Research Aims

The research that informs QuickSmart is focused particularly on cognitive processing, the conditions necessary for gaining facility with lower order tasks or basic academic skills, and the potential complementary effects of improved mastery of these skills on higher order learning processes. Accordingly, the research has two overall goals:

• to investigate improved fluency with basic academic skills; and
• to observe whether improved fluency with the basics has any effect on the performance of more demanding academic tasks, such as comprehension and mathematical problem solving, as reflected in students' performance on state-wide tests or standardized achievement tests.

Specific Research Aims of the QuickSmart Project

The QuickSmart project aims to:

• Develop a deeper understanding of the role of working memory load in information processing, and how this is implicated in the literacy and numeracy problems students encounter.
• Develop detailed descriptions of cognitive obstacles that preclude students achieving acceptable standards of literacy and numeracy.
• Prepare detailed profiles of individual students, documenting their development in literacy/numeracy over the period of an academic year.
• Note procedures for overcoming common learning obstacles.
• Gain insights into how the procedures developed for individual use may be generalised to suit whole or part classroom, or small group situations.
• Explore ways of adapting the technology used in the project to assist classroom teachers and support personnel to identify and target particular problems that students face in areas of literacy and numeracy.
• Develop a set of design features that can be used by teachers and support staff to identify and help rectify particular problems in the areas of literacy and numeracy.

Pre–test and post–test data are collected for each intervention group as well as from ‘comparison students’, using two forms of assessment. The Computer–based Academic Assessment System (CAAS) tests accuracy and speed of recall and recognition of basic literacy tasks or numeracy facts. Independently prepared tests in the form of state–wide tests or standardised achievement tests such as the Progressive Achievement Tests (PAT) in Mathematics or Reading (ACER) are also used to provide information about the transfer of basic facts to more complex academic and cognitive tasks.

Furthermore, assessment 'self–factors' such as student self–efficacy, self–confidence, and scaffolded risk taking are an important part of the QuickSmart research framework.