

Universiti Teknologi MARA

**Collaborative Augmented Reality for
Chemistry Reaction**

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ABSTRACT

Chemistry is a subject that is difficult to visualize by students, especially when looking at changes in the response of elements in the periodic table to other elements such as water which is H₂O. The difficulty of understanding and imagining such reactions will make the students bored easily and reduce concentration in classroom. Therefore, interesting approach should be adapted, especially by school teachers in their teaching delivery. In this research a preliminary study have been conducted by planning the step to take in the research; making an analysis on the information collected; designing the system structure and flow; develop the system using Augmented Reality approach by using Adobe Photoshop, Blender and Unity, and lastly testing the system effectiveness and getting users feedback. This project focuses on simulating H₂O responses to elements in the periodic table that covers in chapter four for the fourth-grade secondary students. A group of ten students have been picked randomly as participants in the usability testing. From the testing, results shows that the application was function well and most of the respondents were satisfied with this application. In conclusion, the approach of Augmented Reality application could help students to understand and see the changes of H₂O reaction towards the elements in the periodic table with more cleared and at the same time this technology can be used as a new learning technique approach in a classroom.

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CHAPTER 1

INTRODUCTION

This chapter had explained the rationale studying for this project. Background of study, the problem statement, aim, objectives, some scopes that will be focused, significances and conclusion of the project are being discussed in this chapter.

1.1 Background of Study

Nowadays, current technology in education should be applied at the school level so that it will be more tangible interaction in learning especially on understanding and interacting with the spatial relations between molecules in chemistry subject. In addition, it can increase the interest of students to learn in the classroom while making learning more interesting and useful and can increase the number of interested students to understand science better. Once it is in line with the requirements of the Ministry of Education in the ratio of education science and non-science students.

According to Yee and Fah (2014), the Ministry of Education has set a target quota of science to non-science students with a ratio of 60%:40% by year 2010. In Malaysia, science is a very important area for maintaining economic development and improve the quality of life regarded through the National Science Policy.

In addition, there are numerous studies that have been carried out in Malaysia on the topic of chemical bonds in the classroom through textbooks that commonly used in schools. The study said that had several problems of learning and misunderstanding in the subject. According to Bakar and Ayob (2010), a total of 86 science students several secondary schools in Kota Bharu, Kelantan