Teaching Math Effectively in Rural Manitoba isn't Rocket Science, or is it?

mRLC Spring 2021

Rural students in Manitoba can do math and they are getting better at it all the time. That statement might seem counterintuitive given what you have heard recently about Manitoba's poor success rate on international tests, but it is time to stop painting all students and educators in the province with the same brush. There are success stories when it comes to learning math and rural Manitobans need to be aware of the excellent teaching and learning happening in their own backyards. An improvement of 18% - 39% on students' math scores over a couple of years is worth examining further.

We know that students benefit if their teachers continue to improve their skills over their careers. Quality professional learning can make a difference. In 2011, the Manitoba Rural Learning Consortium (mRLC) was established as a cooperative to support rural school divisions in providing such a service. Being a small organization, the mRLC proved that it had the flexibility to be responsive and innovative when it came to best educational practices. Five years later when rural Manitobans became aware of an intensive professional learning program in Prince Edward Island (PEI) that was having success improving students' math skills; it was logical that they would ask how such a program could be adapted to the Manitoba context. As a result, many rural school divisions partnered with the mRLC to create the Numeracy Achievement Program (NAP).

Rural Manitoba's program has been carefully constructed based on lessons learned in PEI and by having Manitoba educators develop materials using existing Manitoba curricula. Current mathematics research is at the heart of the classroom delivery and common assessments are used to track progress. Local divisional facilitators lead this professional learning, frequently working with networks of teachers over a period of years. Principals are involved and support the classroom work back in their schools.

By the end of the first year of the program, student achievement gains were so dramatic that the school divisions pushed for more teachers to be involved. In the last five years, the program has expanded to Grades Four to Nine. To date (spring 2021) over 600 educators in 180 schools will have been part of the NAP, as well as their students.

You have to go back to the data to determine how well the program has worked. In the beginning before the program began, large cross-sections of rural students were given baseline assessments on the full Manitoba math curriculum for each grade level involved. In subsequent years, similar assessments were given at the end of each school year allowing comparison of the scores of students with teachers in the program to those initial baselines. The following numbers are based on the most recent report for all students in the program (2019), pre-COVID. After teachers had been in the program for two years, their students increased their scores by 39% in Grade 6 and 20% for Grade 9. Grade 7 and 8 teachers had only been in the program for one year at that point, but their students demonstrated improvement as well (29% for Grade 7 and 18% for Grade 8). Likewise, the program narrowed the gap between those who could not do math and those who could. More students were ready for the next grade level. In addition, the mRLC looked at the demand for the program and how effective NAP has been in continuing to build educator capacity. Many teachers state that being part of the program has been the most impactful professional learning of their careers.

Why does the program work? Few rural teachers have the luxury of exclusively being the math teacher. They are also the language arts teacher, the science teacher, the physical education teacher, etc., and they must keep up-to-date in every area. That amount of professional learning is no small feat if you want to minimize the amount of time that teachers are out of the classroom. The program is successful because teachers and coaches have made a commitment to prioritize learning new math pedagogy for the duration, believing that what they are learning is valuable. That value comes from the fact that the program's structure is not based simply on a one-day workshop. There is time to grow with excellent materials and learning, useful evidence to act upon, and follow-up between sessions. Those educators repeatedly practice,

analyze, and improve, with the opportunity to take risks. They are to be commended for their commitment, but student success is the ultimate reward.

Teaching math effectively may not be as complex as rocket science, but it may be just as challenging. There are no shortcuts when implementing a successful math program. Instead, many demands are put upon students, teachers, and their support systems. It is important to emphasize what an active role students have in our program. Not only are they doing math; they are learning how to determine which steps they need to improve on and how to do so. Those analysis skills will serve them well in the future. Only programs that really help students *learn math,* as well as *do math,* end up surviving.