Chapter 1.5
Interactive E–Learning

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ABSTRACT

This chapter introduces the concept of improving student memory retention using a distance learning tool by establishing the student's communication preference and learning style before the student uses the module contents. It argues that incorporating a distance learning tool with an intelligent/interactive tutoring system using various components (psychometric tests, communication preference , learning styles, mapping learning/teaching styles, neurolinguistic programming language patterns, subliminal text messaging, motivational factors, novice/expert factor, student model, and the way we learn) combined in WISDeM to create a human-computer interactive interface distance learning tool does indeed enhance memory retention. The authors show that WISDeM's initial evaluation indicates that a student's retained knowledge has been improved from a mean average of 63.57% to 71.09%—moving the student from a B to an A.

INTRODUCTION

This chapter discusses interaction between the computer interface and the user in e-learning and indicates that the correct use of component parts, as a result changing the way the interface interacts with each student, is likely to enhance his or her memory. Catania (1992) reports that sensory input is mainly derived from iconic (sight) 60%, auditory (hearing) 30%, haptic (touch) 10%—as little derives from olfactory (smell) and gustatory (taste). Driscoll and Garcia (2000), Fleming (2001), Fleming and Mills (1998), Fuller, Norby, Pearce, and Strand (2000), and Murphy, Newman, Jolosky, and Swank (2002) show that everyone has his or her own sensual preference for

exchanging ideas, and acquiring and passing on knowledge. Sadowski and Stanney (1999) report that there is a tendency to prefer one sensory input (visual, auditory, or kinaesthetic—tactile/haptic). Fleming's 2001 research shows that most students prefer multi-modal communication. Liu, Pastoor, Seifert, and Hurtienne (2000) assert that multi-modal interfaces are more natural and engaging, encouraging a wider use of human senses and perceptual systems and that, latterly, video-games are introducing the Haptic sense, with the mouse and joysticks, and balance through headsets.

HYPOTHESIS

As this chapter's authors, we consider that communication preference (CP) linked to learning styles (LS) interaction is not used in e-learning (Janvier & Ghaoui, 2001, 2002a, 2002b). Our research hypothesis is:

Matching neurolinguistic (NLP) language patterns in a distance learning tool (DLT)-interactive/intelligent tutoring system (ITS) will enhance human-computer interface/interaction (HCI) communication and, thus, enhance the storing of and recall of instances to and from the learner's memory.

WISDeM (Web intelligent/interactive student distance-education model) develops this.

COMPONENTS

Distance Learning Tool

The learner should find a DLT intuitive to use with either an extranet, intranet, or Internet browser with the ideal DLT encompassing self-directed learning (English & Yazdani, 1999), asynchronous and synchronous communication (Phillos, Merisotis, & O'Brien, 1999; Turgeon, 1999; Wang,

Jorg, Rubart, & Tietze, 2000), and Intelligent Interaction[1] to each learner's own profile capable of dynamically changing as the learner develops, offering: relevant links to libraries, system resources and WWW websites, hints, structured answers, tracking every learner's progress and 'learning' from the learner's usage and interactivity (see A'Herran, 2000, for an excellent presentation of the various components usually offered).

A DLT should also exhibit easy-intuitive-flexible-authoring facilities; while this is not required for the student, it is vital for the tutor to be able to make changes fast and easily. The questions that need to be posed for any DLT are:

1. Is authoring easy?
2. Is there an administrative Web database front-end?
3. Can the author create/add/amend/delete content?
4. Can questions and answers be easily created?
5. Is it easy to authorize and control student access?
6. Is online authoring training/support available?

The JCU (2000) report looked for ease of maintenance, flexibility, integration of legacy materials, consistency, a uniform framework, quality of design, and streamlining administrative procedures. Allison, Lawson, McKechan, and Ruddle (2000) suggested that quality of service needs to be addressed for all stakeholders, including students and tutors/authors. Konstandinidis, Ng, and Ghaoui (2000) consider that the number of authoring steps required should be kept low with a simple authoring interface. Technologies (2000) reported that current development authoring DLT programs/modules are experiencing a major shift in thinking: the vision is to create small independent "learning objects" in repositories for modules to be assembled as required.

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