

# **AN ANALYSIS OF LONG-TERM EFFECTS OF AN INTERVENTION PROGRAM DESIGNED TO ENHANCE BASIC NUMERACY SKILLS FOR LOW-ACHIEVING MIDDLE-SCHOOL STUDENTS**

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This poster describes a project that evaluated over a twelve-month period, low-achieving students' maintenance of recently acquired competencies in basic numeracy. Of interest was whether the learning outcomes achieved during a thirty-week intervention program remained available at the same level for a further year without direct teaching maintenance. This aim is particularly important because it is necessary, for any intervention deemed "effective", to show that gains in student learning continue well after the teaching program has been completed. The results confirmed that the 24 middle-school students in the sample achieved significant improvement in accuracy and fact-retrieval times during the intervention program, and that these gains, in relation to the students' initial baseline measures, were maintained for a further twelve month period.

The significance of this research lies in obtaining longitudinal data regarding the ongoing strengths of the *QuickSmart* program of student support in basic numeracy. The focus of the work on low-achieving students is an important one for school education. It is particularly important that the findings of intervention research are rigorously evaluated because the student population for this work is among the most vulnerable in our education system (Dobson, 2001; Reynolds, Temple, Robertson, & Mann, 2001). In this study the longitudinal data provided additional insights concerning the role of working-memory and automaticity in information processing. It also highlighted the need for further research where both comparison and control groups are used. The collection of data from experimental, comparison and control groups over an extended period of time adds further to the cost and complexity of research. However, such work must be pursued so that an important avenue of focused assistance for low-achieving students is not lost, but carefully explored and fully justified.

This poster will use text, tables of results, figurative representations of the statistical analyses conducted, and photographs to address the importance of longitudinal data to intervention research in mathematics.

## **References**

- Dobson, P.J. (2001). Longitudinal case research: A critical perspective. *Systemic Practice and Action Research*, 14 (3), 283-296.
- Reynolds, A.J., Temple, J.A., Robertson, D.L., & Mann, E.A. (2001). Long-term effects of interventions on educational achievement. *Journal of the American Medical Association*, 285 (18), 2339-2346.