*D sdGeoRat : Geography Learning Game*

Project Documentation Submitted to the Faculty of the

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SHS Bootcamp

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# Executive Summary

Geographic literacy among young learners worldwide is alarmingly low despite its crucial role in understanding global issues. Traditional methods of teaching geography have proven to be ineffective in engaging students in learning. A revolutionary solution aims to address this gap and make learning enjoyable.

The programmer’s solution is an educational visual novel game designed to make learning geography interactive and enjoyable. The game takes users on a virtual journey, where they interact with local characters from various countries, learning about their culture, geography, and significant landmarks. This makes learning more engaging but also helps students retain information better.

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# Introduction

## Project Context

Having basic geography skills, especially in this era, is critical, as people use geography in their daily lives. The programmers use geographic skills in climate emergencies, in understanding historical events, in resource management and hazard identification, and in understanding human-environment interaction (Gil & Destura, 2021).

According to a survey conducted by Trivedi (2002), less than 25% of young people globally could locate countries such as Israel, Afghanistan, Iran, or Iraq on a map. The study indicates a lack of geographic knowledge among young adults globally.

Studies have shown that traditional learning is less engaging for students than game- based learning. According to a study conducted by Hartt et al. (2020), results show that students favored and were more engaged in the game-based lecture.

A study conducted by Florensia and Suryadibrata (2023) about using a visual novel game for mathematics education showed that the game has increased the students’ learning interest in mathematics as they feel immersed when playing the game.

## Statement of the Problem

The main issue we aim to address with this project is the lack of interactive geography games, specifically visual novel games, as the majority of the geography games available now are puzzle, map, and quiz games.

## Objectives

The main objective of this project is to help improve the geography knowledge of the users, who struggle to learn geography traditionally. The proposed solution is to develop an educational visual novel game. To do this, the programmers need to first create an engaging storyline. The visual novel needs to have a compelling narrative that makes the user more engaged in learning. The next is an interactive UI. The UI of the game needs to be intuitive and easy to navigate, which makes navigating the game a user-friendly experience. The last thing is to incorporate gamification elements, such as quiz games, achievements, and rewards, to motivate users to continue learning and progressing in the game.

## Significance of the Project

* Young people
* Students
* Adults

The geography visual novel game app can help many different people. Students get a fun and interactive way to learn about geography, and teachers can use it to support their classroom lessons. Parents can provide their children with an educational and entertaining tool for learning outside of school. Adults can also enjoy expanding their geographical knowledge.

Schools can add the app to their teaching methods, using it as a modern, tech-based learning tool. The app's success helps grow and validate the educational entertainment industry. Communities benefit by having a resource that promotes education and global awareness, creating more informed and culturally aware citizens.

The geography visual novel game app is designed for users aged 10 and above. This age restriction makes sure that the information is interesting and appropriate for a variety of users, such as individuals who are interested in geography and students in middle school and high school. Our goal in implementing this age restriction is to offer a flexible learning resource that can accommodate a wide range of learning needs and degrees of curiosity.

## 

## Scope and Limitations

The geography visual novel game app is designed to cover important geography topics like countries, cities, physical features, and cultures. It includes interactive maps, multimedia, quizzes, and challenges to make learning fun and effective. The app is mainly for primary and secondary school students but can also be used by teachers and adults interested in geography. It has an easy-to-use interface and some features that work offline. The app uses engaging stories, character development, and rewards to keep users interested and motivated.

However, it may not go into detail on advanced topics and needs regular updates to stay engaging. The app's performance might vary depending on the device and operating system. It also requires significant investment for development and marketing. Quizzes might not fully measure understanding, and ensuring data privacy and security while following regulations is challenging.

# Review of Related Literature / Systems

This chapter will introduce a review of related literature or systems for the programmer’s project. It will include the studies, articles, and systems that the programmers have referenced in the project.

Having basic geography skills, especially in this era, is critical, as people use geography in their daily lives. We use geographic skills in climate emergencies, in understanding historical events, in resource management and hazard identification, and in understanding human-environment interaction (Gil & Destura, 2021). According to a survey conducted by Trivedi (2002), less than 25% of young people globally could locate countries such as Israel, Afghanistan, Iran, or Iraq on a map. The study indicates a lack of geographic knowledge among young adults globally.

Studies have shown that traditional learning is less engaging and enjoyable for students than gamified learning. According to a study conducted by Hartt et al. (2020), results show that students favored and were more engaged in the game-based lecture. A study conducted by Florensia and Suryadibrata (2023) about using a visual novel game for mathematics education showed that the game has increased the students’ learning interest in mathematics as they feel immersed when playing the game.

The programmers look into other geography games such as Seterra, Playgeography, and Sheppard software for reference. These games are all geography games; however, they are mostly puzzle, map, and quiz games but not visual novel games.

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| A screenshot of a computer  Description automatically generated  Figure 1 Seterra geography game |
| A screenshot of a computer  Description automatically generated  Figure 2 playGeography geography game |
| A computer screen shot of a map  Description automatically generated  Figure 3 Sheppard Software geography game |

The programmers also look into visual novel games such as Doki Doki Literature Club!, Limbus Company, and Library of Ruina for reference and inspiration in making the GeoRat game. These games are all visual novel games; however, they are not geography games.

|  |
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| A screenshot of a video game  Description automatically generated  Figure 4 Doki Doki Literature Club! |
| A screenshot of a video game  Description automatically generated  Figure 5 Limbus Company |
| A screenshot of a computer  Description automatically generated  Figure 6 Library of Ruina |

# Technical Background

This section will discuss the overview of the technologies used in the current system. It will also discuss the technologies to be used in developing and implementing the proposed system.

## Current System

Current geography game system uses puzzle, map, and quiz games for the educational game.

## Proposed System

The proposed system utilizes a visual novel engine called Ren’Py to help create the visual novel game .

# Conclusion

# The programmers have been successful in creating a geographical learning game. They were able to create a visual novel using the game engine Ren'Py and were able to create three storylines for three countries: Japan and the Philippines. They accomplished this by creating a document file called “Storyline Ideas,” where they shared their ideas for creating the storyline. The programmers have also been successful in creating an interactive UI that makes navigating the app user-friendly. They did this by thinking about how the user will interact with the game and how they can make it easier for the user. However, the programmers were unable to incorporate gamification elements, such as quiz games, achievements, and rewards, to motivate users to continue learning and progressing in the game.

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# Appendices

## Appendix A: Project Vision

Our vision is to revolutionize geography education by creating an engaging, interactive, and immersive visual novel game that encourages a deep understanding and appreciation of global cultures and geographical knowledge, making learning enjoyable and effective for users worldwide.

## Appendix B: Schedule

A screenshot of a computer

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A grid with a purple and black and gold letter t

Description automatically generated with medium confidence



A screenshot of a game

Description automatically generated

Figure 7 Gantt Chart of Schedule

## Appendix C: Product Roadmap

A diagram of a project

Description automatically generated with medium confidence

Figure 8 Roadmap

## Appendix D: Users’ Manual

The programmers used a visual novel program called "Ren'py" which uses python to be able to create this app. This Launcher is used in order to be able to run the app if it is not yet downloadable as a separate application. The 7zip file contains all the codes and images used. Meanwhile separate files for codes "rpy" is also provided to view the souce codes.

To launch GeoRat, once Ren'py is downloaded, select the create new project. Download and extract the 7zip file. If you have the 7zip file already, there is no need to download the individual "rpy" code files. Once extracting the files, replace all files in the file directory of the new created project in Ren'py. Go back to the launcher and Launch Project.

## Appendix E: Team Meetings

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| A screenshot of a video chat  Description automatically generated Figure 9 2024-06-09 Meeting with mentor |

## 

## Appendix F: Source Code

GitHub Repository (Source Codes):

<https://github.com/CKTarog/GeoRat>

A screenshot of a computer

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Figure 10 Screenshot of GitHub reopsitory

## Appendix G: Design Thinking

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| --- | --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | |  | | A white paper with black text  Description automatically generated  Figure 11 Need Statement | | A diagram of a person's mind map  Description automatically generated  Figure 12 Empathy Map | | A close-up of a text  Description automatically generated  Figure 13 Problem Rundown  A screenshot of a computer screen  Description automatically generated  Figure Ideation | | A group of comic strips  Description automatically generated with medium confidence  Figure 15 Storyboard 1 | | A collage of a cartoon character  Description automatically generated  Figure 16 Storyboard 2 | |  | |

**Contributions**

Kirsten Maya Mendoza: Storyline, Documentation; Significance of the Project, Scope and Limitations, Design Thinking, ppt

Charisse Keira Tarog: Design Thinking, Programming, UI Design: Menu UI, Map, Character Designer, Documentation: Gantt Chart, Source Code, Similar Games

John Daniel Oclares: Design Thinking, Programming, UI Design: Character Color, Suggested to turn proposal into Visual Novel, Introduce software to help with the proposal

Alfred Clemence Tabudlo: Design Thinking, Storyline ideas,Project Documentation: Executive summary, Project Context, Statement of the problem, Objectives, Review of related literatures, Conclusion