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Computer anxiety and perception of task complexity in learning programming-related skills

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Abstract

The purpose of the study was to investigate how computer anxiety is associated with computer task complexity in teaching and learning computer programming and related skills. The study also examined the effects of computer confidence and computer liking on user perception of task complexity. The study referred to the literature concerning whether enhancing computer experience may be the remedy of computer anxiety. Based on the data regarding different computer task levels, the study identified and tested the regression models using path analysis.

The result of the study indicates that computer confidence had significant effects on user perception of task complexity while the effects of computer liking were minimal. At various task levels, increasing computer experience may help reduce computer anxiety. The individuals at a lower task level had less adequate estimation of task complexity than those at higher task levels, and thus were more likely to be subject to occurrence of computer anxiety. The study recommends that in teaching and learning computer programming and related skills, enhancing the knowledge and understanding of task complexity is necessary. It can help computer learners and users, especially at lower skill levels, in dealing with computer anxiety.

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Keywords: Computer anxiety; Task complexity; Computer experience; Path analysis

1. Introduction

Computers have played an increasingly dominant role in our society. Use of computers has become the order of everyday experience in almost all social or

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personal functions. There are two phenomena that are particularly important. One is the magnitude of changes that digital technology has led us to. The mass transitions to electronic media have taken place through “rippling and reweaving the entire social and cultural web” (Birkerts, 1994, p. 256). The other phenomenon is of the rapid innovation in the technology itself. There was so called “Moore’s Law” that has projected the acceleration of computer hardware capacity in recent years. All this means that it is the dynamic setting for constant changes to which computer users have to become accustomed.

In today’s ubiquity of using computers, various forms of anxiety towards using computers are common. While many users appreciate computers to be efficient and useful tools, some others become anxious when they learn to operate a computer. There have been a number of studies that focused on novice learners who had little or no prior computer experience (Rosen & Weil, 1995). Those computer users were actually facing the first type of phenomena of change, as they have to adapt to new working habits in the environment with increasing presence of computers. Some other studies indicated that in general individuals with no prior computer experience had less anxiety than others who had experience (Hemby, 1997). Those computer users seemed to be more influenced by the second type of phenomena. Because of constant innovation and rapid development of computer technology, a user’s computer knowledge and skills become transient and impermanent. Those users, though they were not novices, would nonetheless face challenges in computer-related tasks.

Computers have become effective means of education for decades. With Internet and Intranet of computers, there has been significant development of integrating computer technology in education and learning processes. While some may believe that computer and electronic media are merely vehicles and what influences learning are not the media but the contents carried by them, studies have shown that learning outcomes were attributable to the use of computer and electronic media. Computers can be used effectively or otherwise. It is not unreasonable to believe that improper computer applications or user attitudes toward computers may lead to undesirable consequences. Computer anxiety is one such negative influence in teaching and learning where computers are used. It can be an obstacle not only for the students who use computers as the learning tools or media, but also the educators who intend to incorporate computer technology in teaching and learning.

2. Definitions

The following vocabularies are used in this study:

Programming-related skills refer to the ability of operating a computer to do a task or tasks. To handle a computer task with certain level of complexity often requires computer programming skills. *Computer experience* pertains to the totality of a person’s knowledge, feeling, and other intellectual or emotional experience from encounters with a computer. *Computer confidence* refers to a person’s positive attitude as the result of knowledge experience in use of computers. The person believes that he or she has sufficient computer familiarity, knowledge, and skills to handle a

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