

AN INVESTIGATION INTO THE USE OF
A COOPERATIVE LEARNING STRATEGY
TO IMPROVE THE DECODING OF WORD PROBLEMS
AND THE EFFECT ON STUDENTS'
ACHIEVEMENT IN AND ATTITUDES TOWARDS
MATHEMATICS

by

Annette May Scarlett

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B.Arch (Hons), University of Technology, Sydney.

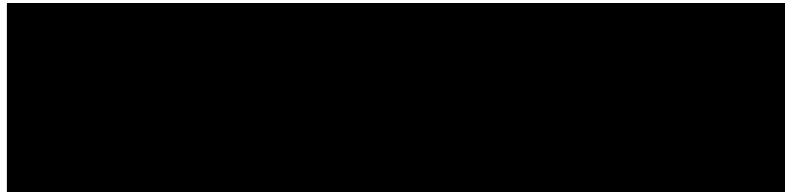
A thesis submitted in partial fulfillment of the requirements of the degree of
Master of Education (Hons) of the University of New England.

November, 2006.

Certificate

I certify that the substance of this thesis has not already been submitted for any degree and is not being currently submitted for any other degree.

I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in this thesis.

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Dedication

To my Mother and Father

ACKNOWLEDGMENTS

It is a pleasure to thank the many people who made this thesis possible.

It is difficult to overstate my gratitude to my mentor, Doctor Rosemary Callingham, for her many insightful, inspirational and great efforts to explain concepts clearly during the development of the ideas of this thesis, and the helpful comments on the text. I would like to thank my second reader Doctor Heather Mays. Thanks also to Associate Professor Karoline Afamasaga-fuata'i who assisted me during a semester when Dr. Rosemary Callingham was absent on study leave.

I thank my mother who has always had faith in me and has inspired me to pursue all my interests. To my Dad, who has realised my potential as a woman over the last few years.

Thanks to Doctor Ted Redden for his initial belief in my ability to fulfill the requirements of this thesis.

I am grateful for the support of my wonderful children, David, Aaron and my darling Rachel who have supported me throughout this momentous feat.

ABSTRACT

This research investigates the ways a program of targeted intervention using cooperative learning strategies to aid the decoding of word problems can influence students' achievement in tests of mathematical word problems and attitudes towards Mathematics in the cognitive, affective and social domains.

A review of the relevant mathematics education literature provided a background to the research. Factors affecting students' outcomes fall into three domains: cognitive, affective and social. Cooperative learning has been suggested as one way of improving students' attitudes towards mathematics, and their subsequent achievement.

An intact class of ten Year 7 students was selected to investigate the issues of interest in light of the literature. The class consisted of mathematically challenged students identified as needing extra support. These students attended a co-educational comprehensive secondary school, located in the Blue Mountains, west of Sydney, in New South Wales. The data were collected through written, verbal and observational strategies, to provide multiple data collection methods for valid and reliable data in support of the study.

Results indicated that achievement may not necessarily be fully assessed by tests but by how students perceive their ability and by the assessors', in this case the teacher/researcher's observation. The cooperative learning strategy had a positive affect on students' attitudes in the affective domain but made little difference to their performance in word problem tests. In this group of students, it was found that the facilitator was a necessary component of the group in the social domain, to keep the students' focus on the tasks and limit any inappropriate antagonistic behavior. These findings were supported by

three case studies of students who responded differently to the cooperative learning approach.

A number of issues teachers may need to address when designing a cooperative learning program for mathematically challenged students arise from the study. Areas of interest for future research related to cooperative learning as a strategy for solving word problems to influence students' achievement in and attitudes toward mathematics are suggested.

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