IMPLEMENTATION OF 2D ANIMATION FOR TRIGONOMETRY LEARNING

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JUDUL: IMPLEMENTATION OF 2D ANIMATION FOR TRIGONOMETRY LEARNING

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IMPLEMENTATION OF 2D ANIMATION FOR TRIGONOMETRY LEARNING

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Interactive Media) with Honours.

FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

2021

DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized

without citations.

STUDENT : MUHAIMIN BIN MOHD IZZAT AYRAF TEH Date : 25 June 2021

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I hereby declare that I have read this project report and found

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Bachelor of Computer Science (Interactive Media) with Honours.

SUPERVISOR : TS DR SARNI SUHAILA BINTI RAHIM Date : 2 July 2021

DEDICATION

This project is dedicated to my dear father Mohd Izzat Asyraf Teh Bin Abdullah, who has been a wonderful supporter of mine until my project was completed, and to my dear mother Saleha Binti Hj Sahiron, who has been encouraging me for months with her undivided attention to complete my project with true self-confidence. Because of the poor internet connection in my neighborhood, a lack of enthusiasm, and a plethora of assignments from other classes, completing the project during this MCO period was the most difficult time of my degree life. Aside from that, I'd like to thank my buddies for their moral support in helping me accomplish my paper.

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My supervisor, Dr. Sarni Suhaila, has been there since the first day of settling on a project title and proposal. Being the best and kindest of all people, as well as setting a good example for younger people.

I'd also like to convey my gratitude and appreciation to my parents for encouraging me to accomplish my final year project. My parents are appreciative for their love, prayers, concern, and sacrifices in order to educate and prepare me for the future.

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ABSTRACT

This project has been created for Projek Sarjana Muda (PSM). It is a 2D Animation of Trigonometry Learning for Form 4 and Form 5 students that provides information and encourages society to learn and understand trigonometry. The project's goal is to educate the students. This project focuses on trigonometry education. Students and subject matter specialists are the intended users of this initiative. When educating students, the teacher might use it as a reference source. This final year project is in the field of 2D animation.

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ABSTRAK

Projek ini telah dibuat untuk Projek Sarjana Muda (PSM). Ia adalah Pembelajaran Trigonometri Animasi 2D untuk pelajar Tingkatan 4 dan Tingkatan 5 yang memberi maklumat dan mendorong masyarakat untuk belajar dan memahami trigonometri. Matlamat projek ini adalah untuk mendidik para pelajar. Projek ini memberi tumpuan kepada pendidikan trigonometri. Pelajar dan pakar subjek adalah pengguna inisiatif ini. Semasa mendidik pelajar, guru mungkin menggunakannya sebagai sumber rujukan. Projek tahun akhir ini adalah dalam bidang animasi 2D.

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LIST OF ABBREVIATIONS

FYP	**-**	**Final Year Project**

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CHAPTER 1: INTRODUCTION

1.1 Introduction

Development of trigonometry is all about how the element and technique in animation are applied to create an interactive animation. This project is about to help the students who are weak in mathematics subject. Since mathematics is one of important subject for the students' future, we need to help them pass the examination. Teenagers nowadays exposed to technologies where they can learn by their own. They can learn by reading or watching some videos for better understanding. The animation that will be delivered in this project will help them focus more and help them for their studies and examination.

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1.2 Problem Statements

Students are having trouble learning about trigonometry because it needs a lot of remembering and knowledge, and it is part of the form 4 syllabus. Students must have a high level of understanding in order to learn this subject, and they are motivated to understand it using visual, auditory, kinesthetic methods and other methods that suitable according to the students.

While trigonometry is a popular subject in secondary school and is used in everyday life, it is not currently placed appropriately (Dogân, 2001). Students, according to Kamber and Takaci (2018), "do not understand specifically how trigonometry is used in realistic circumstances." Triginometry is closely linked to algebra, geometry, and functions (Price & Van Jaarsveld, 2017; Solikin, 2016). Connecting and solving contextual problems related to trigonometric ratios in right triangles (Dündar, 2015; Sarkam, Sujadi, & Subanti, 2019) and geometric concepts (Brijlall & Niranjan, 2015) is one of the competencies that students must master in trigonometric material, but trigonometry is one of the most difficult subjects to understand in high school mathematics and is disliked by most students (Eclipse, Mardiyana, & Pramudya, 2017; Kamber & Takaci, 2018)

Right triangle trigonometry is well-known for being a difficult topic. The unit is difficult for both students and teachers. Learning trig was one of the most difficult things for me and my classmates, based on personal experience. All seemed to hang in there until the end of the unit and exhaled a sigh of relief when it was over. Most students dread the words "high school trigonometry."

1.3 Objectives

This project embarks on the following objectives:

i. To investigate the suitable 2D animation element and requirement for trigonometry learning.
ii. To develop 2D animation based on 2D animation element and requirement.
iii. To evaluate the effectiveness of the 2D animation for trigonometry learning.

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1.4 Scope

i) Target User:

The target users for this project are those students in form 4 secondary school who are taking in subject mathematics, teachers who are teaching in subject mathematics.

ii) Software:

Adobe Animate, Adobe Illustrator, Adobe Premier Pro, Adobe Character Animator, Blender.

iii) Contents:

1. Unit circle
2. Value of sine and the graph of sine
3. Value of cosine and the graph of cosine
4. Value of tangent and the graph of tangent

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1.5 Project Significance

This project learning can help ease the user in understanding the topics about trigonometry especially for students in form 4. Students should look at the topics that they are having trouble understanding and try to understand them using the animation that has been developed. By doing some exercises for the subjects, students should try to verify their understanding of the project.

By creating the animation, this project will convince the users to do something perfectly. The users can solve the exercises without taking too much time when reach this topic in the exercises. The expected outcome of this project is a 2D animation for Mathematics subject. With the guidance of animation, teachers will more easily explain about trigonometry to their students, and students would have no trouble visualizing and answering the trigonometry topic in class, exercises and examination.

1.6 Conclusion

The project is 2D animation that will help the students in more understanding in Mathematics subject. The topic is about introduction of trigonometry 2 in form 4 mathematics subject which consist of the value of the sine, cosine and tangent of an angle with their graphs. The topic had been inserted into chapter 9 of the mathematics subject and will be delivered by teachers to the students by books. This development is all about how the element and technique in animation are applied to create an interactive animation for introduction of trigonometry for form 4 secondary school students. This project target the development can deliver the acknowledgement of the topic in creative and interactive way and to create an interesting method to learn mathematics as well.

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CHAPTER 2: LITERATURE REVIEW AND PROJECT METHODOLOGY

2.1 Introduction

This chapter explains the literature review and project approach that will be used to complete the creation of this 2D animation. In the literature review, previous studies and research from publishing resources such as case studies, technical papers, and an online library play an important role. The aim of a review of literature is to search out, compile, analyze, and draw conclusions from all of the information that has been read and studied. A Multimedia Production Process is being used for this animation project's methodology. This technique is divided into three phases: preproduction, production, and postproduction. It is a fundamental paradigm that applies to all types of animation. This technique is well-known, and experts often employ it for multimedia purposes.

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2.2 Domain

As in all areas of society, new technologies have an effect on the learning-teaching process. The primary reason for implementing educational technology in the classroom is the increase in the quantity of learning, the difficulty of the content, and the number of students. The effect of web-based instruction with educational animation content at sensory organs subject on students' academic achievement and attitudes (Orhan Ercan, 2014). Due to the obvious reasons mentioned above, 2D animation seems to be of greater assistance, especially to students who struggle with mathematics at school.

This system was created to encourage teachers by using technological devices. The subject of mathematics would benefit the most from this scheme. Teachers and students would be able to use this device in their classrooms, making it more social and enjoyable for students. For example, at the end of the class, the teachers should have a Q&A session about the topics to measure the system's effectiveness.

2.3 Existing System

Nowadays, schools use textbooks as guidelines for teachers to coordinate teaching according to the standards set. Textbooks are mandatory textbooks in schools that contain learning resources to help students meet national educational objectives. As a result, textbooks are a technique of conducting objective assessments to guarantee that the material, teaching techniques, discussions, and images are of high quality. According to Minister of National Education Regulation No. 11 of 2005, textbooks shall be utilized as a reference in the learning process by both teachers and students.

Textbooks have word equivalents with textbooks, according to Echols & Sadily, 2006: 584. A textbook, according to Crowther (1995: 1234), is a book that provides teaching in a subject that is utilized primarily in schools (a book that gives instruction in a lesson, especially in school). A textbook, according to Tarigan and Tarigan (1986: 13), is a standard book written by specialists in their field for instructional goals and aims, and it is supplied with teaching facilities that are compatible and easy to grasp by users in school and college. high enough to sustain a teaching program.

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