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Chapter XIII

The Influences of the Degree of Interactivity on User-Outcomes in a Multimedia Environment: An Empirical Investigation

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ABSTRACT

The study reported here investigates the influence of "interactivity" on the learning outcomes of users in a multimedia systems environment. Drawing from past literature base and based on key tenets of three learning theories, behaviorist, cognitivist *and* constructivist, *the study first proposes a measurement scheme for "interactivity" and then hypothesizes that "interactivity" would influence the learning outcomes positively in terms of users' learning*

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achievement and attitude. Three prototypes of a multimedia instructional/ training system to represent high, low, and non-interactive modes of use were developed and implemented, and the hypothesized influences were investigated using a controlled laboratory research design. Multiple analysis of variance (MANOVA) results indicate that while interactivity does not necessarily enable enhanced gain in user learning, it positively influences participants' attitude. The study finds no support for hypothesized moderating effects of learning styles (measured using Kolb's Learning Style Inventory scale) on the relationship between interactivity and user outcomes. The results of this study have important implications for both education and corporations' training efforts and investments. The reasons for practical lack of influence of learning style are highlighted in some detail. Implications and future research directions are discussed.

INTRODUCTION

Corporations, as well as other organizations, such as educational institutions, have been exhibiting significant interest in recent years in multimedia training and instructional systems. The primary motivating factors appear to be reduced costs, flexibility in training and more consistent delivery among others. This has been fuelled further by a call for continuous professional development that demands a constant and consistent updating of one's professional knowledge throughout his or her working life, especially in an environment that displays a climate of rapid technological, social, economic and political change (Sadler-Smith, Allinson & Hayes, 2000). Such knowledge/ education/training demands call for innovative means of instructional delivery including learner autonomy and self-directed life-long learning. Interactive multimedia instruction (IMI) systems is a relatively new instructional technology that falls into this realm and has become possible by recent advances in both hardware (i.e., multimedia computer technology), software (e.g., authoring software) and network (e.g., delivery via the Internet/Web) technologies. IMI is related to computer-assisted instruction that has been widely used for over 20 years and to video-based instruction that has been introduced more recently.

While printed materials, TV and computers employ text, pictures and diagrams to support and to facilitate learning, only TV and computers provide a medium to use sound and depict motion. Computers can be used to further aid learning due to their capability to process, transform and proceduralize information. Available research on multiple versus single media does not support the claim that the former has significant advantages in enhancing effectiveness in learning (Clark, 1992). However, the capability of a multimedia system, in conjunction with