

Many tens of thousands of students in Australia struggle with Numeracy and Literacy during their middle years of schooling (ages 9-to-15 years). Current instructional activities do not appear to overcome the learning problems experienced by many of these students or lead to substantial improvements in their academic performance. In order to address this situation, the National Centre for Science, Information and Communication Technology, and Mathematics Education for Rural and Regional Australia (SiMERR National Research Centre) has further developed and supported the growth of *QuickSmart*, an extensive research program aimed at narrowing the achievement gap between low-achieving students and their average-achieving peers.

*QuickSmart* has improved the academic performance of many thousands of students from over 1,200 schools across sectors and State/Territory education jurisdictions. *QuickSmart* has systematically addressed the learning needs of those middle-school students who often find themselves caught up in a cycle of continued failure in Numeracy (basic mathematics) and/or Literacy (reading, vocabulary and comprehension). Important understandings gained from the *QuickSmart* research program are summarised below:

- The *QuickSmart* program is an evidence-based program that is highly supported, well resourced and built around a professional learning program for Principals, supervising teachers, teachers and teacher aides.
- *QuickSmart* emphasises both practice and strategy instruction, and is a sustained quality intervention for pairs of students who actively participate in 30-minute lessons three times a week for 30 weeks.
- *QuickSmart* narrows the achievement gap by facilitating growth of two- to three-years. This enables low-achieving students to proceed with their studies successfully, to maintain improvement and to learn to “Trust their heads” in the same ways that effective learners do.
- *QuickSmart* students maintain the gains from the program years after they have completed the program.
- *QuickSmart* students report a new confidence about their learning based on feedback and acknowledgement of genuine observable improvements that are obvious to peers, parents, teachers and the students themselves.
- *QuickSmart* is successful with Indigenous students who achieve substantial and lasting benefits from the program.
- The *QuickSmart* model of professional learning provides the necessary knowledge and experiences to enable practitioners to work effectively towards improving the life chances of low-achieving students.
- *QuickSmart* is a data-rich intervention with information collected on pre- and post-measures on individual learning characteristics and Australian standardised tests (and where possible National/State Basic Skills tests), as well as stakeholder views from students, parents, teachers and school executives.
- *QuickSmart* is cost-effective, scalable, sustainable and efficient in addressing the learning needs of persistently low-achieving students.

## Why QuickSmart?

Students who experience ongoing failure in upper-primary and lower-secondary school face a myriad of difficulties in pursuing post-school options and contributing to society through employment and aware citizenship. Those who exhibit consistent weaknesses in basic skills, such as the recall of number facts, or who experience difficulty with reading and comprehension are particularly vulnerable. There is well-documented evidence in Australia of a substantial systemic decline in achievement for these vulnerable students.

Data from national assessments underpin a compelling case for the need to develop instructional programs that improve the numeracy outcomes for Australian students performing in the lowest 30% of the achievement spectrum. This includes students performing at or below the national minimum standards. Many indigenous and geographically isolated students, as well as those in low-socio economic areas, are particularly in need of such a program.

## Purpose of QuickSmart

The prime purpose of the *QuickSmart* program is to reverse the trend of ongoing poor academic performance for students who have been struggling at school for several years and who are caught in a cycle of continued failure. These targeted students experience significant and sustained difficulties in basic mathematics and/or literacy, and have shown themselves to be resistant to improvement despite attempts to overcome their learning problems. For a variety of reasons these students have been unable to draw lasting benefits from other in-class and withdrawal instructional activities.

In addition, the *QuickSmart* professional learning program is designed for classroom teachers, special needs support teachers, and teacher aides to learn how to work with, and significantly improve, the learning outcomes in basic mathematics and literacy skills of under-achieving students in the middle years of schooling. The program offers professional learning and support for teachers to work in a small class instructional setting with two students using a specially constructed teaching program supported by extensive material and computer-based resources.

## Background

It is our contention that it is particularly difficult to bring about sustainable change, within 'normal' classroom environments, with students who are persistently at or below national minimum standards. Consequently, there is a need for educational interventions that support students who experience these difficulties. It was this notion that was the catalyst for the development of the *QuickSmart* program.

*QuickSmart* is an example of an evolutionary student intervention program of research that is having a strong impact with low-achieving students. The research program associated with *QuickSmart* is one of a few programmatic interventions that has accrued substantial evidence regarding value and applicability from research conducted in Australian schools targeting low-achieving middle-school students.

## Development of the QuickSmart program

*QuickSmart* was developed with the support of the National Centre for Science, Information and Communication Technology, and Mathematics Education for Rural and Regional Australia (SiMERR National Research Centre) at the University of New England. The development of the *QuickSmart* intervention has drawn upon extensive analyses of the research literature (e.g., Swanson & Hoskyn, 1998) while its implementation has been supported by research grants from the Australian Research Council, the Federal Government, project funds from SiMERR, and extensive cash and in-kind support from all States and Territories.

The following principles have guided both the development and scaling up of the *QuickSmart* intervention:

- Research evidence should inform policy positions and systemic approaches to addressing the needs of low-achieving middle-school students.
- Programs designed to address the learning needs of low-achieving middle-school students should be intense, of significant duration, and conducted in small class instructional settings.
- An extensive professional learning program for teachers, teacher aides and executive members of schools and education jurisdictions should be an important component of any sustainable instructional intervention.
- Improving the skill base of teacher aides should be a focus of attention for all support programs, especially those in rural and remote areas or difficult to staff schools where teaching staff mobility is a significant factor.
- To ensure sustainability, National, State, regional and school level stakeholders need to coordinate their efforts and collaborate to ensure the fidelity of the program, and the viability of its implementation and scaling up processes.

The research program associated with *QuickSmart* is unique because it has explored a programmatic intervention conducted in a wide variety of Australian schools. Since 2001, systematic data collection and analysis has accrued substantial evidence regarding the value and applicability of the *QuickSmart* Numeracy (basic mathematics) and *QuickSmart* Literacy (reading and comprehension) programs as they have been implemented to an increasingly expansive scale.

## Research Evidence from *QuickSmart*

A critical aspect of the implementation of *QuickSmart* since 2001 has been the attention paid to the ongoing intensive evaluation of the program. This has included gathering assessment information from comparison groups of average-achieving students drawn from the same schools as low-achieving *QuickSmart* students. This research design helps quantify ways that *QuickSmart* narrows the achievement gap for low-achieving students and serves to isolate any effects attributable to the instructional program.

Independent assessment results (using state-wide or standardised tests) gathered from thousands of *QuickSmart* and comparison students provide rich data sets related to student growth that complement computer-based data collected on students' speed and accuracy on basic skills during *QuickSmart* lessons. Interviews and surveys of students, parents, teachers, and Principals have also yielded consistently positive qualitative data.

This strong evidence base confirms the success of *QuickSmart* from a range of perspectives. On the basis of extensive quantitative and qualitative data, it is clear that students, both Indigenous and non-Indigenous, have made substantial academic improvement over the course of the *QuickSmart* Program.

Independent (federal, state-wide or standardised tests) assessments gathered from *QuickSmart* and comparison students over twelve years consistently show overwhelmingly that Indigenous and non-Indigenous *QuickSmart* students have made substantial academic improvement. Research data collected from across Australia report:

- average effect-size results for thousands of *QuickSmart* Indigenous and non-Indigenous students (of 0.60 to 0.94) that translates into growth of two- to three-years in one year compared to the gains made by average-achieving students. (An effect size of 0.3 represents an expected yearly average growth for non-*QuickSmart* students.) In terms of student's typical growth this increase can be as high as a factor of 7.

- substantial improvement on standardised test results in the first year of implementation is increased, and sometimes doubled, with new students in the second year as schools and Instructors become more experienced.
- learnings continue to develop years after students exit the program, with academic gains being maintained or enhanced in subsequent years.
- Indigenous students receive great benefit from the program with their results mirroring those of non-Indigenous students, as well as strong reports about increased student engagement in class and improvements in attendance.

## The *QuickSmart* Program

Students are involved in *QuickSmart* sessions in pairs. The program is intensive and requires students to work with an adult instructor in pairs for three 30-minute lessons each week for about 30 weeks. Teachers design individually intervention programs that are developed and implemented as part of *QuickSmart* in order to strengthen students' problematic skills, e.g., recall of number facts, strategy use, and basic computation.

The *QuickSmart* program:

- ☐ is designed to improve students' information retrieval times;
- ☐ frees working-memory capacity from an excessive focus on routine tasks;
- ☐ fosters automaticity in basic tasks;
- ☐ utilises explicit teaching based on understanding, not rote learning, and deliberate practice;
- ☐ has time (as well as accuracy) as a dimension of learning;
- ☐ integrates assessment tasks into each lesson with a focus on individual improvement;
- ☐ maximises student on-task time in a structured but flexible lesson format;
- ☐ provides extensive materials including teaching resources, speedsheets, flashcards; and
- ☐ incorporates a computer program called the Cognitive Aptitude Assessment System (CAAS).

The professional development program accompanying *QuickSmart* is focused on supporting teachers and instructors to understand and provide:

- ☐ effective instruction that maximises student on-task time, and provides learning scaffolds to ensure students experience improvement and success;
- ☐ deliberate practice that is integral to every lesson, allows for success and is focused on providing targeted feedback to improve learning;
- ☐ guided and independent timed practice activities;
- ☐ strategy instruction and concept development;
- ☐ confidence in their students by encouraging a 'can do' attitude;
- ☐ appropriate teacher and peer modelling; and
- ☐ motivational academic activities that are opportunities for modelling and to develop fluent performance.

## Conclusion

*QuickSmart* stands as one of a very few interventions either Nationally or Internationally in which evaluations have examined implementation at all sites over the years of its development. Thus, we are able to demonstrate our successes at scale-up to public scrutiny. We believe that only by collecting and analyzing these types of data can potential adopters receive critical information upon which to base important decisions, namely, the probability of an intervention producing beneficial outcomes during the scale-up phase.

We have provided extensive quantitative and qualitative sets of evidence from many thousands of students and many hundreds of teachers and parents. Both sets of results point to how *QuickSmart* helped “narrow the gap” for low-achieving middle-school students. Analysis has identified impressive statistically significant gains in terms of probability measures and Effect Sizes that mirror the qualitative improvements reported by teachers, teacher aides and parents.

On this note, it is important to consider the parents’ perceptions of the program in order to “bring to life” the results already presented. While this has the potential to be regarded as “selling the spin” it is important for readers to look beyond the positiveness of the comments to the underlying messages of success and hope that these parents see in their children that was not evidenced in the years before the students had undertaken the *QuickSmart* program.

Teachers and researchers interviewed many hundreds of parents about how they felt their children reacted to the *QuickSmart* program and what benefits resulted from their participation. In all cases their views were positive. Examples of parent’s comments are included below. These are presented to try and capture the usually life-changing and intensely personal journey that students travel with *QuickSmart*

- He told me how well he was doing and how he was improving. His speeds were getting better and so was his accuracy. He enjoyed the work on the laptop. Yes, it was a good experience for my son and he is a lot more confident in his approach and more willing to take risks with his maths.
- My daughter has improved her basic maths knowledge. She no longer uses her fingers. I believe she has learnt a lot. She enjoys maths in the normal classroom now.
- *QuickSmart* has had a huge effect on our daughter’s performance at school – most notably the Basic Skills results. In Year 3 she was in the bottom 30% of the state. This year, in Year 5, she was in the top 30%.
- The school and *QuickSmart* combined have created a child who wants to learn. She now happily completes homework!
- *QuickSmart* should be part of the school forever. For kids who are having a bit of trouble with the basics, the program has given them the boost they need to catch up, keep up and stay confident with themselves.”

**Additional information concerning the conduct or effectiveness of the *QuickSmart* program is available on request from Professor John Pegg at the SiMERR National Centre, University of New England on (02) 6773 5065 or at [simerr@une.edu.au](mailto:simerr@une.edu.au)**