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MASSEY UNIVERSITY

AN EVALUATION OF MICROCOMPUTER ASSISTED INSTRUCTION
FOR TEACHING WORD RECOGNITION TO MENTALLY RETARDED ADULTS

by

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A THESIS
PRESENTED IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
IN
EDUCATION

FACULTY OF EDUCATION

PALMERSTON NORTH, NEW ZEALAND

DECEMBER, 1980



02850 1R
KENNETH ALLAN RYBA, 1980

Abstract

This study compared the utility of computer assisted instruction with more conventional interpersonal tuition for teaching word recognition skills to mentally retarded adults. A second aspect of the research was to evaluate acquisition, retention, and transfer of learning using two common methods of instruction; these were errorless discrimination (word-focus only) and paired associate learning (picture-word focus). Recognition of words was selected as the experimental task on the basis that this was a practical academic area that traditionally involves large amounts of teaching time, primarily within the realm of drill and practice procedures.

The sample comprised 52 subjects who were drawn from three special education facilities in Palmerston North, New Zealand (a Special School, and two Vocational Training Centres). Subjects were screened initially on tests of visual perception and letter discrimination to ensure that they possessed requisite skills to benefit from participation in training. Pre-testing was carried out to determine whether subjects were able to recall or recognize any of the words to be taught. All subjects entering the experiment knew two or less of 16 words selected for inclusion in the training programmes.

Subjects were randomly assigned to computer assisted instruction or individual tuition groups with 26 persons placed in each group. Within each group, subjects were again randomly allocated to receive errorless discrimination or paired associate modes of instruction. This 2 X 2 classification resulted in 13 subjects being placed in each subgroup. Two modules each containing eight words were used for training. Both the individual instruction and computer groups were given a total of 10 training sessions, or five sessions for each of the two modules.

A modified microcomputer was interfaced with a sound-on-slide projector to provide both audio and visual instruction. Parallel teaching programmes were developed for administration by computer or individual tuition. The first programme (errorless discrimination) required subjects to select target words from a series of increasingly complex word discriminations with no picture cues provided. A second teaching method (paired associate learning) involved the pairing of pictures and words. Subjects were instructed to select target words from a list of printed items that matched referent photographs. Thirteen senior special education students (Teachers College Graduates) carried out the individual training while

the experimenter supervised the computer based programmes.

Progress in training was assessed by comparing pre- and post-test performance on Word Recognition (verbal labelling), Word Identification (pointing on cue), and Picture-Word Matching. Transfer of learning was evaluated using situational tests requiring that subjects match printed words with real life objects. Tests of retention were conducted four weeks after completion of training. A repeated measures design was used with counterbalancing to control for possible confounding effects of list order (Modules).

The findings revealed that both computer assisted instruction and interpersonal tuition resulted in very similar learning outcomes with regard to acquisition, retention, and transfer of learning. No reliable differences were found between the two groups or modes of instruction in terms of training method. It was advanced that some common features of programmed instruction (e.g. active participation, self-pacing, over-learning, and immediate feedback) may have accounted for these equal gains in performance.

In respect to the question of the potential utility of micro-processor technology in special education, this research points to the efficacy of computer assisted instruction for drill and tutorial practice. Specifically, the computer provides a highly structured learning experience that has the potential to assist retarded learners in organising input materials. Evidence from this study suggests that computer related learning environments give the adult learner considerably more control of the teaching situation, and provide consistent reinforcement that is not so readily administered through conventional forms of instruction. Finally, it was proposed that the relatively impersonal, though highly interactive, nature of the computer may avoid the triggering of perceptions of failure that can impede performance of handicapped learners.

This dissertation is dedicated to my wife, Beth,
whose understanding and support provided me with
the encouragement to complete this work.

Acknowledgements

This thesis would not have been possible without the assistance of a large number of persons who contributed much time and effort. I am particularly grateful to my Chief Supervisor, Dr. Alan Webster, who has provided me with excellent professional supervision, emotional support, and inspiration throughout the duration of this research.

Appreciation is also due to Dr. Dan McKerracher who offered supervision and advice concerning the experimental design. I wish also to thank Dr. Lauran Sandals, Overseas Examiner, and Dr. David Mitchell, External Examiner, for their critical appraisal of the dissertation.

Dr. James Chapman contributed much appreciated advice, guidance and friendship, particularly with regard to measurement and statistical aspects. I would also like to extend my appreciation to Mr. Bryan Christiansen and Dr. Ted Drawneek whose technical and programming expertise proved invaluable in developing the microcomputer-based teaching system. Thanks are also due to Mr. Basil Orr, Control Electronics Ltd., who designed some of the special purpose equipment used in this experiment.

I am extremely grateful to the staff of Awatapu Special School, Cook Street Training Centre, and Aokautere Training Complex for support provided during the course of this investigation; particularly, Mr. Don Budge, Mrs. Glyn Robinson, Mr. Bruce Houghton, Mr. Alan Parry, and Miss Ann Harris. Special appreciation is accorded to Mr. John Doolan, Administrator, Manawatu Branch, New Zealand Society for the Intellectually Handicapped, for his continued support of this project.

My sincere thanks is offered to the many trainees and students who participated in the training programmes. It was a pleasure to work with this enthusiastic group of learners. I am appreciative also of the assistance rendered by Miss Sheena Rajpal, B.S.W. student, who conducted some of the assessment and training sessions.

Thanks are also due to the Special Education Students for the considerable time and energy they invested in the research. It would not have been possible to conduct the investigation without this support.

I am grateful to Mrs. Bev Hawthorn and Mrs. Maryanne Nation for their assistance in typing several sections of this manuscript with such speed and accuracy.

Appreciation is also due to the New Zealand Institute of Mental Retardation and New Zealand Society for the Intellectually Handicapped whose financial assistance enabled me to devote full time and effort to completion of this research.

The final thanks goes to my wife Beth. She has provided me with much needed emotional support, encouragement, and understanding through the inevitable stresses of student life. Moreover, Beth typed a large part of this dissertation and critically proof-read the final draft. This was truly a team effort.

Table of Contents

Chapter	Page
I INTRODUCTION AND OVERVIEW	1
Purpose of the Study	6
II REVIEW OF RESEARCH ON INFORMATION PROCESSING: ACQUISITION, RETENTION, TRANSFER OF LEARNING	8
Introduction	8
Procedural Variations	8
Error Factors	11
Retention of Learning	13
Transfer of Learning	18
Summary	22
III REVIEW OF RESEARCH ON TEACHING WORD RECOGNITION	24
Introduction	24
Definition of a Social Sight Vocabulary	24
Effects of Extra Stimulus Dimension	25
Research Findings	27
Summary	32
IV REVIEW OF RESEARCH ON PROGRAMMED INSTRUCTION AND AUTOMATED TEACHING IN SPECIAL EDUCATION	34
Introduction	34
A Process Definition of Programmed Instruction ...	34
Programmed Instruction Research	36
Electromechanical Teaching Machines	40
Computer Applications of Programmed Instruction ..	45
Types of Computer Assisted Instruction	47
Early Developments of Computer Assisted Instruction	50
Computer Assisted Instruction With Handicapped Persons	54
Summary and Implications for Further Research on CAI	59
Research Questions	62
V DEVELOPMENT OF INSTRUMENTATION AND TEACHING PROGRAMMES	63
Introduction	63
Background to the Study	63
Equipment and Technical Modifications	67
The Computer Software	70
Development of Computer Assisted Instruction Courseware	73

	CAI Training Sequence: Errorless Discrimination	74
	CAI Training Sequence: Paired Associate Learning	78
	Development of Individual Instruction Programmes ..	81
	Individual Training Sequence: Errorless Discrimination	82
	Individual Training Sequence: Paired Associate Learning	84
VI	RESEARCH DESIGN AND PROCEDURES	87
	Introduction	87
	Pilot Phase	87
	Trial Evaluation	89
	Subjects	89
	Procedure	90
	Results	91
	Survey of Social Sight Words	94
	Screening of Subjects	95
	Visual Discrimination Test	95
	Word Recognition and Identification	96
	The Sample	97
	Procedure	99
	Overview	99
	Evaluation Procedures	100
	Training Administration Procedures	106
	Hypotheses	116
	Design	121
VII	RESULTS	122
	Descriptive Data	122
	Statistical Analysis	124
	Word Recognition	124
	Word Identification	130
	Picture-Word Matching	135
	Transfer	140
	Retention	144
	Time in Training	149
	Attempts to Mastery	152
VIII	DISCUSSION	156
	Acquisition of Learning	156
	Transfer of Learning	165

	Retention of Original Learning	168
	Methods-Time Measurement	171
IX	CONCLUSION AND EDUCATIONAL IMPLICATIONS	173
	Bridging the Gap Between Invention and Innovation ..	173
	Limitations of the Study	177
	Suggestions for Future Research	178
APPENDICES		
A.	Survey of Social Sight Words	182
B.	Visual Discrimination Test	183
C.	Word Recognition and Identification Screening Test .	188
D.	Pre- and Post- Test Procedures	191
E.	Transfer Tests	195
F.	Training Procedures: Administration and Scoring	197
G.	Raw Score Data	210
	REFERENCES	219

LIST OF TABLES

Table	Page
1. Pilot Study Pre-Versus Post-Test Comparison	92
2. Pilot Study Number of Attempts to Mastery	92
3. Vocabulary Items Arranged By Module	103
4. Age and Sex Distribution of Subjects	123
5. IQ and Visual Discrimination Score Distribution of Subjects	123
6. ANOVA Summary Data for Module 1 Word Recognition Pre- Versus Post-Test Comparison (Repeated Measures). .	125
7. Means and Standard Deviations for Module 1 Word Recognition: Pre- Versus Post-Test Comparison . .	125
8. ANOVA Summary Data for Module 2 Word Recognition Pre- Versus Post-Test Comparison (Repeated Measures). .	126
9. Means and Standard Deviations for Module 2 Word Recognition: Pre- Versus Post-Test Comparison	126
10. ANOVA Summary Data for Module 1 Word Recognition List Order Effects	128
11. Means and Standard Deviations for Module 1 Word Recognition List Order Effects	128
12. ANOVA Summary Data for Module 2 Word Recognition List Order Effects	129
13. Means and Standard Deviations for Module 2 Word Recognition List Order Effects	129
14. ANOVA Summary Data for Module 1 Word Identification Pre- Versus Post-Test Comparison (Repeated Measures) . .	131
15. Means and Standard Deviations for Module 1 Word Identification: Pre- versus Post-Test Comparison	131
16. ANOVA Summary Data for Module 2 Word Identification Pre- Versus Post-Test Comparison (Repeated Measures) . .	132
17. Means and Standard Deviations for Module 2 Word Identification: Pre- Versus Post-Test Comparison	132
18. ANOVA Summary Data for Module 1 Word Identification List Order Effects	133
19. Means and Standard Deviations for Module 1 Word Identification List Order Effects	133

20. ANOVA Summary Data for Module 2 Word Identification List Order Effects	134
21. Means and Standard Deviations for Module 2 Word Identification List Order Effects	134
22. ANOVA Summary Data for Module 1 Picture-Word Matching Pre- Versus Post-Test Comparison (Repeated Measures) . . .	136
23. Means and Standard Deviations for Module 1 Picture-Word Matching: Pre- Versus Post-Test Comparison	136
24. ANOVA Summary Data for Module 2 Picture-Word Matching Pre- Versus Post-Test Comparison (Repeated Measures) . . .	137
25. Means and Standard Deviations for Module 2 Picture-Word Matching: Pre- Versus Post-Test Comparison	137
26. ANOVA Summary Data for Module 1 Picture-Word Matching List Order Effects	138
27. Means and Standard Deviations for Module 1 Picture-Word Matching List Order Effects	138
28. ANOVA Summary Data for Module 2 Picture-Word Matching List Order Effects	139
29. Means and Standard Deviations for Module 2 Picture-Word Matching List Order Effects	139
30. ANOVA Summary Data for Transfer Test Module 1: Group By Mode By Order Interactions	141
31. Multiple Classification Analysis of Transfer Test, Module 1	142
32. ANOVA Summary Data for Transfer Test Module 2 Group By Mode By Order Interactions	143
33. Multiple Classification Analysis of Transfer Test, Module 2	143
34. ANOVA Summary Data for Module 1 Word Recognition Retention Group By Mode By Order Effects	145
35. Multiple Classification Analysis of Word Recognition Retention, Module 1	145
36. ANOVA Summary Data for Module 1 Word Identification Group By Mode By Order Interactions	146
37. Multiple Classification Analysis of Word Identification Retention, Module 1	146
38. ANOVA Summary Data for Retention Module 2 Word Recognition Group By Mode By Order Interactions	147

39. Multiple Classification Analysis of Word Recognition Retention, Module 2	147
40. ANOVA Summary Data for Retention Module 2 Word Identification: Group By Mode By Order Interactions . . .	148
41. Multiple Classification Analysis of Word Identification Retention, Module 2	148
42. ANOVA Summary Data for Module 1 Total Time, Group By Mode By Order Interactions	150
43. Multiple Classification Analysis of Total Time, Module 1	150
44. ANOVA Summary Data for Module 2 Total Time, Group By Mode By Order Interactions	151
45. Multiple Classification Analysis of Total Time, Module 2	151
46. ANOVA Summary Data for Module 1 Total Attempts, Group By Mode By Order Interactions	153
47. Multiple Classification Analysis of Total Attempts, Module 1	153
48. ANOVA Summary Data for Module 2 Total Attempts, Group By Mode By Order Interactions	154
49. Multiple Classification Analysis of Total Attempts, Module 2	154

LIST OF FIGURES

Figure	Page
1. Microcomputer Work Station	71
2. Design of Study	101
3. Errorless Discrimination Linear Branch Routine	115
4. Paired Associate Linear Branch Routine	117