



Faculty of Computer Science and Information Technology

***PUZZLE INDIE GAME ABOUT THE AWARENESS OF
ENVIRONMENTAL POLLUTION***

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Bachelor of Computer Science with Honours
(Computational Science)

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POLLUTION**

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This project is submitted in partial fulfilment of the
requirements for the degree of
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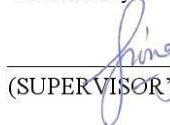
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ABSTRACT

Game is a method that uses for entertainment or as an education tool. A video game is a type of game that the user will need to interact with the application to complete a play. The occurrence rate of the video game is starting to increase from our country. While the issue of awareness of the environment is significantly increasing in our country, yet our people still not giving their concentration to the issues of pollution nowadays. Therefore, the idea to combine the issues of pollution and video game is proposed. Right now, most of the video game does not have the content about the issues of the environment. The proposed project is to prepare a platform to let every user realise their responsibility to protect and preserve the environment. Through the game, the user will know the effect of the pollution and the cause of it from a third-person perspective.

ABSTRAK

Permainan merupakan satu cara yang digunakan dalam hiburan atau sebagai satu alat pendidikan. Permainan video merupakan salah satu permainan yang memerlukan pengguna berinteraksi dengan aplikasi tersebut untuk menghabiskan satu permainan. Kadar kemunculan permainan video dalam negara kita semakin meningkat. Walaupun isu-isu yang berkaitan dengan pencemaran alam sekitar semakin meningkat, tetapi rakyat kita masih tidak memmberi perhatian kepada isu-isu pencemaran pada masa kini. Oleh itu, idea untuk menggabungkan isu-isu pencemaran alam sekitar dengan permainan video dicadangkan. Pada masa kini, permainan video kebanyakannya tidak mempunyai kandungan tentang pencemaran alam sekitar. Projek yang dicadangkan ini adalah untuk menyediakan satu platform supaya setiap pengguna sedar akan tanggungjawab untuk melindungi dan memelihara alam persekitaran kita. Melalui permainan video ini, pengguna boleh memahami kesan dan sebab-sebab pencemaran alam sekitar daripada perspektif orang ketiga.

Chapter 1: Introduction

1.1 Introduction

A video game is a computer game designed mainly for entertainment purposes and a video game console is an electronic machine designed to play the games and a video display such as a computer monitor, or television is the primary feedback device. The main input device is a controller. A controller can be a keyboard, mouse, gamepad, joystick, paddle or any other device designed for gaming that can receive input. (Sardone, N., Devlin-Scherer, R. , and Martinelli, J., 2008) Most of the people think that video game not having many things to do for our life except entertainment, but every video do have their aim and scope. Some game like “Cut the Rope” (ZeptoLab, 2019) and “Where is My Water?” (Disney, 2019) they promote their game by focussing their main point in the thinking skill. A player needs to plan, set and use some strategy before starting to solve a level. Since the player will involve time management, planning skill and flexibility skill, he can have training in these thinking skills after he has done with the game.

Until 2019, there is some game that involves pollution of environment but still in a minority. Some video games industry already acting in response to the problem by using the power of their platforms. For example, Microsoft will announce the expansion of its existing operational commitment to carbon neutrality, established in 2012, into its devices and gaming work. It will set a new target to reduce its supply chain emissions by 30 per cent by 2030 – including end-of-life for devices – and to certify 825,000 Xbox consoles as carbon neutral in a pilot programme. In addition, Microsoft will engage gamers in sustainability efforts in real life through the Minecraft its ‘Build a Better World’ initiative, which has seen players take more than 20 million in-game actions. (Rukikaire, 2019) Another example is Google Stadia, which is set to launch later in the year, will produce a new Sustainable Game Development Guide as

well as funding research into how “green nudges” can be effectively incorporated into gameplay . (Rukikaire, 2019)

In this game, it will be going to awake the player throughout the story about their responsibility of the environment.

1.2 Problem Statement

Nowadays, the world is encountered in many cases of pollution in the environment. Those cases cause problems like flood, haze, forest fire, disease and other problems. This application will awake the awareness of environment of society. Throughout the story, the user will need to solve the puzzle to recover the environment. From the result of the environment in the game, the user will know the importance of the environment and the responsibility to protect the environment.

Flood (Water Pollution): Heavy rain on Tuesday (Sept 3) inundated several roads in Bayan Baru and Bayan Lepas here. Several low-lying areas like Jalan Mahsuri, Jalan Mayang Pasir, Lebuhraya Mayang Pasir and Jalan Kampung Relau were also affected. However, the floods waters receded by 1 pm. The Penang International Airport (PIA) experienced flight delays for around half an hour due to the downpour. (Trisha, 2019)

Haze (Air Pollution): The haze in Sarawak is moving into the danger zone, with the Air Pollutant Index (API) in Sri Aman going beyond the 300 marks. Located close to the Sarawak-Kalimantan border, Sri Aman is the first area in Malaysia to enter the “hazardous” level since the transboundary haze caused by slash-and-burn agricultural practices started choking the country early this month.

The API level in Sri Aman climbed up to a 395 reading as at 8 pm yesterday, data from the Department of Environment showed. A total of four spots across the nation reported “very

unhealthy” levels as at 7 pm yesterday, including Seri Manjung (227), Nilai in Negri Sembilan (206), Kuching (214) and Johan Setia (230). (Ling et al., 2019)

Forest Fire: An unprecedented number of fires raged throughout Brazil in 2019, intensifying in August. That month, the country’s National Institute for Space Research (INPE) reported that there were more than 80,000 fires, the most that it had ever recorded. It was a nearly 80 percent jump compared to the number of fires the country experienced over the same time period in 2018. More than half of those fires took place in the Amazon.

The number of blazes decreased in September after president Jair Bolsonaro bowed to mounting pressure to address the flames and announced a 60-day ban on setting fires to clear land. Some exceptions were made for indigenous peoples who practice subsistence agriculture and those who’ve received clearance by environmental authorities to use controlled burning to prevent larger fires. (Calma, 2019)

1.3 Scope

The scope of this project is to provide a window prototype for awareness of environmental Pollution among age above 3.

1.4 Objective

- To develop a window platform-based puzzle game.
- To evaluate the usability of the proposed game.

1.5 Brief Methodology

Rapid application development (RAD) is an agile project management strategy popular in software development.

The key benefit of a RAD approach is fast project turnaround, making it an attractive choice for developers working in a fast-paced environment like software development. This rapid pace is made possible by RAD's focus on minimizing the planning stage and maximizing prototype development.

By reducing planning time and emphasizing prototype iterations, RAD allows project managers and stakeholders to accurately measure progress and communicate in real-time on evolving issues or changes. This results in greater efficiency, faster development, and effective communication. (Team, 2018)

In general, RAD has four main phases, requirements planning, user design, rapid construction and cutover.

1.5.1 Requirement Planning

The initial phase of this project is to plan out the goal of this project and the issue would need to confirm during the build. The developer will define the requirement of this game and finalizing the requirements with stakeholder. After the communication between the developer and stakeholder, the goal and the expectation from this project can be more understanding by the team.

1.5.2 User Design

In this phase, the prototype will come out according to the requirement discussed in the last phase. Every version of prototype will test by stakeholder and user, then they will discuss with the developer about the bug happened in the prototype and the expectation they need from the game to come out a new version of the prototype until no more potential of something is go through the cracks.

1.5.3 Rapid Construction

In this phase, the developer will take the prototype from the design phase to build it into a working model. The stakeholder may also suggest changes or new ideas solve the current problem. 4 steps will be breaking down in this phase.

- Preparation for rapid construction.
- Program and application development.
- Coding
- Unit, integration, and system testing.

1.5.4 Cutover

In this phase, the final version of the prototype will be done from the final change made by developer and stakeholder. After that, this product will ready is launch.

1.6 Significant of Project

This game will help people to discover the problem from the pollution of the environment, to explore the technique and knowledge to solve the pollution of the environment and awake the responsible of social to protect the environment.

1.7 Project outline

1.7.1 Chapter 2: Literature Review

Chapter 2 will discuss review and comparison about the existing games, which focus about the perspectives, genre, graphics and scope of the games by analyse their content and come out with the solution for the improvement. This chapter also reviews the skill and technology used for the games proposed.

1.7.2 Chapter 3: Methodology

Chapter 3 will discuss the methodology applied for this project. The Rapid Application Development (RAD) methodology is chosen as a model for the development of the game. This chapter will involve the requirements analysis and the logic design of the system.

1.7.3 Chapter 4: Implementation and Testing

Chapter 4 will discuss the actual implementation of the project by building a prototype for the project and the prototype is further tested to improve and enhance its performance.

1.7.4 Chapter 5: Conclusion and Future Work

Chapter 5 will conclude the project and documentation will be ready for future work.

1.8 Summary

This chapter provides an overview and the main idea of the whole project. In this chapter, it shows the problem, solutions and method to complete the solution faced by society nowadays.

The proposal will introduce the details of the project.

Chapter 2: Literature Review

2.1 Introduction

This chapter illustrates about three existing application that is released or published in the market. The review will be majority based on usability, roles in the game, main purpose, advantages and disadvantages of all the games chosen. After the analysis, a comparison table among these games will be formed to show the differences, advantages and disadvantages after compare. Next section will discuss the software and technology used to develop this application.

2.2 Review on Similar Existing Systems

There are three existing applications selected to discuss. These applications are “Songbird Symphony”, “MO: Astray” and “Hazy Days”. Each of the systems contains their part of the feature that will implement in the proposed game will be discussed after this.

2.2.1 Songbird Symphony



Figure 2.1: Songbird Symphony Poster

Songbird Symphony is a musical adventure game that combines platforming and rhythm gameplay mechanics to emulate the magical role music plays in a Disneyesque storytelling experience. (Studio, 2019) In this game, the player will act as an orphaned chick “Birb” and

start his journey to find his true origins. Birb will need to learn and collect new note as engage new musical segments that challenge the player's rhythmic skills. Across the journey, Birb will find out more about the tales and the secrets of the birds in the world by discovering their feather and meet the owner. Figure 2.2 shows one of the character's feather while figure 2.3 shows the owner of the feather.



Figure 2.2: Buridoss' Feather



Figure 2.3: Buridoss

Some of the levels will need the player to guide Birb solve the puzzle to access the story or some hidden rooms. Figure 2.4 shows Birb is pushing a box to the right place for solving the puzzle while figure 2.5 shows a cutscene state that Birb learned a new note.



Figure 2.4: Songbird Symphony gameplay

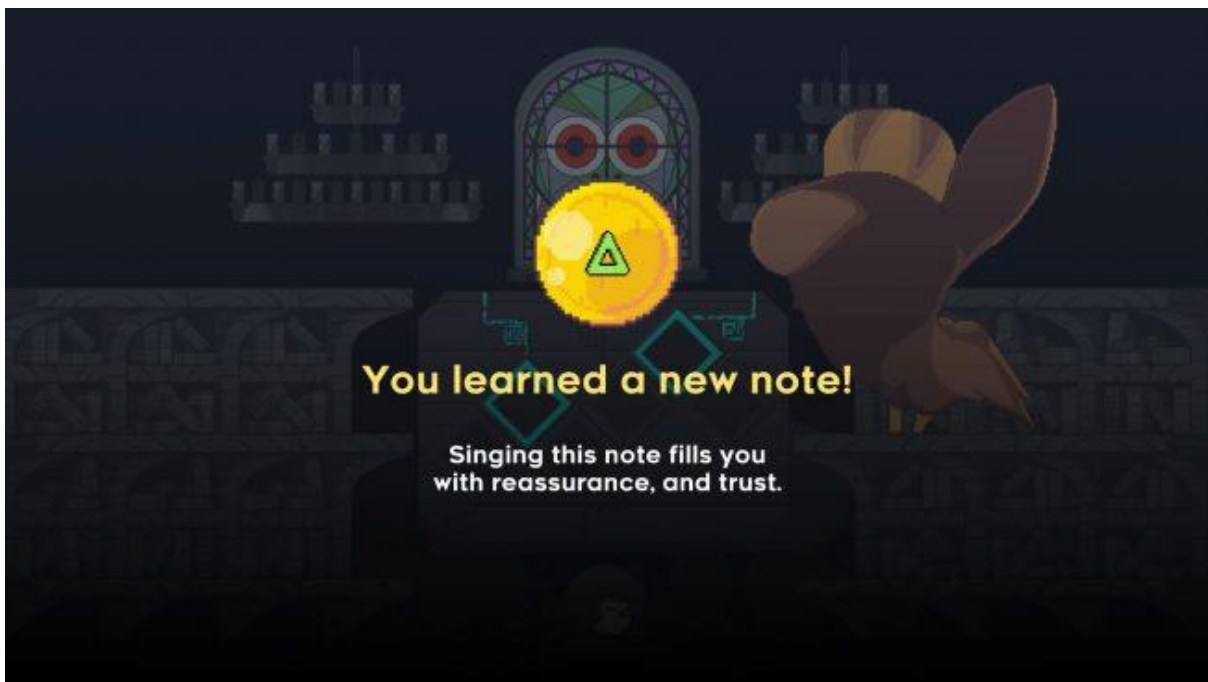


Figure 2.5: Songbird Symphony Cutscene