Making Gains: Insights from Ontario School Boards with Consistent Improvement in EQAO Mathematics Achievement

Introduction

In summer 2023, the Ontario Ministry of Education announced Ontario's new Math Achievement Action Plan. The plan includes funding for school boards to address mathematics achievement through

- board math leads for each school board, with the responsibility not only to lead progress but also to report on and monitor school board math achievement.
- school math facilitators: educators with qualifications in mathematics to support work in classrooms for Grades 3, 6 and 9.
- support from the Ministry Math Action Team on achieving outcomes on key performance indicators and on the implementation of high-impact instructional practices.
- the identification of math priority schools, selected for extra support based on 2021–2022 EQAO mathematics performance for Grades 3, 6 and 9, with results in the lowest 20% of provincial achievement (Ontario Ministry of Education, 2024). Boards also had the ability to change the selected schools based on local needs and additional considerations or data.

Taken together, the key initiatives of the Math Achievement Action Plan have led to the implementation of numerous efforts by school boards to improve student mathematics performance. Against this backdrop, EQAO reached out to school boards across Ontario with substantial improvement in EQAO mathematics achievement to find out what practices they were employing through their own Math Achievement Action Plans and if they would be willing to share them. Fifteen school boards agreed to discuss what they've learned through the implementation of their plans and what they believe contributed to their improvement. This report describes the findings of these discussions categorized into seven overarching themes, with quotes and examples to illustrate each.

Method

As an initial step for this report, a review of mathematics achievement results from 2021–2022 to 2023–2024 for Grades 3, 6 and 9 was undertaken. A three-year span was chosen for this review to establish a clear pattern of change in mathematics performance as school boards implemented their Math Achievement Action Plans. The review revealed several school boards with substantial improvements in mathematics in one or more grades. EQAO then approached these school boards to discuss their results and what they identified as contributing school-board-related factors in student success. Superintendents, system leaders and other senior administrators from 15 school boards (two French-language and 13 English-language) in various regions of Ontario agreed to participate.

As illustrated by Table 1, the participating boards showed improvements in their mathematics achievement from 2021–2022 to 2023–2024.

Table 1. Percentage Point Change in Students Meeting Provincial Standard from 2021–2022 to 2023–2024

Assessment Results in Mathematics	Grade 3	Grade 6	Grade 9
Province (English- and French-language results combined)	3%	3%	2%
Participating school boards	8%	7%	3%

Classification of Interview Themes

Through the analysis of the interviews with participating school boards, EQAO identified patterns in how the boards approached the Math Achievement Action Plan and grouped them under seven themes: Use of a Data Discovery Process, Leveraging of Assessments, Innovative Approaches to Professional Development, Supports That Build Engagement, Collaborative Relationships, Targeted Approach to Student Achievement and Insightful Management of Resources. These themes highlight the systematic and coordinated manner in which boards with improvement in mathematics performance were undertaking their improvement planning to build momentum and effect change. Each of these themes will be explored in detail in the following sections, with examples and quotes that show how school boards took action that they feel contributed to their improved mathematics performance.

Findings

Theme 1. Use of a Data Discovery Process

One of the characteristics of highly effective school boards identified by Leithwood et al. (2016) is the tendency to use evidence to inform decision making. This theme also emerged in our discussions with school boards. The boards that participated were frank about their EQAO mathematics results being lower than desired. They did not describe their results in a way that tried to make them more acceptable, and they refrained from blame. Instead, they used data findings to build a clear and concise plan of action at the classroom level to improve mathematics performance. All interviewed school boards demonstrated transparency and a willingness to face challenges revealed by their data discovery process. Use of data from multiple sources, including EQAO results, report card marks, classroom observations, student and staff survey results, and data from classroom-based assessments revealed missing mathematical knowledge and skills in students and lower-than-expected engagement and confidence in mathematics.

One school board created student profiles using math assessments and other data sources. These profiles were used to track student progress through a spiralled curriculum, allowing educators to track skill development over time.

A school board said:

> "Sometimes when you get caught in a loop of generating data and stuff like that, it can become that the task of getting the data generated is the checkbox. You need to be seeing classroom level changes happening. You need to be getting feedback from teachers and from students that they're better able to tackle math as a result of it."

Theme 2. Leveraging of Assessments

As revealed in the previous section, classroom assessments were an important part of the data discovery process for school boards. Math facilitators, educators and administrators frequently conducted classroom assessments to identify gaps in students' mathematical understanding. The results were then leveraged immediately for use in the classroom to inform instruction and interventions for students at the individual level. The boards made strong connections to the mathematics curriculum and the Ministry's High-Impact Instructional Practices in Mathematics (Ontario Ministry of Education, 2020).

School boards also used assessments to allow students to practise problem-solving strategies and employed direct instruction to slow down the process of answering. For example, a board introduced the acronym "SLOWER," which encouraged students to **scan** the question, **listen** to the text, **open** tools, **work** the problem out, **enter** the answer and **review** it.

School boards also shared the value they found in gathering information from individual students in the classroom in order to develop class and school profiles. For example, in one board, a school administrator and a classroom educator would administer assessments together. They encouraged students to use whiteboards or paper while working through the questions to allow for learning conversations. After the assessment, both the educator and the administrator would look at the results to better understand student strengths and areas for improvement.

One school board said:

> "[Math facilitators] then use that data [from assessments] in order to support students to see who could use a little bit more assistance. What types of questions were they either missing pieces of or not understanding, and they worked individually with each of the schools in different ways. So, each classroom was very unique in how they took that information and used it to then try and help prepare students for the EQAO test."

Theme 3. Innovative Approaches to Professional Development

In our conversations, we encountered new and innovative approaches to professional development. Due to staffing concerns, the school boards included virtual options as well as offerings over shorter time frames and with higher frequency. This professional development was often based on research, but some boards also leveraged local on-the-ground knowledge. For example, educators who were having success in their classrooms were often asked to share their approaches with others. One school board created "How Do I" videos as an innovative approach to professional development, showcasing teachers who demonstrated expertise in various classroom strategies. These videos were then shared with principals in advance, allowing them to incorporate the content into staff meetings or other professional development.

Leithwood et al. (2016) highlight job-embedded professional development as a key aspect of effective school board practice. School boards frequently emphasized job-embedded professional development, particularly through math facilitators modelling instructional strategies in the classroom.

One school board said:

> "We had the teachers come together and look at student work together and talk about it, and they then devised next steps for their classroom using the High-Impact Instructional Practices."

Theme 4. Supports That Build Engagement

Rich curriculum and instructional supports were found in many of our discussions with school boards. These supports took numerous forms, but what stood out was how school boards were able to align their supports with classroom activities and engage their communities, often through family-friendly resources or events focused on mathematics.

For example, one board developed a mathematics guide for families that included a range of fun resources such as board games and online tools to reinforce and consolidate math learning in an engaging way. In another example, a school board's central team created a family math night kit that provided individual schools with games and tools to host family math nights. Another board hosted a central family math night that provided families with opportunities to learn about the curriculum, participate in hands-on math activities and engage in discussions with superintendents, senior leaders, school administrators, math facilitators, teachers and trustees. In all three cases, the school boards emphasized the importance of putting mathematics at the centre of conversations with families.

Theme 5. Collaborative Relationships

Most of the school boards in our study focused on the importance of relationship building, both with families and staff. The family math nights mentioned in the previous section helped foster collaboration, but we also found collaborative partnerships between senior administrators and school administrators, math facilitators and educators. Many superintendents made frequent visits to math priority schools, where they made themselves available to school staff. According to Dervarics et al. (2019), effective boards build collaborative relationships with staff. Specifically, boards pointed to the importance of the relationship between math facilitators and classroom educators and how the modelling of instructional strategies by facilitators in the classroom helped both educators and students further their mathematical understanding. The important commonality in these relationships was the focus on building trust, clear communication and a shared goal for improving achievement in mathematics.

One school board recognized the importance of building a network of learning with other school boards. This collaboration allowed them to share the "Marvels and Meltdowns" of their Math Achievement Action Plans. By discussing both successes and challenges, they could develop best practices for learning.

School boards said:

> "Our greatest accomplishment is to have created a safe, non-judgmental environment throughout the system … so we really worked on fostering the relationship, developing trust between the teams."
>
> "Even at the senior admin level, we are in the schools now, sitting in the classrooms and looking at how math is happening and all that is contributing to raising students' achievement in math."
>
> "We had coaches split between most of the identified priority schools last year, providing at-the-elbow coaching with teachers to co-plan, deliver lessons and determine next steps and needs. The coaches also provided support within the classroom, based on immediate needs, with intervention, support for students with larger gaps in understanding."

Theme 6. Targeted Approach to Student Achievement

School boards took a targeted approach to improving student achievement, with more focus on actions happening in the classroom and less on administrative details. This approach often took the form of reallocating time spent on administrative meetings to focusing on how to increase student mathematical knowledge and skills and discussing strategies that were working in classrooms. Building mathematical knowledge at the student level was planned and included discussion of next steps for individual students.

One school board emphasized their team approach, which included collaborative ownership of supporting student success. As they noted, "if I can just highlight the team approach and the ownership by everyone around the board to support student success. We're having a lot of conversations with principals around their leadership in the school, and how they can actually be participants in the data collection and monitoring of the plans."

Some boards said:

> "We focused on, how can I take this student and move them to the next spot, and how can I take them and move them a little bit further?"
>
> "So we targeted students, we targeted specific skills, and we targeted specific high-leverage strategies like small group instruction."

Theme 7. Insightful Management of Resources

The insightful management of resources to address different student and staff needs was also apparent in our school board discussions. This management involved the efficient use of resources and often critical thinking about their use. Specifically, resources and staff were coordinated to focus on a few key strategies or tools that were aligned to student and educator needs. According to Waters (2006), the insightful management of resources should also include monitoring, and the reduction of initiatives not aligned with board goals. School boards indicated that they were aware there was no "cure-all" that they could purchase that would solve all their concerns regarding mathematics achievement. Instead, they focused on meeting the different needs of students through quality instruction provided by professionals. As noted by a school board, "we see resources as tools to pivot for curriculum fidelity and building teacher capacity … we're not expecting your product to be the silver bullet, but we're expecting your product to help us on our journey to build capacity in the teachers we're working with."

Many boards indicated that they provided access to resources through internally shared electronic storage environments. For example, one board made mathematics-related resources linked to the pillars of their 100-minute math block available to educators in colour coded folders. These resources provided educators with a variety of activities to use for each portion of their math blocks, from social-emotional learning to fluency development to problem-solving.

Some school boards said:

> "The source we used that held more importance … was the feedback from teachers and from the math facilitators based on their experience with students and where they felt the greatest needs were."
>
> "We've changed our conversation around planning and about school supports, board supports to be action focused."
>
> "We are spending a lot more time with people on things to make sure we're actually changing practice."

Conclusion

The themes revealed here closely align with those found in the literature (e.g., Dervarics et al., (2019), Leithwood et al., (2011), Leithwood et al., (2016) and Waters et al., (2006)) and offer an informative look at some of the practices employed by school boards with substantially improved mathematics performance. A clear overarching theme that emerged through our discussions was the focus on changes happening at the classroom level. This theme included a strong team approach that encouraged collaboration and the sharing of ideas, resources and a vision of student success. The leveraging of classroom assessment results to identify student strengths and areas for improvement in mathematics was particularly noticeable in our conversations and, again, aligns with the classroom focus. As well, resources (both staff and material) were consistently prioritized for classrooms, with a shift from administrative details to a focus on time spent in classrooms.

EQAO would like to thank the school boards who participated in this research. Your dedication to improving student achievement in mathematics was not only evident in our discussions but also observable in your improved mathematics assessment results.

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