Learning through construction of interactive multimedia

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Learning Through Construction of Interactive Multimedia

A Thesis submitted in fulfilment of the requirements for the award of the degree:

Doctor of Philosophy

from

University of Wollongong

by

Mrs Christine Anne Brown
BvetSci (Hons), MVetSci, Dip Ed

Faculty of Education

September, 1996

Accompanied by the CD, "THE GARDEN®."
Declaration

Except where stated in the text, and in the list of acknowledgments, this thesis represents the original work of the author, and the material has not been submitted for the degree to any other university.

Mrs Christine Anne Brown
Summary

This study examines the potential for the merger between computer mediated educational technology and the classroom, within the context of a constructivist philosophy. Parallel representations of the findings have been produced—a traditional text thesis, and a multimedia representation, *The Garden*, which accesses a CD also titled *THE GARDEN*, containing the full data set. Through a personal account of the teacher as researcher and designer in two class settings, with subjects at primary school and tertiary level, as students and student teachers, focused on the construction process or product development, the researcher demonstrates the benefits of learning through construction of interactive multimedia. This constructionist activity engages students for sustained periods of time, permits them to express their creativity and individuality, promotes higher order thinking and cognitive flexibility, and demands increased student reflection and communication of strategies.

A framework is presented to relate the activities of teaching and learning to interactive multimedia when the student occupies the role of software user, or software producer. For meaningful learning, students do not have to produce a 'product' aimed at a specific target audience. There are many benefits to be derived from allowing them to construct interactive multimedia using simple cognitive tools in a playful and grounded manner. This permits students to explore expression using multiple forms of representation and multiple representations. It also allows two different thinking styles—the bricoleur and the planner, to process learning materials in entirely different ways, even though the ultimate products may bear a striking resemblance.

Nine key study findings are presented, relating to constructivism/constructionism from the perspectives of teacher, researcher and designer, and the framework of interactive multimedia and teaching/learning. Implications are discussed for teachers, designers and researchers. Learners are challenged to develop a more self-regulated, lifelong approach to learning. The process focus on the construction of personal information systems permits the expert practice of sustained contact with an evolving body of knowledge. The product focus refines multimedia publishing skills. Standardised tests which maintain fixed curricula are seen as a major limit to the growth of social acceptance of the constructivist philosophy as a foundation for flexible education.
Acknowledgments

I begin my acknowledgments with special thanks to my husband, Peter, and my sons Rhoderick and Alexander. You are three loving and supportive individuals with keen intellects. Your contribution to the pool of ideas has been through your gift of years of active listening and meaningful feedback. I doubt this study would have happened without your encouragement and faith.

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Thank you to all those in project teams for the chance to experience the design and production process in a range of circumstances, for a range of target groups— The teams on Investigating Lake Iluka, the Journalism project. The Virtual Teaching Hospital, Negotiating Naturally, the VET Project and Exploring The Nardoo. There are far too many of you to mention each one personally, without the risk of leaving someone special out. You all threw challenges which helped develop problem-solving strategies and creative thinking. You permitted the experience of a range of roles in varied teams, and tolerated my infuriating habit of talking too much when multiple perspectives emerged.
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Thank you to my fellow teacher John Hedberg, my technical support Matthew Fifield, and all the creative pre-service primary school teachers who shared the new experience of multimedia production and construction in the EDUM courses. Your willingness to stretch your own boundaries, to collaborate and most of all to enjoy learning was the inspiration for hours of background work.

Study is not an isolated experience. Thank you to my dear family, friends and neighbours, for your tolerance and understanding when I was busy these last four years—Mum and Dad—for the hours you have listened on the phone and the subsequent phone bills; Peter's Mum — I know Dad would have been proud of this accomplishment; Marlene Knight— for your creative excitement, positive energy and hours of discussion on concept development; Anita and Gerry Bakkers— for your neighbourly concern, friendship and script review; Sylvia and Mark Clissold— for your ever present focus on the deeper meaning of experience and true friendship; Margaret and George Mills— for your family concern, moral support and interest; finally to Emma Frearson and family— for the love and joy you have brought into our household via Rhoderick.

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