Effects of Cognitive Styles on a Virtual Learning Companion System as an Adjunct to Classroom Instructions

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ABSTRACT

This study designed a MSN Chatbot System (MCS), as a virtual learning companion to examine how specific application design variables within educational software affect the learning process of subjects as defined by the cognitive continuum of field-dependent (FD), field-independent (FI) and field-mixed (FM) learners. 207 college students participated in a certification project that used MCS as an adjunct to classroom instruction. The study considered to what extent the three guidance methods offered by MCS would affect the learning performance of three cognitive style learners. Each of the three guidance methods available within the MCS was designed to conform to the specific needs of FD, FI or FM learners. Experimental results showed that students who received a matching "guidance method"-"cognitive style" presented a significant improvement in their learning performance.

Keywords
Learning Companion, Chatbot System, Cognitive Styles, Guidance methods

1. Introduction

The convenience and effectiveness of employing Peer-to-Peer (P2P) social media system, such as MSN, in learning activities has grabbed the attention of educators around the globe (Hsu, 2007). P2P social media system and Internet technology enable learners to learn with a variety of digital resources from anywhere in the world at anytime. It is certainly impossible for any instructor to provide 24 hour assistance to the learners in P2P environment. Not only is this not feasible, it is also undesirable. The paradigm shift in education advanced by changing technology has meant that more and more learning is self-guided. This positive social adjustment to a technological change has been manifested in popular P2P social media system. In this form the learner increases their learning efficacy by engaging with a peer virtual learning companion, or a peer, over the Internet in addition to their interaction with their instructor (Chan & Baskin, 1990). The role of a Virtual Learning Companion (VLC) that can be accessed at any time and from almost any location is, and will become an increasingly important component of many educational projects, whether they be based on traditional classroom instruction or completely removed from a formal educational setting.

However, when a different instruction approach or tool, such as VLC, is introduced to learners, learners are often requested to adapt themselves to the new methods without a consideration of their cognitive and affective preferences (Åkerlind & Trevitt, 1999). Hung, Bailey and Jonassen (2003) mentioned that learners may experience frustrations during the transition from an accustomed learning approach to a different one. This frustration is almost inevitable for learners who are uncertain of their roles, their duties and the evaluation methods in their new learning processes at the early stage of transition (Jost, Havard & Smith, 1997), but learners’ discomfort