**CAPSTONE PROJECT**

**DAGOHOY’S REVOLT: A 3D EDUCATIONAL GAME ABOUT DAGOHOY**

GROUP 2

SECRET CLASS

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M-F 10:30-12:00

**Chapter I**

**Introduction**

**Project Context**

There are a lot of National hero in the Philippines just like Jose Rizal, Lapu-Lapu and many more. But some of them doesn’t get the recognition they deserve. And one of them is Francisco Sendrijas or also known as “Dagohoy”.

People knew the name Dagohoy, but they don’t really recognize who he really is. What’s worst is even his fellow Boholanos doesn’t really know him well. We the researchers think that Dagohoy should be recognized not only on the Province of Bohol, but also in the whole country, Philippines.

There are a lot of ways to educate people about Dagohoy. Just like reading some articles, books, and even search online where people can get information easily. Some people are not fond on reading, but there are other individuals who are visual learners. Those are the individuals who learns best through visual objects.

We the researchers come up with an idea to make project that is educational and also entertaining. We decide to create a 3D Game that aims to educate the user about our hero Francisco Sendrijas “Dagohoy”.

We believe that smartphones and computers can also be used not just for entertainment but also for education. We can find many ways to learn not just by reading books, today we have the internet we have e-books, educational videos, blogs and many other sources. People today often spend their time mostly using their smartphones or computer, that is why we come up with the idea to incorporate project on those devices. Our group decided to make something that a user can both learn and have fun. There are many projects that can provide both education and entertainment, but we think educational game is one of the best, a game that is playable on both mobile devices and computer.

**Statement of the Problem**

People knew the name Dagohoy, but they don’t really recognize who he really is. What’s worst is even his fellow Boholanos doesn’t really know him well.

This research project aims to educate people about Francisco Dagohoy by creating a 3D Educational Game. And here are the following problems we look up:

1. What is the purpose of this 3D Educational Game?
2. What do you want to accomplished in your 3D Educational Game?
3. How will you able to educate the people?
4. What is the difference in traditional way of learning to non-traditional way?
5. Can the game be played without an internet connection?
6. How to install the game? ­­

**Purpose**

The purpose of this project is to educate people about Bohol’s history. Specifically, one of Bohol’s mighty hero Francisco Dagohoy. The project will help enlighten the people about who Francisco Dagohoy is and the revolt he led in Bohol that last for 85 years.

This project is good because we believe this is a timely solution. Incorporating this project into a game makes it more interesting for the user. Today’s games does not only capture children attention but also the teens and adults. This is perfect for our project’s target users which are children and youth.

**Objectives**

The main objective of this project is to create a game that is both educational and also entertaining.

* To create game that will have a campaign/story mode that tells the story of Francisco Dagohoy,s revolt.
* To create a game playable for PC and Mobile device and it can be played online and offline.
* To create a website which contains the download page and trailer of the game.

**Significance of the Study**

This project will benefit the following:

* **Children and Youth.** This project will enlighten them about one of major events of the history in Bohol. As of our generation today moves further into the technological age people, especially the millennials have forgotten those individuals that bravely fought for justice in our country. Making it a game will make it interesting and also while using it they will both learn and have fun.
* **Future Researchers.** This project will help the build their ground on how to start and develop an Educational game. This will serve as a reference on what things they might consider in their development. This will give them ideas on what concept and gameplay to apply on their own project.

**Scope and Limitations**

This game is a 3D Adventure RPG (Role Playing Game). The game has a Campaign/Story Mode that narrates the events on Francisco Dagohoy’s revolt. The game also has an extra quiz game about some of the important details of Francisco Dagohoy. The game can be downloaded and installed on Android and Windows PC; it is also playable on the computer’s browser.

The game only covers the events of revolt lead by Francisco Dagohoy. The story does not contain major personal information of Francisco Dagohoy like his childhood life. The game will not be available on Play Store or in Steam due to some financial requirements. This game is also not available for IOS device because Apple doesn't offer an official way to install software outside of the App Store. There are some ways to install application outside the App Store but the process might be complicated for the users.

**CHAPTER II**

**Review of Related Literature**

This chapter presents the related literature and studies after the thorough search done by the researchers to address the content of the study.

This project provides different understanding and ideas, concept and different related studies of the educational game-based learning which was studied from the past up to the present. The researchers properly looked up every detail and which will serve as the foundation in this research study. And the researchers make sure that this research project will turn into what they envision. Here are the following studies regarding this system.

According to the article of Teemu H. Laine (2018) entitled “Mobile Educational Augmented Reality Games: A Systematic Literature Review and Two Case Studies”, she define mobile AR as a type of AR where a mobile device (smartphone or tablet) is used to display and interact with virtual content, such as three-dimensional (3D) models, annotations, and videos, that are overlaid on top of a real-time camera feed of the real world. AR has been widely used for educational purposes across subject areas both in formal and informal learning settings, with several literature reviews existing on the matter.

Libradilla et al., (2015) in their research “Teaching Effectively with Use of Game-Based Interactive Mathematics,” it determined the interest of the pupils to learn math because of the features of the game such as colors, graphics, sounds and time element that makes it more engaging and fun. It shows that the performance of the pupils in learning mathematics was higher when in game-based. Knowing the subject is difficult itself, it turns to be exciting and full of fun. What researchers found was: (i) It is recommended that game-based math lesson be formally part of the Department of Education curriculum and trainings and seminars be conducted to orient the teachers in this classroom intervention for prompt implementation.

Katrina Serrano (2019) published a research paper entitled “The effect of digital game-based learning on student learning: A literature review” in University of Northern Iowa, examines the effect of digital game-based learning on student learning. The review research indicated that when digital game-based learning is used that includes key game design elements, as well as instructional design, there typically is a positive impact on student “engagement”. Research also indicated that digital game-based learning along with collaboration can have a significant effect on student “motivation”, however, the addition of instructions and feedback were not found to have a significant effect.

McKenzi James (2020) published a Master’s Theses & Capstone Project entitled “The Impact of Game-Based Learning in a Special Education Classroom” in Northwestern College, in which studied about a teacher having at least one student who has a learning disability or struggles with academics. And also, where every school also has teachers with the ability to reach out to struggling students using traditional and non-traditional approach to learning. This is where the game-based learning which is non-traditional was introduced to the students and teachers, instead of the traditional paper and pencil activity. In which game-based helped generate a positive environment for students.

According to the article of Ramon Cozar-Gutierrez &  Jose Manuel Lopez (2016) entitled “Game-based learning and gamification in initial teacher training in the social sciences: an experiment with MinecraftEdu”, their study analyses the application of game-based learning and gamification using MinecraftEdu, which allows for an exploration of the possibilities regarding immersive learning environments. Where they analyse the second-year university students who are pursuing a degree in Primary Education and are enrolled in a subject entitled Social Sciences II: History and Teaching at Castilla-La Mancha University. And it shows that their respective participants consider video games as non-essential tools in an educational context, they value the fact that game-based learning through immersive environments allows for learning that involves a higher level of activity and engagement of the students. According to their interest level, educational innovation and motivation are valued positively and show statistically significant improvements.

**Historical Background**

Educational games are not today. Since the introduction of video games on 1970’s a lot of games are released that are considered as an educational game. The first educational game was *Logo Programming,* this game was released by Turtle Academy with the intent of teaching programming and mathematical concepts. Then there is *Lemonade Stand,* this is business simulation game that teaches basic economics by running a lemonade stand. *Lemonade Stand* is considered one of the oldest and most populareducational games of all time. There is also *Oregon Trail* which is originally developed for students in Minnesota, the gameplay is simply asking players to successfully lead a family of settlers along Oregon Trail. *Oregon Trail* had a great impact on educational games that causes an increase number of educational video games on the following year.

As of today, Minecraft is one of the most popular educational game. Minecraft is considered as an educational game because it enhances creativity, problem-solving, self-direction, collaboration and other skills. On November 1, 2016 Minecraft: Education Edition is released. This is a version of Minecraft that is specifically designed for classroom use.

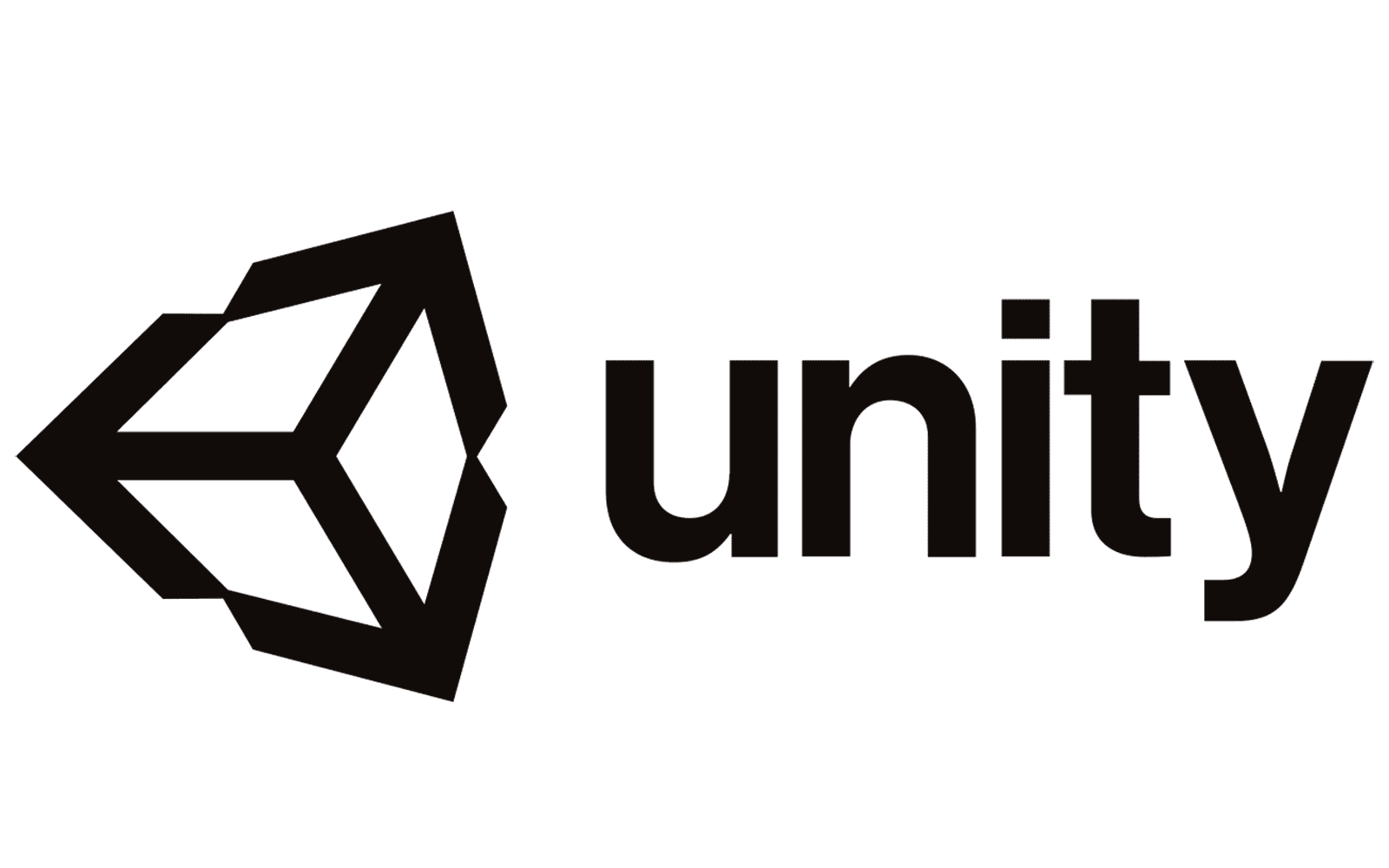
**CHAPTER III**

**Technical Background**

There are a lot of ways to develop a game. Especially today there are a lot of game engines that are free to use like Godot, Unreal, Unity and etc. We choose to use Unity because there are many tools and packages that can help us in our development.

Making a game is not all about programming. Especially on a 3D game there are lot of things you need to consider. Making a 3D game means making 3D models and also animating it. Thankfully today there are lot of 3D software like Cinema 4D, Autodesk Maya and Blender.

**Unity**

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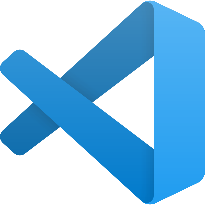
Unity is a cross-platform game engine that is developed by Unity Technologies. This is widely used by companies and indie game developers.

**C#**



The main programming language that will be used in this project is C# because this is the default language that unity supports.

**Visual Studio Code**



Visual Studio Code is a source-code editor made by Microsoft. This will be used as an external code editor for unity to make programming faster because the default code editor in unity is just a plain text editor and does not have intellisense.

**Blender**

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Blender is a free and open source 3D creation suite. It supports modeling, rigging and animation which is perfect for what 3D game needs.

**Adobe Photoshop**



Adobe Photoshop is raster graphics editor developed and published by Adobe Inc. This application will be used to create textures like normal map and height map for the materials in the game.

**Adobe Illustrator**

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Adobe Illustrator is a vector graphics editor developed and marketed by Adobe Inc. This application will be used to crate graphical assets for the game like buttons and other elements that will appear in the UI (User Interface) of the game.