

# CAMED: An Innovative Communication Tool in Teaching Engineering Drawing

LILIA HALIM, RUHIZAN M. YASIN , & AZAMAN ISHAR

Faculty of Education,  
Universiti Kebangsaan Malaysia  
43600 UKM Bangi Selangor  
MALAYSIA

Email: [profdrililia@gmail.com](mailto:profdrililia@gmail.com), [ruhizan@ukm.my](mailto:ruhizan@ukm.my), [azamanisj172000@yahoo.com](mailto:azamanisj172000@yahoo.com)

Website: [www.ukm.my/fpendidikan](http://www.ukm.my/fpendidikan)

*Abstract:-* Technical drawing is an important basic communication tool in engineering drawing. Besides student ability, teaching strategy also plays a prominent role in enhancing student's learning. This paper aims to discuss students and teachers perception on an innovative teaching method? of engineering drawing subject at secondary school level. The strategy employs Computer Animated Module for Engineering Drawing (CAMED) which was developed based on constructivism and cognitive load learning theories. Furthermore the effectiveness of the module on student's achievement, conceptual understanding and problem solving skills is also discussed. A quasi experimental method was employed on 110 students in the treatment group and 109 students for control group respectively. There were five teachers involved in giving feedback on the module. The result revealed that both students and teachers have very positive view on this innovative way of teaching and learning. In addition, the results also show better achievement, understanding of the concepts and knowledge on problem solving among treatment group students as compared to the control group. It indicates that the application of animation is an effective way to help teacher's teaching and enhancing student's learning. Therefore it is suggested that more of such module should be developed for other topics.

*Key-Words:* Computer Animation, Engineering Drawing, Computer Aided Instruction, Educational Technology, Multimedia Communication

## 1 Introduction

Technical or Engineering Drawing (ED) is a communication media which is graphic based and is widely used in the engineering field. It communicates by using simple and exact symbols, as well as conventions with its own procedures and standards. In the Malaysian school system, Engineering Drawing is included in the Secondary School Integrated Curriculum since 1994 [1]. The subject is introduced as an early exposure to the

technical subject and as a preparation for students who are interested to further their studies in engineering. In a normal practice students' achievement are gauged through the Malaysian Standardized Examination (SPM). The SPM results of ED subject since 2003 to 2008 showed an increase (Table 1) in its overall percentages for the number of students passed but percentages of students who obtained excellent and moderate grades are still low (below 50%).

Table 1 SPM Results of Engineering Drawing Subject

Year	Excellent Grade	Moderate Grade	Low Grade	Passed
2003	15.3	44.5	40.2	78.50%
2004	17.7	50.3	32	86.80%
2005	18.6	49.7	31.6	86.40%
2006	20.3	49.2	30.5	87.00%
2007	18.7	52.7	28.7	88.90%
2008	20.3	49.2	27.2	90.30%
Average	18.5	49.3	31.7	86.30%



















