species and their endemism rates.

Biodiversity in flora and fauna plays a vital role in maintaining the balance of ecosystems. Flora serves as a producer of oxygen, an absorber of carbon dioxide and a source of food, while fauna plays a role in maintaining the food chain, aiding in the dispersal of plant seeds, and supporting the sustainability of ecosystems. Indonesia's high level of biodiversity is also influenced by the adaptation and evolution of species to diverse environmental conditions, resulting in numerous endemic species found exclusively within Indonesian territory.

Megabiodiversity nations countries with exceptionally high levels of biodiversity, both in terms of plant and animal species often attract the attention of researchers and tourists. For a long time, researchers have regarded the Nusantara archipelago now known as Indonesia a "living laboratory" even dating back to the pre-modern era. Researchers working in the Nusantara archipelago have systematically studied and documented these plant and animal species, making the country a key focus for the pursuit of natural sciences.

Indonesia's biodiversity potential has attracted the attention of researchers since pre-modern times. In the 19th century, Alfred Russel Wallace explored the Indonesian archipelago from 1854 to 1862 and collected more than 125,000 animal species. His research findings were published in the book "The Malay Archipelago" in 1869, which described species distribution patterns and a biogeographic concept later known as the Wallace Line.

During the Dutch colonial period, research on flora and fauna expanded through the development of various scientific infrastructures, such as herbariums, museums, and documentation centers for various species.

On the other side, Indonesia's rich biodiversity has also driven human utilization of wildlife for thousands of years, whether for food, traditional ceremonies, traditional medicine, or cultural artifacts. As international trade expanded, this utilization evolved into wildlife trade on a much larger scale. During the colonial era, various species of wildlife in Indonesia that held economic value and were considered exotic were traded abroad to serve as private collections or decorations, research subjects, or raw materials for luxury goods. This exploitation marked the beginning of the wildlife trade within the context of colonialism and the commercial exploitation of biological resources.

By the early 20th century, the wildlife trade had evolved into a thriving black market worth billions of dollars. Initially, the wildlife trade was intended to meet people's daily needs. However, as demand increased, it led to the exploitation of wildlife species that were of use to humans. This high level of demand has caused a significant decline in wildlife populations (Iqra Mansyur et al., 2024). The widespread trade in wild animals poses a threat to the survival of biodiversity. Habitat destruction and the exploitation of wild animals for commercial purposes threaten the survival of wild animals (Liana & Witno, 2021) in Amalia & Cahyanto, 2023)). A large proportion of illegally traded wild animal around 95%, comes from wild captures rather than captive breeding; furthermore, as many as 40% of the animals traded die as a result of painful capture, inadequate transport, cramped cages, and diets that do not meet their nutritional needs, resulting in a high mortality rate among animals in the illegal trade (Nuraeni et al., 2021) in (Amalia & Cahyanto, 2023)).

This statement is supported by news reports on poaching and the trade of Sumatra tigers, which continue to be hunted despite their protected status. According to a news article on mongabay.co.id dated January 4, 2020, a resident of Bintang Bener Village, Permata Subdistrict, Bener Meriah, was arrested by police with evidence including a tigers skin, fangs, and a tigers bone on December 31, 2019. Accessed on April 9, 2026.

Figure 1. 1 Photo of Evidence of Illegal Hunting of Sumatra Tigers
(Source: https://mongabay.co.id/2020/01/04/harimau-sumatera-tetap-diburu-meski-statusnya-dilindungi)

According to a news article on Voaindonesia.com, the government is promoting the IKN project as a modern, smart, and green city that will be dubbed a "forest city" with 75% of its area designated as green space. However, this raises a critical question: since 256,000 hectares of the area are currently forested, if 75% of the area is to be green space, that implies infrastructure development will cover 25% of the land. Tens of kilometers from the IKN's Kilometer Zero point lies a Protected Forest on the border of Balikpapan and Samboja Subdistrict, Kutai Kartanegara Regency. Various protected wildlife species inhabit this forest, including proboscis monkeys, long-tailed macaques, orangutans, and bears. This development risks destroying the wildlife's habitat, raising concerns that the animals may become aggressive and enter residential areas (Kurniawan, 2023) and accessed on October 15, 2025.

Figure 1. 2 Photo of the IKN Development Process
(Source: https://www.voaindonesia.com/a/ibu-kota-nusantara-merusak-hutan-atau-memperbaiki-lingkungan-/7106732.html)

It is not only the IKN development project that threatens the habitats of rare animals in Indonesia; according to a news article on fajar.co.id dated September 9, 2025, there has recently been widespread coverage of the regions of Sumatra and Aceh, which have been hit by major natural disasters, including severe flooding and landslides. It is suspected that this is due to the impact of deforestation by oligarchs, including timber, palm oil, and mining oligarchs. Naturally, this project could adversely affect the animals inhabiting these forest habitats, such as Sumatran elephants and tigers, whose populations have declined drastically.

Ironically, the Sumatra elephants themselves victims of deforestation and habitat destruction are helping to move logs that have been swept downstream, blocking roads and preventing access to the homes of people affected by floods and landslides. The herd of elephants appears to be willingly clearing away the debris left behind by floods and landslides in Aceh, Sumatra, and other regions (Rif'an, 2025) accessed on September 10, 2025.

Figure 1. 3 Elephants That Help Residents Move Wood
(Source: https://www.msn.com/id-id/berita/other/penampakan-4-gajah-ikut-bersihkan-kayu-sisa-banjir-bandang-di-pidie-jaya-aceh-bikin-haru)

Even endangered animals that have become iconic symbols of Indonesia are threatened with extinction, such as the Javan hawk-eagle and the Komodo dragon. The Javan hawk-eagle was designated as the national animal by Presidential Decree No. 4 of 1993 and serves as a national emblem of the Republic of Indonesia. Meanwhile, the Komodo dragon is an endemic species in Indonesia with a very high international profile. In fact, the Komodo dragon is often featured in international contexts and serves as a major international attraction in Indonesia's tourism posters, having gained global recognition for the animal's unique.

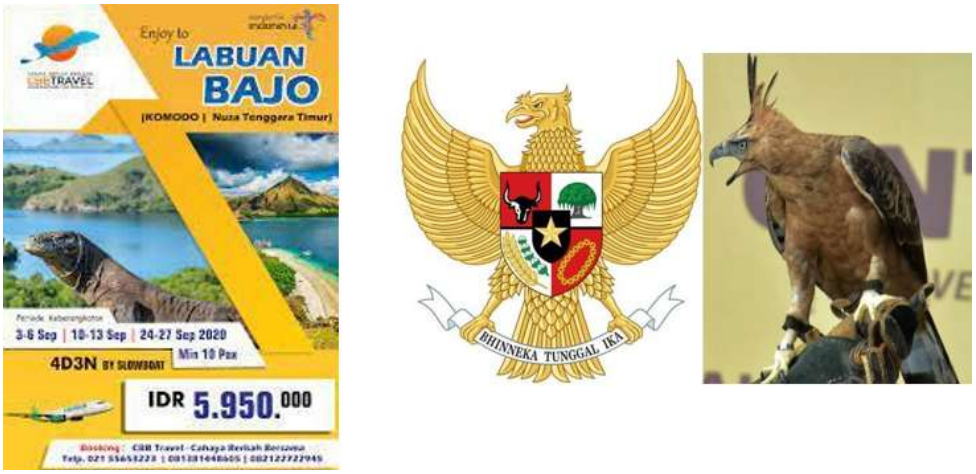

Figure 1. 4 Komodo dragons and Java Eagles that have become iconic
(Source: https://www.facebook.com/story.php dan https://telusurkultur.com/blogs/news/5-fakta-menarik-burung-garuda-sebagai-lambang-pancasila)

Currently, the total number of rare animal species in Indonesia that are threatened with extinction is estimated to exceed 40,000; this has prompted the government to take steps to conserve these species and prevent their extinction. By enacting laws on wildlife protection or forestry and Government Regulations regarding the conservation of plant and animal species, which serve as the basis for preventive measures, enforcement against trade, and the illegal hunting of wild animals or animals at risk of becoming endangered (Rahmat & Widjajanti, 2025). Law of the Republic of Indonesia No. 5 of 1990 on the conservation of biological natural resources and their ecosystems, as well as Government Regulation No. 7 of 1999 on the conservation of plant and animal species, serve as the legal foundation for conservation, habitat protection, the designation of protected species, and the imposition of sanctions for violations.

Regulations established by the government are managed and enforced by relevant agencies, such as the Ministry of Environment and Forestry (KLHK), which is responsible for national policy and establishes the list of protected species. The Directorate General of KSDAE (KLHK) and Conservation Offices (BKSDA or Regional Offices) carry out the management of conservation areas, rehabilitation, and field patrols. The Forest Police Unit (PPNS), the Law Enforcement Office, and the police or the prosecutor's office play a role in law enforcement (investigations, sting operations, seizures, and prosecutions). Additionally, local community organizations such as the IAR Indonesia Foundation and the Belantara Foundation are organizations formed by local communities to protect and conserve rare wildlife species, as well as to conduct rehabilitation and rescue efforts.

The establishment of national parks and protected areas, such as Komodo National Park, is one of the primary efforts to preserve habitats and protect endemic species. Other efforts, such as organizing campaigns, building communities or institutions dedicated to endangered species, and enforcing the law, have also been implemented. Unfortunately, these efforts remain insufficient because the scale of threats such as poaching and illegal trade exceeds the capacity to address them, compounded by resource constraints and limited management capacity in many protected areas (including labor, funding, and technology). National coverage remains limited, and there is a lack of public effort, knowledge, and awareness regarding the need to conserve, preserve, and protect endangered wildlife.

This is due to the still relatively low level of awareness, particularly among teenagers and adults. The younger generation especially teenagers plays a crucial role in shaping mindsets and behaviors that can significantly impact environmental sustainability in the future. It is crucial to understand, protect, and learn about endangered protected species. If these endangered species go extinct, it will not only result in the loss of the species itself but also have consequences for the sustainability of ecosystems and human life (Erniwati, 2024). This poor awareness is partly influenced by the way information is conveyed, which is often unengaging and ill-suited to the characteristics of the younger generation, particularly teenagers aged 15–21.

Traditional educational media that have long been used and encountered such as posters or formal outreach activities like seminars and group discussions often fail to capture the attention of teenagers. The one-way nature of information delivery tends to make them passive and may potentially lead teenagers to disengage from such efforts. As a result, the intended message is not fully absorbed, and this creates a sense of helplessness, hindering the development of a strong sense of care for the conservation of endangered animals in Indonesia.

Figure 1. 5 Edangered Animals in Indonesia Poster, 2015

(Source: https://ppi.unas.ac.id/poster-fatwa-perdagangan-dan-perlindungan-satwa-langka-mui)

Furthermore, based on observations made at the Surabaya Zoo (KBS), it appears that the educational content intended for or presented to visitors is still not fully optimized, as the facility serves both as a tourist attraction and an educational resource for visitors. However, the facility emphasizes itself more as a tourist destination or simply a place to view the animals at the Surabaya Zoo (KBS) rather than the educational content intended to be conveyed. This is because the animal description signs are poorly maintained, unappealing, and contain too much text, which discourages visitors from reading; consequently, visitors focus only on the animals' names and pictures.

Figure 1. 6 Photos of Visitors Seeing Animals

(Source: https://radarsurabaya.jawapos.com/surabaya/77987877/kbs-night-zoo-)

Young people, particularly those aged 15–21, are in a transitional phase from adolescence to early adulthood, characterized by the formation of self-identity, ways of thinking, and an understanding of social and environmental values. As the nation's future leaders, young people play a crucial role in shaping sustainable development and environmental conservation in the years to come. However, rapid technological advancements and the fast-paced flow of information have led to a tendency for young people's attention spans to be easily distracted, with a growing preference for entertaining visual and interactive media. This situation has resulted in low interest and understanding among some young people regarding environmental issues, including the existence and conservation of endangered animals in Indonesia. Their lack of knowledge about the threats facing endangered species can lead to low levels of concern for biodiversity conservation. Therefore, there is a need for alternative media capable of educating and conveying information in an interactive, engaging, and age-appropriate manner that aligns with the characteristics of today's youth.

One alternative medium with potential for use as an educational tool is the card game. Card games are games that use cards as their primary medium and can be played individually or in groups. In addition to having simple and easy-to-understand gameplay mechanics, card games can also combine elements of entertainment, social interaction, and learning. With these characteristics, card games are considered effective as an educational medium for introducing the diversity of rare animals in Indonesia and raising awareness among the younger generation about the importance of conservation.

The popularity of card games among the younger generation is also a key factor driving the development of this medium. Card games are generally popular because they combine elements of strategy, challenge, and luck, which can enhance player engagement. Additionally, card games serve as a means of social interaction since they are played together. In this modern era, card games have also evolved into a popular trend and a collecting activity, giving them strong appeal for the younger generation. By leveraging these characteristics, card games have the potential to become an effective educational medium for increasing knowledge and awareness of endangered animals in Indonesia.

1.2. Problem Identification

a. Based on an interview with Mrs. Lintang, Head of the Public Relations Section at the Surabaya Zoo, conducted on December 6, 2025, it was found that the primary cause

of the decline in Indonesia's wildlife population is a lack of education regarding the role of wildlife in ecosystems, which has led to mass poaching and the illegal trade of animals in Indonesia.

b. Based on an interview with Irvan Ferdianto a professional illustrator, conducted on December 6, 2025, first impressions are a crucial factor. A visual design not just for card games must be able to capture the audience's attention.

c. Based on the results of interviews and focus group discussions (FGDs) with card game communities conducted from October 14 to December 12, 2025, it was found that the illustrations and gameplay mechanics in a card game have a significant impact, particularly among teenagers.

d. Based on an interview with Naura a college student, conducted on December 7, 2025, it was found that teenagers' interest in Indonesia's endangered animals is generally driven by the animals' appearance and physical features. As a result, teenagers tend to prefer and remember the animals they like; therefore, it can be concluded that information and educational materials about other endangered animals still fail to capture teenagers' attention.

e. Based on observations conducted from October 12 to December 12, 2025, at a card shop that also serves as a gathering place and community hub for card game players, no board or card games with an endangered animal theme were found; however, an online search revealed a board game themed around endangered animals called "Endangered"; yet, upon further examination of its gameplay, this game is too complex and is not recommended for teenagers.

1.3. Problem Statement

How can we design an alternative medium specifically a card game for teenagers aged 15–21 that can educate them, capture their attention, and foster their sense of care and interest in learning more about the diversity of rare animals in Indonesia?

1.4. Scope of Problem

a. This study focuses only on the design of an educational card game related to the diversity of rare animals in Indonesia.

b. The main target audience for this card game is teenagers aged 15–21.

c. The design of this card game focused on creating an alternative educational and entertainment medium that fosters a sense of care and interest in Indonesia's rare animals among teenagers aged 15–21.

d. The unique facts on the cards serve as both information and education knowledge that teenagers rarely encounter.

1.5. Design Objectives

a. Designing an alternative medium in the form of a card game that can both educate and entertain teenagers aged 15–21 about the diversity of rare animals in Indonesia.

b. Designing a card game with engaging visuals, illustrations, and gameplay mechanics to increase teenagers' attention and interest in rare animals in Indonesia.

c. Foster awareness and concern among teenagers aged 15–21 regarding the importance of protecting and conserving rare animals and their habitats through an interactive and enjoyable game medium.

d. Convey information about unique facts on the cards including facts, characteristics, threats, and the importance of conserving rare animals in Indonesia through a card game medium that is easily understood by teenagers.

1.6. Benefits Design Results

a. It can be an educational and entertaining medium for teenagers aged 15–21 through a card game featuring Indonesia's rare animals.

b. It increases awareness for everyone, especially teenagers, and helps them learn more about the diversity of rare animals in Indonesia.

1.7. Design Framework

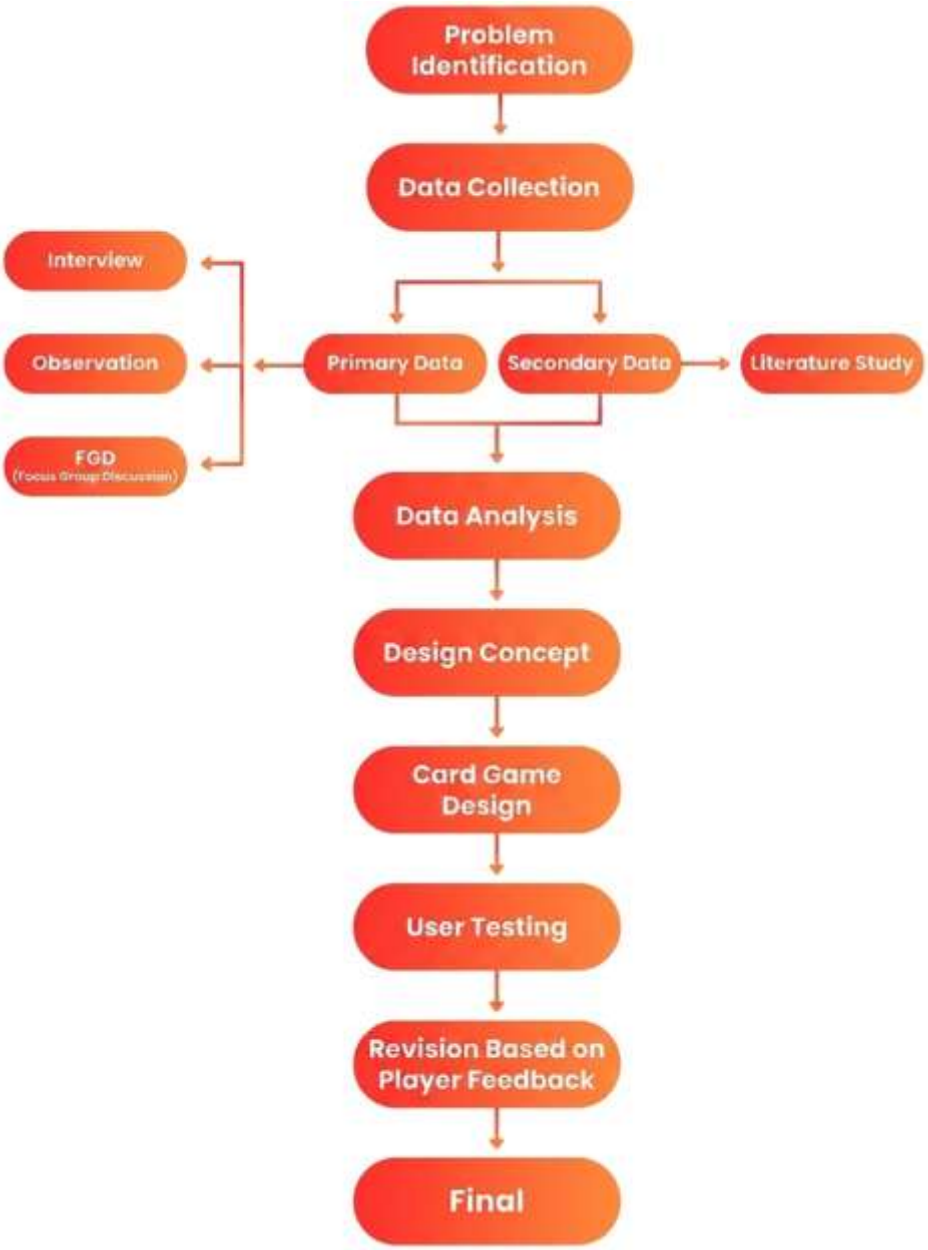

Figure 1. 7 Design Framework

(Source: Personal Documents)