THE EFFECTIVENESS OF USING NETWORK MODELING AND SIMULATION TOOLS IN EVALUATING STUDENTS' PERFORMANCE

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ABSTRACT

The challenge in our education today is to identify the learning process and methodologies that can help students grasp the importance of knowledge and understand the way to apply that knowledge in the real world environment. Therefore, computer-simulation has been considered as a potential approach and methodology to achieve that objective. Based on Kirkpatrisk's model, the data is gathered through three types of questionnaires which are designed for three different levels of evaluations (students' reactions, behavioural changes and self-evaluation level) and two pre-test post-test to determines the level of student's knowledge and skills. The results of this study showed that most of the students increased their knowledge and skills performance after the use of computer-simulation in learning network design. Students of different gender, who are also with various academic backgrounds, as well working experiences, have unexpectedly produced high results on their questionnaires reports of students' reactions, behaviour changes and self-evaluations, where most of the results are in the positive level. The response given indicates that they have agreed towards the use of computer-simulation in learning network design because of the effectiveness of its usage. In conclusion, this learning process and methodology have a strong potential to increase the achievement of students' knowledge and skills, as needed in the real job market.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Since about forty years ago, educators and computer scientists have been using computers for instructional purposes. In that time span, incredible innovations have been made in computer technology and its availability.

The infusion of computer-based learning into teaching and learning has altered considerably the instructional strategy in our educational institutions and changed the way teachers teach and students learn. The traditional teacher-centric method of teaching used for decades in our educational system has been modified and enhanced.

Hundred of research studies have been conducted to prove that using computers to teach is better than using books, films or other more traditional methods (Alessi and Trollip, 2001). However, according to Kulik and Kulik (1986), overall reviews of this studies claim a small effect in favour of computer-based learning.

To take advantage of the computer's particular capabilities, our first rule for correctly developing instruction to be delivered via computer is to do so in situations where the computer is likely to be beneficial with the correct methodologies. These situations include those in which the cost of instruction by other methods is high; safety is a concern; the materials is hard to teach by other methods; extensive individual learner practice is needed; learner motivation is typically lacking; logistic difficulties exist in traditional instruction or the intended learners have special needs