**CAPSTONE PROJECT**

**DAGOHOY’S REVOLT: 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 many national heroes in the Philippines, just like Jose Rizal, Lapu-Lapu, and many more. However, some of them do not get the recognition they deserve. Furthermore, one of them is Francisco Dagohoy.

People knew the name Dagohoy, but they do not recognize who he is. What is worst is that even his fellow Boholanos does not know him well. We, the researchers, believe that Dagohoy should be recognized not only in the Province of Bohol but also in the Philippines.

There are many ways to educate people about Dagohoy. Just like reading some articles, books, and even search online where people can get information quickly. Some people are fond of reading, but other individuals are visual learners. Those are the individuals who learn best through visual objects.

We, the researchers, came up with an idea to do an educational and entertaining project. We decide to create a 3D game that aims to educate the user about our hero Francisco 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 projects on those devices. Our group decided to make something that a user can both learn and have fun with. Many projects can provide education and entertainment, but we think the educational game is one of the best, a playable game on both mobile devices and computers.

**Statement of the Problem**

People knew the name Dagohoy, but they do not recognize who he is. What is worst is that even his fellow Boholanos does not know him well.

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

1. What do we want to accomplish in the 3D Educational Game?
2. How will we be able to educate the people?
3. What is the difference between the traditional way of learning to non-traditional way?
4. Can the game be played without an internet connection?
5. 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 heroes is 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 do capture children's attention and teens and adults—the 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 a 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 devices, it can be played online and offline.
* To create a website that 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 the significant events of the history in Bohol. As our generation today moves further into the technological age, people, especially the millennials, have forgotten those who bravely fought for justice in our country. Making it a game will make it enjoyable, and also, while using it, they will both learn and have fun.
* **Future Researchers.**  This project will help them build their ground on how to start and develop an Educational game. It will serve as a reference on what things they might consider in their development. It will give them ideas on what concept and gameplay to apply to their project.

**Scope and Limitations**

**Scope**

This game is a 3D adventure RPG (Role Playing Game). The game has a Campaign/Story Mode that narrates the events of Francisco Dagohoy’s revolt. The game also has an extra quiz game about some of the essential 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.

**Limitation**

The game only covers the events of revolt lead by Francisco Dagohoy. The story does not contain important personal information about 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 devices because Apple does not offer an official way to install software outside the App Store. There are some ways to install applications outside the App Store, but the process might be complicated.

**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, concepts, and related studies of educational game-based learning from the past up to the present. The researchers correctly looked up every detail and which will serve as the foundation in this research study. Moreover, 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.

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.

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”.

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.

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. 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 new today. Since the introduction of video games in the 1970’s many games are released that are considered educational games, the first educational game was Logo Programming, and Turtle Academy released this game with the intent of teaching programming and mathematical concepts. Then there is Lemonade Stand; this is a business simulation game that teaches basic economics by running a lemonade stand. Lemonade Stand is considered one of the oldest and most popular educational games of all time. Oregon Trail is initially developed for students in Minnesota, and the gameplay is simply asking players to lead a family of settlers along the Oregon Trail successfully. Oregon Trail had a significant impact on educational games that causes an increasing number of educational video games the following year.

         As of today, Minecraft is one of the most popular educational games. Minecraft is considered 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 many ways to develop a game. Especially today, many game engines are free to use like Godot, Unreal, Unity, and many to mention. We choose to use Unity because many tools and packages can help us in our development.

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

* **Unity**

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**

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**

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.