

UNIVERSITI TEKNOLOGI MARA

**ENGAGING STUDENTS IN
LEARNING LUNAR AND SOLAR
ECLIPSES WITH THE USE OF
DRILL AND PRACTICE COMPUTER
GAME**

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ABSTRACT

Eclipse is a difficult topic for standard six students as they cannot visualize the phenomenon because they cannot see the motions of the moon and earth. Using computer game does help standard six students to improve their understanding in learning lunar eclipse. However, without a variety of multimedia elements used, they can only rely on boring textbook which resulting students from performing their exercises, test and examination without engagement and interest. This project presents an interactive desktop based application, EzEclipse that is designed to engage students in learning lunar and solar eclipse. Technique that is being used in developing EzEclipse is computer game using Unreal Engine. EzEclipse consist 3 levels of survival based game concept which in every level, students need to collect all of the notes with various difficulties. This project tested by 15 standard six students of SRII Darul Mujahidin using user testing to show that EzEclipse is effective in engaging students to learn lunar eclipse and solar eclipse. To sum up, EzEclipse is proven in engaging students in learning lunar eclipse.

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CHAPTER 1

INTRODUCTION

This chapter provides the project background and common knowledge about computer game. It also gives details of the significance of learning lunar and solar eclipses, the problems that led to this research and objectives of this project.

1.1 Background of Study

Based on the survey conducted, it is found that 66% of students find it difficult to learn eclipses. Learning astronomy is important as astronomical observation can motivate students to develop creativity with the use of scientific methods and inference skills to solve problems (Tarng et al. , 2016). This topic also will be asked during the examination. Thus it is necessary for the students to get the idea about this topic.

An eclipse is an astronomical event that occurs when one object in the sky moves into the shadow of another either when the Moon's shadow crosses Earth's surface (solar eclipse) or when the Moon moves into the shadow of Earth (lunar eclipse) (Spiritual Science Research Foundation, 2017).

When the Moon orbits Earth, it moves between the Sun and Earth which cause the Moon blocks the light of the Sun from reaching Earth that called solar eclipse. During a solar eclipse, the moon casts a shadow onto Earth (NASA, 2017).

A lunar eclipse exists when the Earth blocks the Sun's rays from straightaway reaching the Moon ("What are Eclipses?", 2016). Because of Rayleigh scattering, lunar eclipse often called a blood moon based on its reddish color ("UCSB Science Line," 2016).