THE EFFECTS OF IMPROVED AUTOMATICITY IN BASIC ACADEMIC SKILLS ON TEST PERFORMANCE: A STUDY OF LEARNING DIFFICULTIES IN THE MIDDLE-SCHOOL YEARS

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A thesis submitted for the degree of
Doctor of Philosophy
of the
University of New England

Dated May, 2011

DEDICATION

To my parents, Maureen Bellert and Martin Bellert, in appreciation of your love and support.

ACKNOWLEDGEMENTS

I would like to extend my gratitude to the following people for their assistance, advice and encouragement during the development of the research and the writing of this thesis.

To my principal supervisor, Associate Professor Lorraine Graham, I am eternally grateful to you for your belief in me and your ever-present positive, can-do attitude. Your encouragement and feedback, your incredible 'smoothing' editing skills, and your ready availability for queries big and small, have supported me from the beginning to the end of this research process. Importantly, your knowledge and experience in the field of learning difficulties and intervention research, your knowledge about the research process and your collaboration with me in writing publications, have been instrumental in my development as a researcher. I thank you for your generosity.

Sincere appreciation is also extended to my second supervisor, Professor John Pegg, for his consistent guidance throughout the research process. Your suggestions were always constructive and judicious, providing me with much needed advice and clarity in direction. I am fortunate indeed to have had the experience of working with you, and I thank you whole-heartedly for your advice and support.

Many thanks to the students, staff and schools involved in this study, as without them a wonderful project would have never come to fruition. The inspiring contributions of the students in the cohort reported in this study live on in the implementation of the *QuickSmart* programs.

I was very grateful to receive support in the data analysis for this study from Professor Ray Cooksey and Dr Stefan Horarik. In particular, Stefan's patient teaching and review of my work was of great assistance. I also appreciate the friendly support of other staff at the SiMERR National Centre.

I was a recipient of an Australian Postgraduate Award in 2009 and this scholarship enabled me to focus exclusively on my studies for a year, a most appreciated opportunity. Financial support from the Rod Gerber scholarship in 2009 was also most appreciated.

My employer, the Catholic Education Office, Diocese of Lismore, has been supportive of my studies and other academic ventures. My colleagues Paul Thornton, Barry Bermingham, Leanne McLennan and Andrew Madden, as well as the Additional Needs Teachers in schools in the Clarence region, have been both encouraging and inspiring.

To my husband Frank Falkenstein I offer my greatest acknowledgement. I definitely could not have completed this work without your patient love and support. Thank you for the extra support that you provided our children with when I was away from home, for your empathy and understanding, and for your belief in me. I also appreciate the love and support of my children, Rosa and Max and thank them for accepting my dedication to this project. My sister Jenny Bellert has continually offered me support, as have many other friends and family members. I am very fortunate to have you all in my life.

ABSTRACT

Students in the middle-school years experiencing learning difficulties (LD) in reading and basic mathematics are educationally vulnerable. In many jurisdictions, the learning needs of younger students with LD are prioritised and students in the middle-school years experiencing LD have limited, or non-existent, opportunities to access the intervention support they need to make appropriate progress in learning. During the middle-school years gaps in performance, achievement and motivation between students with LD and their non-LD peers widen, to the point where, for some students, they become an unbridgeable chasm, potentially leading to long-term economic and social disadvantage.

This investigation examines the learning progress of 22 students in the middle-school years who experienced persistent LD. These students participated in an educational intervention called *QuickSmart*, which aimed to support students in developing more efficient cognitive processing in tasks of basic academic skills. The study was implemented in local schools, using the researcher as the teacher in the intervention lessons. *QuickSmart* was delivered to participant students in pairs, as either a word-reading program or a basic mathematics program, consisting of three, 30 minute lessons per week for 18-22 weeks. The intervention lessons utilised evidence-based strategies and approaches aimed at improving automaticity (that is, reducing response speed and improving accuracy) in basic academic skills. It was theorised that such an improvement in 'the basics' may facilitate more efficient working-memory processing which, in turn, could lead to improved performance on standardised tests.

The investigation was designed within a mixed-methods framework incorporating both a quasi-experiment and six individual student learner profiles. The research design also incorporated a comparison group of non-LD peers against which the automaticity progress of the participant students could be evaluated.

Results indicated that the participant students improved automaticity in each of the targeted domains and they suggested a 'narrowing of the gap', as participant students' automaticity rates were similar to those of the comparison students at the end of the intervention. Further, maintenance testing one year after the intervention concluded showed

that participant students maintained automaticity rates. Pre- and post-testing on standardised tests, being broader measures of academic performance, indicated improvements, such that, for this group of students, an intervention focus on basic academic skills led to improved outcomes on higher-order tasks such as comprehension and problem solving. Individual student profiles indicated that these participant students required a long intervention to enable them to make changes in strategy use, and to improve speed and accuracy of recall. Implications of the results centre on the utility of a cognitive-processing approach to inform understandings about the phenomena of learning difficulties in the middle-school years.

CERTIFICATION

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 or qualification.

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

Signed 

Anne Bellert

13th May, 2011

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