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Animating the mind: an analysis of animation as a representational mode for learning

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**Animating the Mind:
An Analysis of Animation as A Representational
Mode for Learning**

A thesis submitted in fulfillment of the requirements for the award of the degree

DOCTOR OF PHILOSOPHY

From

UNIVERSITY OF WOLLONGONG

by

Lindsay Hewson

NSW Teacher's Cert. (Syd), Grad. Dip. Design Studies (UTS), Master of Design (UTS)

FACULTY OF EDUCATION

2002

CERTIFICATION

I, Lindsay Hewson, declare that this thesis, submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the Faculty of Education, University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. The document has not been submitted for qualifications at any other academic institution.

Lindsay Hewson

20^h August 2002

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Abstract

The relative value of animation as an educational medium depends on a number of factors within the medium itself, the manner in which it is integrated with an overall educational design, and with the levels of expertise possessed by the learner in the subject domain and with the medium.

This study began to compare animation with informationally equivalent text and graphic modes of presentation in Chemistry, but in doing so, uncovered the roles of expertise and metacognition in its effective use.

An initial pilot comparative study with undergraduate Chemistry students revealed that higher-ability students had preferred text-only instruction and lower-ability students had been drawn to the animated version. The text-based instructional group performed significantly better in a standard post-test than did the graphic or animation groups. Subsequent redistribution of the sample in a main study overcame this bias and no significant difference in student performance could be attributed to the mode of presentation used.

Follow-up interviews with both high- and low-ability students, as well as the expert/teachers of the group revealed the cognitive functioning of each group in response to the animated and text-based instruction and suggested ways to improve the use of animation in learning. A range of visual literacy skills and a level of metacognition combined with explicit instruction and practice with the medium are essential for learning from animated instruction.