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**Constructivist Approach to Multimedia Design For
Interactive Content in Discrete Mathematic
(Permutation and Combination)**

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“IN THE NAME OF ALLAH, MOST GRACIOUS, MOST MERCIFUL.....”

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ABSTRACT

Most of students who learn Additional Mathematics in higher secondary school and the high institute of education students who study Discrete Mathematics found that the topic of probability is very boring and difficult to learn. In official examination such as Sijil Pelajaran Malaysia (SPM) in Additional Mathematic subject, the questions related of probability will be skipped by most students. Moreover, the questions about probability are optional. It is because from their opinion, this topic is hard to learn especially in conventional way. It influenced some teachers to do not teach this topic. Another problem traced is the students feel hard to recognize the type of probability problems which will be using permutation method and which kind of questions will be using combination method. The process of designing of the prototype of courseware is more focus to Permutation and Combination, one of the topics in Discrete Mathematics and also in Additional Mathematics. This courseware is developed for not only the students who take that course, but also suitable for anyone who did not know before about probability. In designing this courseware, the examples and questions will be constructed based on the learning theory that is constructivism approach. The courseware will be following the constructivism theory which the students will be able to construct the solutions and finally will come up with general ideas of what they have learned. Besides of that, the examples of the problem will be provided and suited the each subtopic which they will learn.

Keywords: Multimedia courseware development, constructivism approach, permutation and combination, motivation

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CHAPTER 1

INTRODUCTION

1.1 Project Background

One of the main challenges in Vision 2020 that should be faced by Malaysia is to create the scientific, progressive and innovative civilizations. The knowledge empowerment in science, mathematics and technology is the need and it becomes more critical for the advancement of the existence of scientific civilization (Abdul Rafie, 2001). Today, in mathematics education, the basic 3M skills stand for *Membaca, Menulis, Mengira* (Reading, Writing, Counting) is not enough for students. In the era of Information and Communication Technology (ICT) the skill of knowledge, practical, thinking and scientific should belong to students, especially in secondary schools and institutions of high education.

One of the objectives in mathematics education is to expand the students' thinking skill so they can think systematically, analytically, critically and logically, enabling them to solve the problem and use their ability to manipulate mathematical knowledge in their real life. The quality of education obtained will determine the quality of the birth of fresh graduates. It is recommended to produce an effective teaching and learning method, especially at the school level to help students expand their thinking and scientific skills. Teachers should change their mathematics teaching tradition so that it will not just concentrate on the mathematics content. The teaching process should focus on the construction of knowledge and high-level thinking ability development.