



Game Development Using Unity Game Engine for Developing Critical Thinking Skills

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Abstract: The main goal of this assertion is “Reducing the stress of students and improving critical thinking abilities using a multi-player Virtual Game Environment”. Nowadays students have a lot of different responsibilities, right from attending college lectures, performing extra-curricular activities, going for coaching classes and so on. These all factors increase the stress that students experience. As it has been said in the past that, “Humans are Social Animals”, so it is crucial for people to interact with each other. Playing multi-player games can improve leadership skills, collaborative working abilities and even develop logical thinking amongst the students whilst at the same time they release some pent-up stress in a less amount of time. The past few years due to the recent pandemic many students have found it difficult to socialize and interact with their friends and even family members. Hence, with the help of an easy to play multi-player game the end user of any demographic can easily find friends online while immersing themselves in the game.

Keywords: stress, virtual environment, socialization, critical thinking, logical thinking

I. INTRODUCTION

According to multiple studies performed over the past few years, stress amongst students in colleges has increased by a large amount. The studies also highlighted the different individuals that were affected by the recent pandemic and how these people also experienced increased amount of stress and depression. A lot of people experienced social isolation and this also affected the mental health of many.

Many people use games to release their pent-up stress and also to feel a sense of satisfaction. This playing of games also leads to addiction, due to something known as “progression systems”, which provides the end users with multiple goals that they must achieve to progress within the game.

The users are also given multiple different challenges that they must face. The progress gives people a sense of satisfaction and pleasure. The users feel satisfied when they achieve something and this makes them “feel good”. We can use this sense of satisfaction to release pent-up stress and relax in a very short amount of time.

Having no progression systems included within games, allow users to play without the dangers of addiction. Also having no progression systems, helps reach a wide demographic of different age groups. According to multiple studies performed it was found that older adults (defined as those above the age of 65) are at a higher risk of cognitive decline, depression and a large variety of psychological illnesses. Simple multiplayer games can help these older adults to find new people and also help them to develop some cognitive skills which may help them in their day-to-day activities.

In real life many of us have to learn various skills in colleges and schools, yet how many of us are really able to focus on these activities. Even if someone is able to focus, can they remain consistent? More often than not, people quit because they are not making any progress.

As stated above many people release stress by using video games and therefore the games that we create can affect someone’s emotions. There are multiple different kinds of games that are available for people to play.

Some of these games may take long amounts of time to complete playing (or games with no time limit, where the users decide how long they want to play) or some games like puzzles which may take less time to solve. Many people don’t have a lot of time to relax due to their hectic schedules and may need to release the stress in a shorter amount of time.



II. LITERATURE SURVEY

A multiplayer game may also have some unique challenges like communication delays, network problems and even sometimes some servers may be slower than others. Unity allows developers to write scripts in C#, JavaScript (It is also called as UnityScript) and multiple other languages. Unity has become very popular due to its ability to deploy to multiple platforms, using the same code. Unity uses Mono as its runtime environment and it allows cross platform compatibility. MonoDevelop is an open-source IDE for Linux, Android Operating System, Windows Operating System and Mac OS X.

Unity Cloud is an upcoming tool that will allow cross-platform advertisements and title promotions, and developers may even earn some revenue which will reduce the need of third-party software to complete these tasks. One drawback of the outdated version of Mono requires the developer to keep on working on Garbage Collection after the application reaches some size.

All types of game development are possible using Unity, as it provides multiple different functions like shaders, physics engine, audio and video animation and so on. Unity has won multiple different awards including Gamasutra Top 5 Game Companies in 2009[1]. The Unity editor is comprised of many sub-windows. The sub-windows of Unity include the most commonly used Inspector, Project Browser, Game View and the Scene View. The Inspector window is where the developer may update values to get the game to work correctly. The Game View is where the preview (how the game will look at the end) is included. And in the Scene View the developer can drag and drop different objects from the Project View in the perfect positions.

Photon Unity Networking also called as PUN, is used to allow multiplayer support for games by using different networking techniques. This plugin contains multiple different classes and functions, but the only important class is "PhotonNetwork". This class contains all the different methods and data variables that you may need to allow multiplayer support for your game. Photon Cloud products are based on client-server architecture which allows many clients to simultaneously connect to a server at the same time from multiple different locations.

The main reason people play games is because "it is fun", "it makes them happy", but what part about these games makes people happy? The answer is simple, they feel that they are making some kind of progress by completing multiple different challenges that are added to games to make them fun, like "can you do 'x' task, 'y' number of times within one day?" or "there are thousands of users playing this game, can you defeat each one of them?".

In this study, we expand the applications of video games to help people socialize and communicate with other users to combat loneliness. According to recent observations, many games that already exist are played by only a certain demographic (younger adults) and this may not allow the older adults to have ways to connect with different people and release their stress. There are many different games that have been developed today. However, almost every virtual game created, has a progression system and this may lead to addiction.

This paper will discuss various different ways the players can connect with other users in the same room or even around the world and create strategic plans to win games against each other in a simple multiplayer game. In our game, we plan to include multiple different characteristics from various already existing games, so that we can determine exactly what gives one a sense of satisfaction and that be replicated to help the users relax.

III. OBJECTIVES

- To increase cognitive and collaborative skills by using a virtual game environment.
- To promote socialization.
- To develop a simple game without a progression system to attract people from all age groups.
- To perform testing on each individual module and validate the system (game) as per requirements and test its performance.

IV. PROBLEM STATEMENT

Development of critical thinking and cognitive skills through an entertaining online interaction in a virtual game environment.



A. Existing System

The existing system consists of a few of the generic features, some characters and progression systems that can be used to make users play the games more often.

B. Proposed System

This system (game) has been created to make the users experience excitement and reduce their stress in a short amount of time. The game has a simple user interface which allows people of all age groups to easily navigate within the game. This new system will allow users to connect with people anywhere and can help to reduce anxiety. This new multiplayer game does not have a violent environment.

This proposed system has less risks of problems like addiction and too much screen time.

C. Proposed Detailed Methodology

The methodology is used to create an environment for users to release stress with an entertaining online interaction with the help of a virtual game environment.

Multiplayer games require a great deal of strategic planning and logic to achieve certain goals and complete some challenges within the game. These games speed up response time, improve creativity, focus and also promote collaborative skills in the players. It makes sense that people that play multiplayer games will have enhanced development in skills required for problem solving.

These multiplayer games can be played on various devices like android mobile phones, laptops and desktops.

Users do not need to login or create an account before they start playing the multiplayer game. They need to simply install the game on their personal device and then they can immediately start enjoying it.

This system contains four characters that users can use to compete with each other in this immersive game environment. Photon unity networking features like remote procedure calls have been used to enable multiple users to connect with each other from any part of the world. Reliable communication is done through the dedicated Photon servers so that individual users do not need to connect with each other directly.

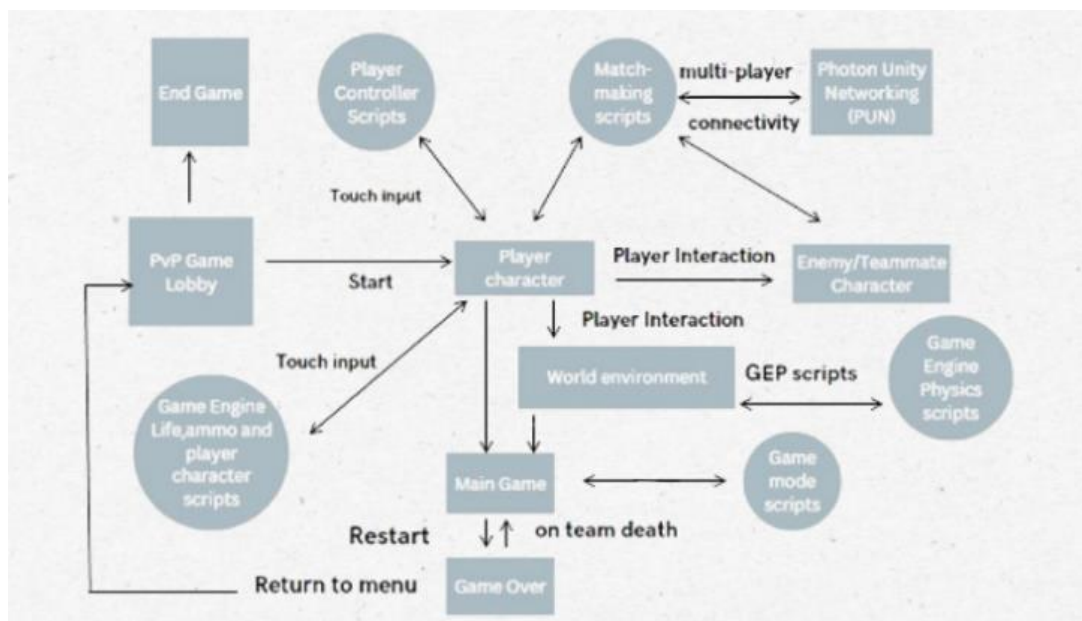


Fig. 1 Backend working of our system.

D. Future Scope

- We look forward to adding more characters within the game.
- We may also add a voice chat in the near future.

**V. CONCLUSION**

In the end, the only thought we have is that this project will be a great help to all people around the world who feel stressed. We firmly believe that our simple game will help users socialize more and develop cognitive skills significantly. We will surely see more people using simple multi-player games to connect with others everywhere. There is not doubt that our game is better than all the already existing games. Having no progression system, our game surely stands out from all the other addictive games that are available today. And with the social cause behind our game, it is the only system that people of all age groups need.

REFERENCES

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