

# Teaching Science at the Submicroscopic Level Using Animated Computer Graphics

**Kok Lai Yim**

Malaysian Institute of Chemistry, Kuala Lumpur, Malaysia

Email: lykok007@gmail.com

## ABSTRACT

**Purpose** - This study reports on the effectiveness of using animated computer graphics to teach submicroscopic level science to secondary school (Form One) students.

**Method** - A total of fifty-three secondary school (Form One) students of average spatial ability were selected to participate in this study. Three topics involving concepts at the submicroscopic level were identified in the Form One Science syllabus. Based on these topics, static graphics were prepared. The same static graphics were then animated using Adobe Flash. The animation was prepared in two versions, slow-motion mode and fast-motion mode. The respondents were given six lessons, two lessons for each topic. The first lesson was taught using static graphics and in the following lesson, the same content was taught again but with animated graphics instead. A pretest and a posttest were carried out at the beginning and at the end of each lesson respectively. The pre-test and post-test, consisting twenty true or false questions served as the instruments for assessing students' understanding. Analysis of the test scores was carried out by calculating the average difference in test scores between the pretests and posttests for the three topics taught.

**Findings** – The analysis showed that when students were taught using static graphics, test scores increased by an average of 10% from pretest to posttest. When students were taught using animated graphics, test scores increased by an average of 30%. Hence, teaching Science using animated graphics was effective in enhancing students' understanding of the content taught.

**Significance** – Animated computer graphics can be utilized as an effective tool in the teaching of submicroscopic level Science. For Form One students, slow-motioed animations help to enhance students' understanding of the content taught.

**Keywords:** Concepts, Submicroscopic, Static graphics, Animated graphics, Understanding