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# **UMI**

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PREVIEW

**EFFECTS OF HAND-DRAWN AND  
COMPUTER-GENERATED CONCEPT MAPPING ON  
EXPOSITORY WRITING AND WRITING ATTITUDES OF MIDDLE  
LEVEL STUDENTS WITH LEARNING AND READING DISABILITIES**

by

Janet M. Sturm

Presented to the Faculty of  
The Graduate College of the University of Nebraska  
in Partial Fulfillment of Requirements  
for the Degree of Doctor of Philosophy

Major: Interdepartmental Area of Psychological and Cultural Studies

Under the Supervision of Professor David R. Beukelman  
and Professor Joan L. Rankin

Lincoln, Nebraska

October, 1996

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DISSERTATION TITLE

Effects of Hand-Drawn and Computer-Generated Concept Mapping on Expository

Writing and Writing Attitudes of Middle Level Students with

Learning and Reading Disabilities

BY

Janet M. Sturm

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GRADUATE COLLEGE  
UNIVERSITY OF NEBRASKA

**EFFECTS OF HAND-DRAWN AND  
COMPUTER-GENERATED CONCEPT MAPPING ON  
EXPOSITORY WRITING AND WRITING ATTITUDES OF MIDDLE  
LEVEL STUDENTS WITH LEARNING AND READING DISABILITIES**

Janet M. Sturm, Ph.D.

University of Nebraska, 1996

Advisors: David R. Beukelman and Joan L. Rankin

This study examined the effects of concept mapping as a prewriting strategy. The primary purpose of this study was to examine the effects of two forms of concept mapping, hand-drawn versus computer-generated, on the expository writing of middle level students with learning and reading disabilities. A secondary purpose was to investigate the effect of concept mapping on learning (LD) and reading disabled (RD) students' attitudes toward written language.

Twenty-four eighth grade students with learning disabilities ( $n = 12$ ) and reading disabilities ( $n = 12$ ) participated in the study. Students wrote under three conditions which included: (a) descriptive essays with no-mapping, (b) descriptive essays with hand-map support, and (c) descriptive essays with computer-map support. The expository compositions were compared on four dependent measures which included: (a) number of words (fluency),

(b) number of T-units, (c) syntactic complexity (MLT-unit), and (d) holistic writing scores. Writing attitude was examined from two perspectives: a) pre- and post-intervention, and b) between writing conditions.

For students with LD, both the hand- and computer-mapping conditions demonstrated significant increases above the baseline writing samples on number of words, number of T-units, and holistic writing scores. Students with RD also showed significant increases above the baseline writing samples on holistic writing scores for hand- and computer-mapping conditions. The hand- and computer-mapping conditions demonstrated similar outcome effects on all dependent variables for students with LD and RD. Both LD and RD students made significant gains in their writing products when using the concept mapping strategy. However, because carryover effects occurred in the no-mapping condition, firm conclusions about concept mapping could not be drawn.

Results of this study showed preliminary evidence for a learning effect across the time of intervention. This outcome provides an indication that students may have acquired writing skills that generalized into their writing when not using maps.

In addition, students with LD demonstrated a more positive attitude toward writing when using computer-mapping over the other conditions. This outcome has implications for selection of hand- versus computer-mapping strategies.

## ACKNOWLEDGMENTS

Without the support, cooperation, and encouragement of many individuals, this project would not have been possible. First and foremost, I wish to thank Anne Thompson for opening her classroom and allowing me to share in her first year of teaching. Anne deserves many accolades for rolling with the punches and balancing the demands of research and teaching. Thanks also to the team teaching effort made by Deb Eastman, the school speech-language pathologist, who played an integral role in ensuring the success of this project. I am indebted to both for their flexibility and assistance in helping this project run smoothly through its completion. I must also extend a big thank you to the eighth grade students who participated in this study. I learned much about the hearts, minds, and motivations of teenagers and took delight in seeing those who came to believe in themselves as writers. I would like to extend my gratitude to Lincoln Public Schools for being allowed the opportunity to work with their teachers and students.

I feel fortunate to have had such a strong community of scholars supporting me on this project. To Dr. David Beukelman, I extend my gratitude for his thoughtful guidance of my scholarly pursuits. He was a pillar of support and followed what he speaks. I thank him also for showing me how to conceptualize future needs and to begin to answer the many questions in our field. I am especially grateful to Dr. Joan Rankin for her strength as a female mentor in the world of higher education. She was a role model for teaching,



collaborating, and mentoring. I also want to thank her for her insight into research that is relevant to the needs of teachers and students. I am also indebted to Dr. Nickola Nelson, who has been both a mentor and friend. I thank her for sharing her love of language and writing, modeling how to examine the big picture, and fostering my path as a teacher and researcher. Her continuing support and guidance has been much appreciated.

To the other members of my doctoral committee, Dr. Roger Bruning and Dr. Ellen Weissinger, I offer my sincere thanks for their support and suggestions in conceptualizing this project. I want to extend a special thanks to Dr. Brenda Schick and Dr. Karen Hux for the time and expertise they devoted to assist with the analysis.

I would like to thank fellow doctoral students Elizabeth Sondermeier, Wendy Gagnon, Joanne Lasker, Lisa Wood, and Mary Hunt-Berg, for their collaboration and support in this scholarly endeavor. As both colleagues and friends, I look forward to sharing in our future.

I am indebted to my Mom and Dad for their unfailing support throughout my educational pursuits. I cannot thank them enough for giving me the strength and courage to follow my life path. Finally, I wish to thank my friends, Lisa, Christina, Jolaina, Gad, Cameron, Jane, and Mary Jo, for their support, humor, and encouragement throughout this project. Their cheers and messages from across the miles helped to bring this project to fruition. It is with each of the above individuals that I share in this accomplishment.

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PREVIEW

## CHAPTER I

### INTRODUCTION

Skilled expository writing becomes increasingly important as students enter into the secondary grades. Secondary students are expected to compose longer documents, to use complex text and sentence structures, and to integrate and manipulate information from a variety of sources. Planning before writing can be used to aid student writers by reducing the cognitive and linguistic demands of the composing process (Flower & Hayes, 1981a). Expert writers have been noted to engage in extensive planning (Bereiter & Scardamalia, 1987). However, for adolescents with learning and reading disabilities the act of writing may be a laborious experience. One way that has supported all types of writing has been the use of prewriting strategies.

This study examined the effects of a prewriting strategy known as concept mapping. The primary purpose of this study was to examine the effects of two forms of concept mapping, hand-drawn versus computer-generated, on the expository writing of middle level students with learning and reading disabilities. A secondary purpose was to investigate the effect of mapping on learning and reading disabled students' attitudes toward written language.

In the following section, an overview of the cognitive and linguistic demands on students with learning and reading disabilities is provided. This is followed by a description of concept mapping and how it may support the cognitive and linguistic