

An Executive Summary of the Numeracy Component
of
*An Evaluation of the
Getting it Right: Literacy and Numeracy Strategy
In Western Australian Schools*

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The Strategy

The *GiR-LNS* (Getting it Right: Literacy and Numeracy Strategy) in the government schools in Western Australia was begun in 2001. This strategy is based on the recognition that teachers make the difference to students' learning and that the most significant professional development to impact practice takes place in the classrooms themselves. Therefore, Specialist Teachers were trained in literacy and numeracy and assigned to schools to work "shoulder-to-shoulder" with colleagues in classrooms, starting with 50 full-time equivalents (FTE) in 2002 and increased each year until the full complement of 200 FTE were in place in 2005, at which time there were 365 schools across Western Australia with either a literacy or a numeracy Specialist Teacher. These Specialist Teachers were assigned release time from 20% to 100%, with the majority having more than 50%. The training comprised seven three-day workshops that occurred during the first sixteen months of their appointment, and for the numeracy Specialist Teachers, *First Steps in Mathematics* was a focus of their training. If they continue in their role, they participate in three two-day workshops each year. This model for professional growth has four structural features—target setting in schools, collaboration between Specialist Teachers and classroom colleagues, a focus on either numeracy or literacy, and quality professional learning.

The Evaluation Process

The Australian Council for Educational Research was commissioned by the government to undertake an evaluation of the *GiR – LNS* to begin in May 2003 in those schools assigned Specialist Teachers in 2002 – 2003 (cohort 1), and continued through to December 2004 with the addition of schools assigned Specialist Teachers in 2003 – 2004 (cohort 2). The data collected over two years was to provide an evaluation of impact of the strategy on changes in school practices, on changes in classroom teaching practices in both literacy and numeracy, and on the development of expertise in teaching literacy and numeracy.

A major component of the evaluation was the administration in each of the two years of five different survey questionnaires—one for the principals, one for the literacy Specialist Teachers, one for numeracy Specialist Teachers, one for the literacy classroom teachers, and one for the numeracy classroom teachers. Each of these comprehensive instruments was crafted for the target group; however, they did contain some common questions and scales. The survey questionnaires for the Specialist Teachers and classroom teachers were relatively long and included multiple choice questions, open-ended questions, and scenarios about identifying students' learning needs, planning learning activities, and monitoring student learning. These survey questionnaires were sent directly to the respondents with a pre-paid postage envelope for the return.

As well as these surveys, the evaluation included interviews and observations in a sample of twenty case-study schools that were visited three times by the evaluation team over the two years 2004 – 2004. Ten were literacy schools and ten were numeracy schools; ten schools were from the first cohort and ten were from the second cohort. In these schools the evaluation teams conducted in-depth interviews of the principals, Specialist Teachers,

and classroom teachers. Notes were taken during these interviews and they were tape recorded as well. In these 20 schools, there were also observations made of classes where the Specialist Teachers worked in collaboration with the classroom teachers. A brief discussion with the Specialist Teacher and the classroom teachers took place before the observation and a much longer discussion afterwards. Detailed notes were taken during the observations so that comparisons could be made with the second and third visits to provide evidence of the development of diagnostic assessment, planning, and the implementation of a wide repertoire of teaching practices.

The response rates to the surveys were good for principals (65% in 2003 and 74% in 2004) and for the numeracy Specialist Teachers (82% in 2003 and 78% in 2004); however, for the numeracy classroom teachers the response rate was only fair (45% in 2003 and 42% in 2004). A problem arose in the surveys with some loss of identification of numeracy classroom teachers between 2003 and 2004 so that only 24 of them could be matched; therefore, the analysis of change between 2003 and 2004 in the numeracy classroom teachers' data was limited. Over 90% of the classroom teachers who responded were female with an average teaching experience of 15 years (SD 10 years) and had been in their current schools for six years (SD of 5 years). Of the numeracy Specialist Teachers, about 90% were female and had been teaching for an average of 16 years (SD 8 years), and about 80% were members of the staffs of the schools with an average of six years at those schools.

Survey Results

The survey information regarding the implementation of *GiR-LNS* in schools indicated that

- Numeracy classroom teachers had worked collaboratively with Specialist Teachers for varying periods (one term to more than eight terms)
- Numeracy Specialist Teachers provided one or two sessions of in-class support per week (45 – 50 minutes) with collaborative planning time of about 30 minutes
- Numeracy classroom teachers were selected most often on the basis of the year level taught
- Schools provided adequate resources for the numeracy Specialist Teachers, with improvements between 2003 and 2004
- Strong connections existed between *GiR-LNS* and other improvement programs in numeracy
- Almost all the schools involved the Specialist Teacher in setting targets

In reporting the usefulness of resources provided in their training for them to use in their work with classroom teachers, all the numeracy Specialist Teachers felt that *First Steps in Mathematics* was useful or very useful, while only 56% of them felt that way about *The First Steps Diagnostic Map*. For assessment instruments such as Numeracy Net, 77% of the numeracy Specialist Teachers felt they were useful or very useful and 64% of them felt the same way about professional readings.

Numeracy Specialist Teachers and classroom teachers were asked to look back over the whole period they had been working together and report on how often they had engaged

in a list of possible activities and how useful they had been in improving teaching practice. While the Specialist Teachers reported the most frequent activities undertaken as *planning learning activities* and *choosing teaching activities to move their students forward*, the numeracy classroom teachers they worked with reported *choosing teaching activities to move their students forward* and *diagnosing student learning needs*. For both groups, there was a strong correlation between the frequency and usefulness of the various activities. The analysis of the survey data indicated that the amount of time teachers spent in planning with the Specialist Teacher was important, but had the most impact when their collaborative work was focused on individual student outcomes and when the school supported a collegial culture. The analysis also showed that the time the classroom teacher spends with the Specialist Teacher was more likely to lead to a positive outcome, if there was a focus on individual students and if the Specialist Teacher provided modeling.

When both groups were asked to look back over the last month on the times they worked together in the classroom and report on the frequency and usefulness of a list of possible activities, it was clear that there was a wide range of activities in the classrooms and most were seen as useful, although typically the Specialist Teachers saw each activity as more useful than did the classroom teacher. The classroom teachers saw *the Specialist Teacher observing and providing feedback* as the least useful activity. It would appear that 20% of the Specialist Teachers were *withdrawing students to provide additional support* even though this was inconsistent with the philosophy of *GiR-LNS* and that it had been addressed specifically in the training sessions.

A wide range of activities was undertaken frequently over the duration of *GiR* by Specialist Teachers to improve numeracy learning across the whole school, significantly more so by Cohort 2 Specialist Teachers. Most of these activities were seen to be useful, typically more so by the Specialist Teachers themselves. In fact, only about 5% of the classroom teachers typically found these activities *not at all useful*, although 20% of them found maintaining a display of mathematics information to be *not at all useful*.

Numeracy Specialist Teachers reported very positively about the impact of *GiR-LNS* training on their knowledge and understanding related to the teaching and learning of mathematics; however, the impact on their understanding of how to plan teaching and learning for specific groups of students was much lower. The numeracy teachers felt that their work with the Specialist Teachers had effects on their knowledge and understanding to a *moderate extent* except for *the knowledge of how to plan teaching and learning activities for particular groups of students*, which they rated broadly as a *minor* effect.

Numeracy classroom teachers appear to have frequently provided their students with a wide range of activities designed to improve student learning in both 2003 and 2004, with *completing pages from pre-prepared commercial worksheets* as the least frequently undertaken activity. There is little indication from this data, however, that there was a shift in practice that might be attributable to *GiR-LNS*.

When asked to determine to what extent their work with the Specialist Teacher increased their confidence about, and their understanding of, numeracy teaching, and their capacity to meet the learning needs of their students, about 40% of the classroom teachers replied *to a major extent* and about another 40% *to a moderate extent*. In 2003 and 2004 respectively, 82% and 79% of the numeracy classroom teachers attributed the source of ideas for enhancing their teaching of mathematics to *GiR-LNS*. Almost all these teachers reported that the *GiR-LNS* had had more, or much more, impact than other professional development they had had in the previous three years: this was confirmed by 96% of the principals in 2003 and 95% in 2004.

Scenario Results

A set of four scenarios was developed and administered in the classroom teachers' surveys to measure the impact of *GiR-LNS* on the assessment strategies used by numeracy classroom teachers. The scenarios asked teachers questions concerning the use of *First Steps in Mathematics Diagnostic Map*, number sub-strands, key understandings, diagnostic tasks, identifying "at-risk" students, and how to respond to their learning needs, in an attempt to assess teachers' professional knowledge as it is related to planning, teaching, and assessment. These scenarios were not responded to by 50 – 60% of the respondents in 2003 and by 30 – 50% in 2004, resulting in a high level of missing data. (These percentages are of the 45% and 42% returned surveys in 2003 and 2004, respectively.) The overall results of these scenarios suggest that the capacity of numeracy classroom teachers to select and develop diagnostic, formative, and summative student assessment strategies and instruments increased from 2003 to 2004. However, this conclusion needs to be treated with caution because of the high proportion of missing data and the lack of the ability to link the 2003 and 2004 data sets.

Principals' Views

When asked to judge the impact of *GiR-LNS* on the teachers' understandings of the curriculum, their ability to diagnose students' learning needs, their confidence in teaching mathematics, as well as the benefits from working with the Specialist Teacher, the principals rated all of them positively, with even higher mean scores in 2004 than in 2003. The influence of *GiR-LNS* in implementing a coherent whole school numeracy plan appears to be great, as 87% of principals reported this *to a moderate extent* or *to a major extent* in 2004, as opposed to 73% in 2003. In 2004, 72% (*to a moderate or major extent*) of principals reported that school results in WALNA testing had improved across the school, compared to 53% in 2003. Overall, the results indicate the principals' impressions that *GiR-LNS* has led to a range of outcomes in their schools. As well, principals reported that *GiR-LNS* had some level of impact on their own knowledge and understanding, and that this had increased by the second survey.

The most frequently listed facilitating factor for the *GiR-LNS* by principals was the general effectiveness of the Specialist Teacher, and the second was the support and cooperation of the whole school staff. Although reference to the training of the Specialist Teachers was limited, the emphasis on the effectiveness of the Specialist Teachers implies the effectiveness of the training provided for these teachers, as well as the

strength of their interpersonal skills and knowledge of numeracy content and pedagogy. The principals also identified two hindering factors: the lack of time for collaboration and staff resistance to working with the Specialist Teacher. The latter reason accounted for 11% of factors in 2003 and rose to 26% in 2004.

Sustainability

According to Specialist Teachers and numeracy classroom teachers, a wide range of teaching activities and professional collaboration brought about by the *GiR-LNS* are likely to continue in schools. According to principals, most schools appear to have plans in place to sustain changes to teaching practice brought about by the strategy. This can be interpreted to mean that the impact of the *GiR-LNS* was valued sufficiently highly to wish to sustain the model in some form.

Conclusion

It is clear that individual teachers and whole schools benefited positively by the *GiR-LNS* by focusing attention on either literacy or numeracy with the goal of improving the teaching and learning through this unique professional development model. While this evaluation of the model was focused on the early years of schooling, the findings suggest that *GiR-LNS* has applicability at all levels of schooling.