

ABSTRACT

Physics is a mandatory subject taught at Junior High School of Muhammadiyah 5 Surabaya. The physics class is divided into two parts: theoretical classes and practical classes. In Junior High School of Muhammadiyah 5 Surabaya, the physics curriculum includes the topic of motion, which is currently taught only in theoretical classes, lacking practical activities. One of the physics experiments related to motion is the Atwood machine experiment, which involves calculating velocity during linear motion accurately. However, Junior High School of Muhammadiyah 5 Surabaya does not have an Atwood machine, preventing the students from conducting the experiment. Even if they had the equipment, its limited availability due to its high cost poses a challenge. Additionally, there are accuracy issues in recording time data, caused by delays when manually pressing the stopwatch, leading to discrepancies between calculated results using formulas and experimental trial outcomes. To address these accuracy issues, a research study was conducted to develop a simulation game. This game aims to simulate the Atwood machine experiment, providing a solution for accurate time data collection. The simulation game displays time, which runs when the hanging mass starts to descend and stops when it passes through the hole in the supporting mass. This game can be accessed by browser because web-based game. Unity 3D and Blender were used to create the game, utilising the C# programming language. The development process employed the prototype method. The simulation game will be tested using the GUESS-18 method. It is hoped that this simulation game will overcome the limitations of the physical Atwood machine, providing an effective educational tool for physics students.

Keywords: 3D game, simulation, physics, Atwood machine, Web.