

# Chapter 6

## Technology in the Development and Teaching of a Literacy Program for XXI Century Education

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### **EXECUTIVE SUMMARY**

*A key capacity in twenty-first century markets is being able to convert information to knowledge. This information is frequently a written form in e-text contexts. Individuals able to read, comprehend, and execute the information more effectively can use more efficiently the resources available in the marketplace. The study examined the influence of teaching individuals to read and comprehend hypertext. Its findings contribute to advancement of knowledge in this area and indicate ways in which individuals can improve their capacity to convert e-text to knowledge.*

### **ORGANISATIONAL BACKGROUND**

This study was conducted as a part of the research program of the Melbourne Graduate School of Education (MGSE) in the University of Melbourne. The University of Melbourne is a leading international university, with links to the

Universitas 21 and Association of Pacific-Rim Universities networks of research-led universities. It is consistently ranked among the leading universities in the world. It is rated in the top 20 worldwide by international peer assessment and employer rating locates it in the top 10 (At a Glance, 2008). It has achieved this evaluation through its tradition of excellence in teaching, research and research training and knowledge transfer.

DOI: 10.4018/978-1-60960-599-5.ch006

The MGSE has the organisational culture, economic climate, business and management structure, financial status that one would expect of an international graduate school in a Twenty first century school of education. Its work is founded on explicit regular strategic planning, with a focus on excellence in the three aspects, teaching, research and knowledge transfer as its key institutional goal.

This study was implemented in this context and brings together the focus on these three main activities. It investigates factors that influence the comprehension of text presented in hypertext formats and conventional written. Its findings contribute to advancement of knowledge in this area and provide the basis for future research. Given their ready mapping into instruction, they provide a basis for improved performance through the use of hypertext throughout the community.

## **SETTING THE STAGE**

The advent of new technologies has brought changes to the market environment. In the Australian system of education, a strong focus is placed on the development, marketing and teaching new literacy programs which enhance the quality of education. Although the overall results in literacy are good, quite a number of students cannot reach the standards. International data shows that in Australia the overall students' performance in literacy is falling behind other countries. Between 2003 and 2006 "...Australia declined in both its absolute and relative performance in reading literacy, with the proportion of students at the high end of achievement also declining." (Importance of Literacy and Numeracy, 2009).

The ability to comprehend written text is important for effective learning and performance. It includes three dimensions: the reader who comprehends, the text that is to be comprehended and the activity in which comprehension is embedded (Block, Gambrell and Pressley, 2002).

It is influenced by several factors that are both internal and external to the reader. Relevant internal variables include one's purpose for reading and their existing knowledge of the context, text structures and motivation (Block, Gambrell and Pressley, 2002; Greasser, 2007; Kintsch, 1995; Tapicro, 2007). External factors include the texts available for reading, text readability and the reading programs used to foster reading ability.

Reader activity during comprehension can be described in terms of the actions readers employ to link concepts both within the text they read and with what they know. They learn more comprehension strategies over time, that they use with texts of increasing complexity. They develop a wide repertoire of reading strategies that they use selectively, based on judgments they make of the reading demands of a particular situation. Both "meaning making strategies" (cognitive) and the management of these strategies (metacognitive) can be used in the process of instructing learners to improve the learning process (McNamara, Ozuru, Best, & O'Reilly, 2007; Vaidya, 1999; Williams & Atkins, 2009).

The advent of new technologies has introduced new contexts in which individuals need to read and comprehend. One of these has been the use of hypertext, the format used to organise written information in the computer context. Hypertext is defined in two ways: in terms of its functional components and construction (Jonassen, 1991; Sweeters, 1994) and in terms of how its links are used for comprehension, (Tolhurst, 1995), that is, the semantic use of its links. ICT has gradually included multimedia contents, such as video and audio clips, animations, and pictures in hypertext. Therefore, the term hypermedia has been used to describe this phenomenon (Landow, 2006). Researchers use hypertext and hypermedia interchangeably since they share the same technological foundation.

The present study is based on a conceptualization derived from the semantic definitions. Hypertext refers to an information data source in which

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