

**Universiti Teknologi MARA**

**A Prototype of Biology Experiment (Body Fluid  
Control and Management) Using Constructivism  
Theory with Multimedia Environment**

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## **DECLARATION**

I certify that this thesis and the research to which it refers are the product of my own work and that any ideas or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

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## **ABSTRACT**

Multimedia has the potential of providing biological science education novel learning environments and pedagogy application to foster student interest, involve students in the research process, advance critical and problem solving skills, and also develop conceptual understanding of biological topics. Biological experiment using constructivism theory with multimedia environment is an interactive, multimedia, problem-based module, on body fluid control and management system that focus on human heart. The process of constructing the module was follows the topic in the biology textbook that provided by Malaysia Secondary School, Kurikulum Bersatu Sekolah Menengah (KBSM). This module is developed for science student's secondary school and also suitable for anyone those want to know about body fluid control and management system. In designing this module, the examples and questions will be constructed based on the learning theory that is constructivism approach. The module will be following the constructivism theory which the students will be able to construct the solutions and finally come out with general ideas of what they have learned. Beside of that, the example of biology questions will be provided and suited the each subtopic which they will learn.

**Keywords:** Multimedia environment, constructivism approach, biology experiment, body fluid control and management

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