

Evaluation of NUMERACY INITIATIVES In Surrey Schools



September 2022 – June 2023

MESSAGE FROM SURREY SCHOOLS

Surrey Schools is located on the traditional, ancestral, and unceded territory of the ḡ ícəḡ (Katzie), ḡ ʷɑ:ḡłəḡ (Kwantlen), SEMYÓME (Semiahmoo) and other Coast Salish Peoples. It is B.C.'s largest school district where over to 12,300 employees serve more than 80,000 students in our diverse multicultural city. We have over 130 educational sites from early learning to adult education.

The Surrey School district is committed to continuous improvement and success of all students through implementation of evidence-informed practices that enhance student learning, inclusivity and equity of outcomes. We welcome and honour diversity while supporting students' holistic growth —mind, body and heart—a commitment captured in our welcome video.

Click the video on the right to watch our welcome video: Éy swayel – Bienvenue – Welcome to Surrey Schools



WELCOME FROM THE NUMERACY TEAM

The Surrey Schools Numeracy Team collaboratively works with – and learns from – teachers from Kindergarten to Grade 12. It is our privilege to be initiated into many different classrooms throughout Surrey. Our team supports schools, teams, and individual teachers by:

- Working closely with teachers pursuing numeracy inquiry questions.
- Providing district-wide after school workshop sessions that address Surrey Schools Priority Practices.
- Facilitating school-based professional learning through workshops, “lunch and learns”, book clubs, and more.
- Meeting with teachers about passions or challenges related to the teaching and learning of mathematics.
- Teaching or co-teaching lessons.

If you are interested in learning more about the numeracy initiatives or how we support school communities across the district, please visit our website: [Numeracy | Resources for Teachers | Surrey Schools ONE](#). We look forward to hearing from you!

Chris Hunter, Jessica Kyle, Marc Garneau

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NUMERACY IN SURREY SCHOOLS

Numeracy encompasses the knowledge, skills, behaviours, and dispositions that students need to use mathematics in a wide range of situations. Numeracy also involves students recognizing and understanding the role of mathematics in the world and having the capacities to use mathematical knowledge and skills purposely.

Mathematics Curriculum, Quality Assessment, and Diversity

Our **mathematics curriculum** aims to develop students' abilities to engage in mathematical competencies as well as their understanding of mathematical content. It encourages students to see math as a coherent connected whole composed of the two. Curriculum design involves creating learning experiences that meet students' needs and embed their interests. A well-designed mathematics curriculum allows all students to participate in and benefit from carefully chosen problems, tasks, and activities.

Quality assessment is an integral—and inseparable— part of instruction. It involves the ongoing gathering and analyzing of evidence so that teachers and students can determine next steps in student learning. Summative judgements are informed by



seeking correspondence between multiple sources of data (conversations, observations, products), not the averaging of points.



Diversity—of students' understandings, skills, experiences, and backgrounds—enriches the teaching and learning of mathematics. It is our job, as teachers, to provide all students with rich mathematical experiences and to help them see themselves as mathematicians with interesting and important ideas of their own. This is especially true for students belonging to groups that have traditionally been excluded from these opportunities.

District-Led Numeracy Activities

Numeracy Helping Teachers in our district are leaders in the development and implementation of research informed numeracy curriculum. The Helping Teachers facilitated thirty-two school-based and virtual sessions to provide continuous support and in-district training to our educators on a variety of topics, including fluency and skills, quality assessment practices, and use of specific online math resources.

Table 1. District-led numeracy sessions during the 2022-2023 academic year

LOCATION	MEETINGS, WORKSHOPS & INITIATIVES	# OF SESSIONS
District Education Centre, and Combined In-Person & Virtual Sessions	1. Assessment in Elementary Math	3
	2. Computational Fluency: Addition and Subtraction	1
	3. Computational Fluency: Multiplication and Division	1
	4. Exploring Indigenous Math	1
	5. Math Department Heads	5
	6. Numeracy Focus Schools Initiative**	3
	7. Place-Based Math Group	3
	8. Professional Book Club: Mathematizing Children's Literature*	4
	9. Routines for Mathematical Thinking: Computation	1
	10. Routines for Mathematical Thinking: Counting	1
	11. Routines for Mathematical Thinking: Representation	1
	12. Standards-Based Reporting (Secondary) Initiative**	1
Fully Virtual Sessions	1. Getting Started with Mathology.ca (Gr. 4-6)	1
	2. Getting Started with Mathology.ca (K- Gr. 3)	1
	3. Teaching with MathUP	1
	4. Teaching with Zorbit's	1
Professional Development Days	1. Summer Institute: Starting the Math Year off Right – Building a Community in which All Learners Belong (K-Gr. 2, Gr. 3-5, Gr. 6-12)	1
	2. Focus Day: Standards Based Math Assessment (Gr. 6-9)	1
	3. STA Convention – Polypad (online tool)	1
	TOTAL	32

* Professional Book Club: Mathematizing Children’s Literature a collaborative event with Literacy Helping Teacher.

**Participants of these initiatives were surveyed about their experiences

Evaluation of Two District-Led Initiatives

To inform planning and to continue to provide evidence-based numeracy support, the efficacy of two numeracy district-led sessions, both an elementary and a secondary initiative, were explored in the 2022-2023 academic year. The purpose of these evaluations were to understand the impacts of the numeracy initiatives on teacher practices. The following sections provide an overview of these initiatives, methodology, and results of the evaluations. Overall, positive impacts to teachers’ practices were observed after participation in both the Numeracy Focused School and the Standards-Based reporting in Mathematics initiatives.

NUMERACY FOCUSED SCHOOLS

The Numeracy Focused Schools Initiative supported elementary schools' collaborative inquiry teams, where elementary school teachers worked closely, onsite and on an ongoing basis, with a Numeracy Helping Teacher. This initiative was designed to support schools—or significant portions of schools' teaching staffs—towards *their* focus related to the teaching and learning of mathematics.

Initiative Overview

Thirty teachers representing ten elementary schools across the Surrey school district took part in the Numeracy Focused Schools initiative. The teachers formed elementary school-based teams to develop and identify: (1) a numeracy focus for their school, decided on (2) strategies to implement the focus within their schools, and (3) developed success criteria to ensure that what they are doing is making a difference. Collaborative groups provided feedback on their experiences with the initiative, including their comfort levels and their perceptions of growth and development within their students. In addition, at the end of the initiative, the collaborative elementary school-based teams provided their observations and descriptions on how they incorporate equity in their classrooms.

Methodology and Methods

To better understand teacher experiences related to the supports and resources offered through the Numeracy Focused Schools initiative surveys were administered and interviews were conducted. To measure pre- and post-initiative impacts on teachers' practices, teachers completed a survey prior to, and again immediately following, their participation in the initiative. The surveys included seven closed-ended questions and asked teachers to rate their comfort level and the extent to which they provided numeracy learning experiences for their students, as well as their perceptions of their students' learning on various mathematical competencies.



In addition, the surveys included open ended questions where teachers indicated what their school focus was for this initiative and how they incorporated equity in their classrooms. Furthermore, two interviews were conducted with a participating elementary school, these were informal in nature and the conversations that arose were recorded and provide further evidence of impacts on teachers' practices.

EVALUATION RESULTS

Overall, positive impacts to teachers’ practices, including their confidence levels as well as positive perceived increases in their student’s dispositions towards mathematics were observed after participation in the Numeracy Focused School initiative. The following sub-sections provides results from surveys and interviews conducted with participating school staff.

School’s Focus, Strategies, and Success Criteria

Nine collaborative school groups of three teachers (N = 27) identified a school focus for the Numeracy Focused Schools initiative. Thematic analysis identified the elementary school-based teams: (1) numeracy focus for their school, (2) strategies to implement the focus within their schools, and (3) their success criteria to ensure that what they are doing is making a difference.

Improving numeracy learning and skills, increasing equity and inclusion, and supporting positive student dispositions were the focus for the participating schools. Strategies that would be used to implement the school’s focus included various activities to support student leaning such as the use of establishing daily routines, use of open-ended questions, and exercises from a variety of pre-selected sources as well building upon student’s mathematical vocabulary.

Teachers identified their success criteria and that they would know they are making a difference by their student’s positive dispositions and motivation towards mathematics as well as through their students’ increased skills in numeracy and their own growth within their teaching practices including their confidence. Summarized results are presented in Table 2.

Table 2. Schools’ numeracy focus, strategies for implementation and success criteria

	THEMES	RESPONSES %	SAMPLE QUOTES
SCHOOL FOCUS	Improving Numeracy Learning and Skills	44%	<i>“Improving our students' ability to communicate, connect and reflect on their mental math strategies for addition.”</i>
	Increasing Equity and Inclusion	38%	
	Supporting Positive Student Dispositions	19%	
STRATEGIES	Activities to Support Student Learning	96%	<i>“We plan to establish daily routines with a variety of pre-selected sources (esti-mysteries, number talk images, open questions).”</i>
	Improved Numeracy Learning and Skills	4%	
SUCCESS CRITERIA	Increased Positive Student Dispositions	44%	<i>“Teachers understand what authentic math learning looks and sounds like, [and they] can select activities to elicit math thinking, [teachers] understand the strengths and next steps for each student, [and are] able to articulate to parents, [and] hold a parent math night.”</i>
	Students’ Numeracy Learning and Skills	32%	
	Teacher’s Growth in their Practices and Confidence	24%	

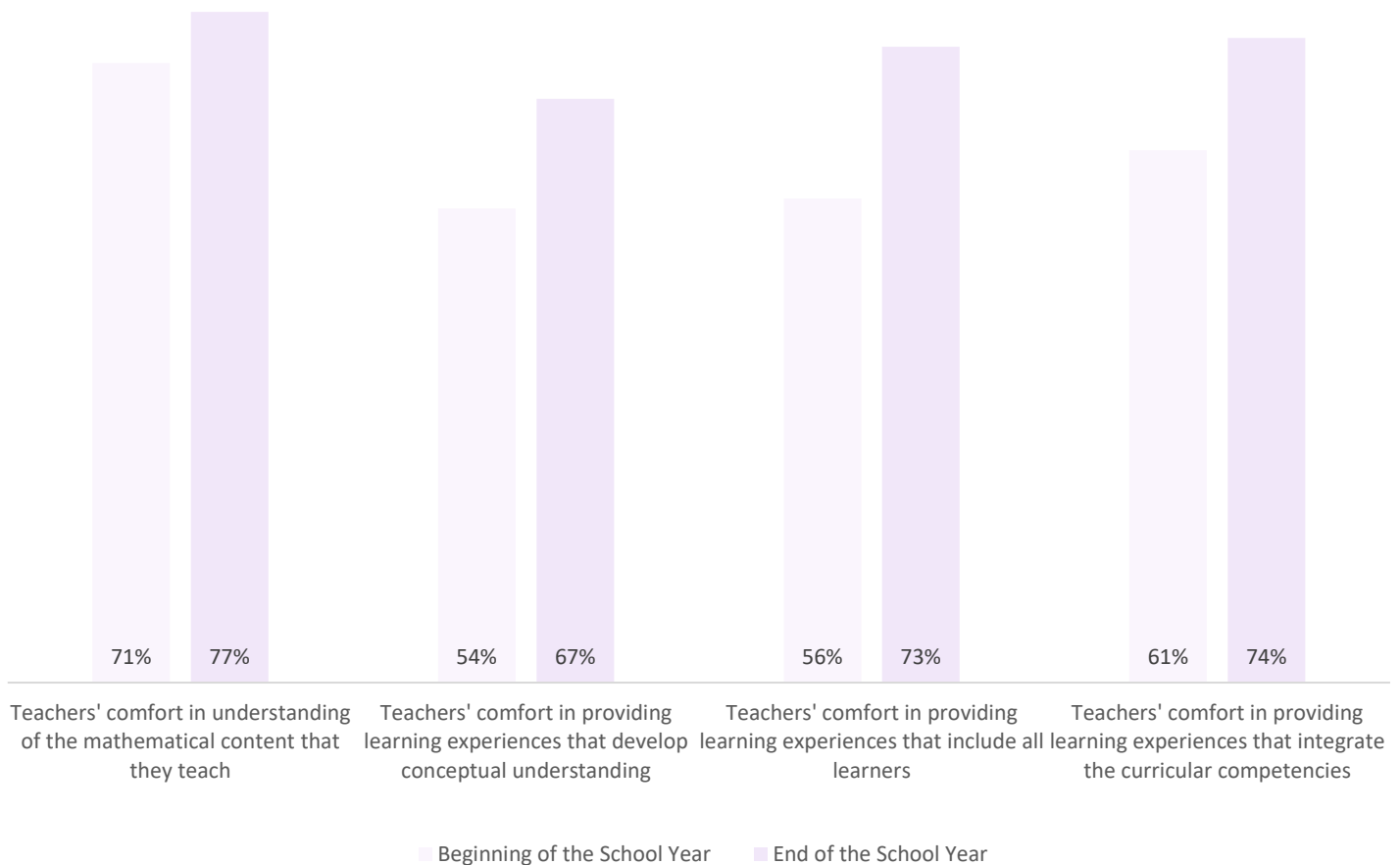
Teachers' Comfort Levels: Results from Surveys

The Numeracy Focused Schools survey included items that asked collaborate groups of three teachers across ten elementary schools (N = 30) to rate their level of: (1) understanding of the mathematical content they teach, (2) comfortability in providing learning experiences that develops their students' conceptual understanding, (3) comfortability in providing learning experiences that include all learners, and (4) comfortability in providing learning experiences that integrate the curricular competencies.

Results from the survey indicate that teachers who took part in the Numeracy Focused Schools initiative grew in their understanding and comfortability across all four items. At the end of the year, about eight in ten (77%) of teachers felt they were comfortable with their level of understanding of the mathematical content they teach.

The greatest improvement in teacher's comfortability was related to providing lessons and classroom experiences that include all learners, with over half (56%) of teachers feeling comfortable doing so at the beginning of the year, which increased to nearly three-quarters (73%) by the end of the year. These and additional results are provided in Figure 1.

Figure 1. Teachers' levels of comfortability with the mathematical content and in providing learning experiences that develop conceptual understanding, include all learners, and integrate curricular competencies



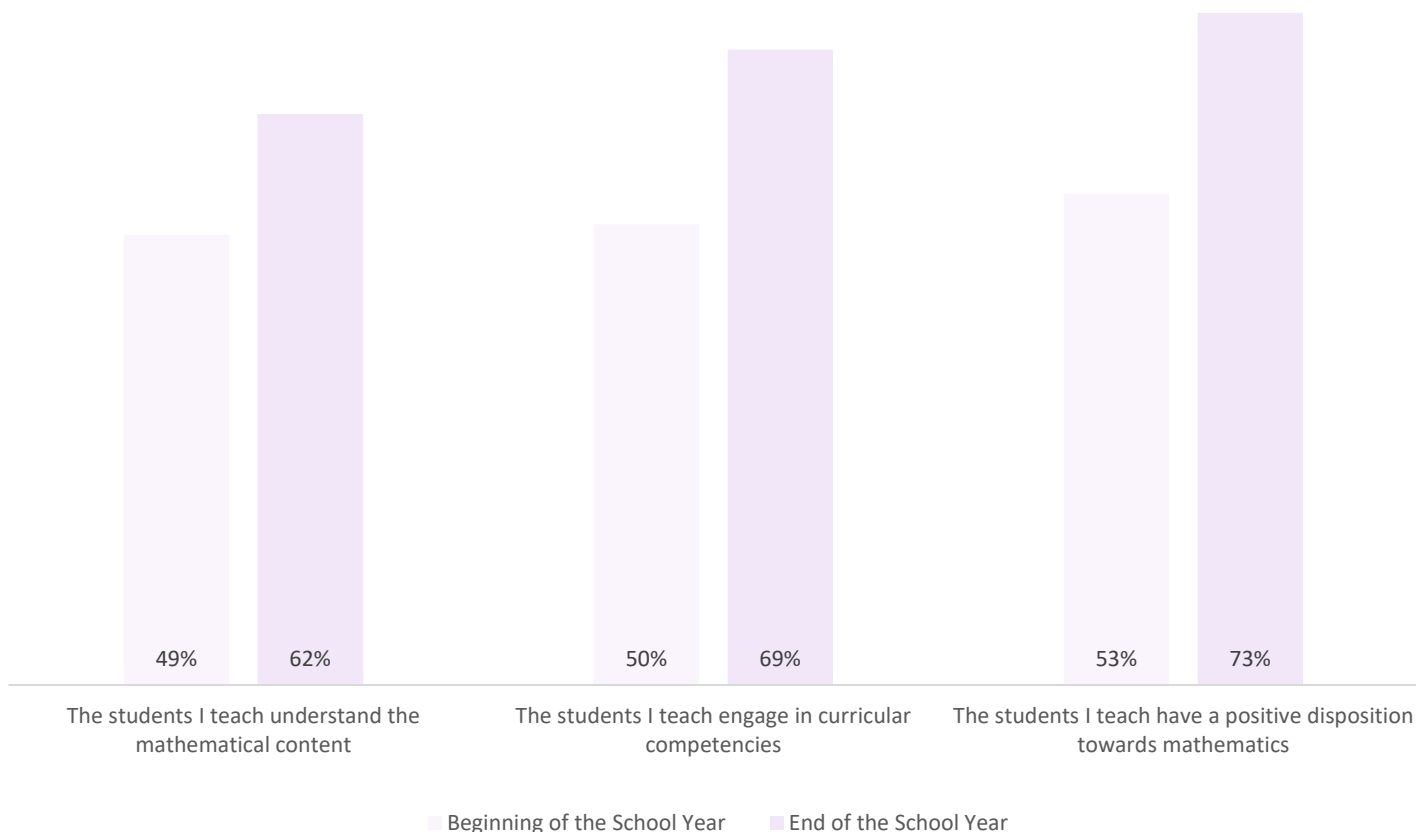
Students' Growth and Development in Mathematics

The Numeracy Focused Schools survey included items that pertained to teachers' perceptions of the extent to which their students demonstrated: (1) an understanding of the mathematical content, (2) their engagement in the curricular competencies, and (3) their students' disposition towards mathematics. Results from ten elementary schools comprised of collaborative groups of three teachers (N = 30) demonstrate increases over the past school year.

Results show teachers' perceptions of their students' development and growth in their understandings of the mathematical content, engagement in curricular competencies (in the doing of mathematics), and growth in students' dispositions towards mathematics has increased by the end of the school year.

The greatest improvement was seen in teacher's perceptions of their students' disposition towards mathematics, with half (53%) of teachers noticing a positive disposition towards math at the beginning of the year, which increased to nearly three-quarters (73%) by the end of the year. From the beginning to the end of the school year, 67% of elementary teachers indicated increased comfortability level in their students understanding of the mathematical content being taught in the classroom, while *all* teachers (100%) observed an increase in their students having a positive disposition towards mathematics at some point in the year. Results from survey completed at the beginning of the year and end of year are provided in Figure 2.

Figure 2. Teachers' perceived growth and development in their students' understanding, engagement, and disposition towards mathematics



Teachers' Experiences and Observations: Interviews

A Numeracy Helping Teacher conducted two interviews with one of the elementary schools that participated in the Numeracy Focused Schools initiative. Both interviews were informal and were conducted to gather further evidence of the teachers experiences within the district-led initiative.

One of the interviews involved a conversation with two participating teachers. These teachers were new to their teaching practices and the focus of this conversation was the growth that occurred within their teaching practices and the perceived growth in the mathematical learning of their students, as a result of support from the Numeracy Helping Teacher and participation within the district-led initiative. Within these conversations the teachers indicated that their teaching practices have improved, that they feel more certain and focused within their classrooms and that their students were visibly more engaged within their learning of mathematics.



I found that focusing more on critical thinking, on problem solving was something I needed to shift my attention towards, and I really found more clarity with this [initiative and], with working with [the Numeracy Helping Teacher].



- Grade 6 and 7 Elementary School Teacher

The Numeracy Helping Teacher and the participating elementary schools' administrator discussed the growth in confidence that they had both perceived within the teachers that participated in the Numeracy Focused Schools initiative by the end of the school year. In addition to the teachers' growth in confidence that they had both perceived, the school administrator indicated that the teachers participating in this initiative shared what they had learned with other teachers within their school. The teachers were not only pleased with their perceived growth within their students, but in addition to that the teachers are excited to continue with the numeracy activities and practices that had been introduced to them within this initiative.



The teachers were just absolutely thrilled to see how much more engaged the students were, how much more true math discussion was happening in the classes.



- Elementary School Administrator

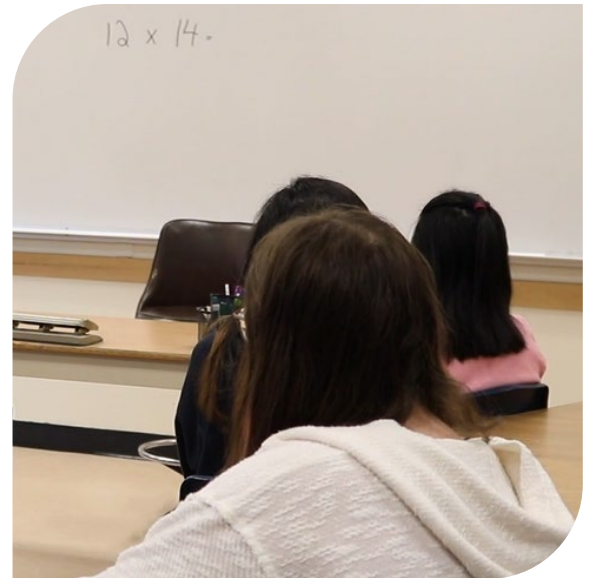
STANDARDS- BASED REPORTING

To better support, assess and evaluate what students know and can do within secondary mathematics, the Standards-Based Reporting in Secondary Mathematics initiative supported secondary schools in forming collaborative inquiry teams and explored ways to update their assessment practices. Targeted support was provided to Grade 8 and 9 teachers with the shift away from reporting on student learning utilizing letter grades and percentages to reporting on student learning with proficiency scales.

Initiative Overview

The Standards-Based Reporting in Secondary Mathematics supported twenty-one secondary school teachers representing eleven of our secondary schools in forming collaborative inquiry teams and within which they explored ways to update their assessment practices.

In addition to support with the shift away from reporting on student learning utilizing letter grades and percentages to reporting on student learning with proficiency scales, the secondary initiative supported teachers understanding of: (1) the standards-based assessment, (2) providing descriptive feedback to students and parents, (3) identifying learning goals, and (4) developing proficiency scales for both content and curricular competencies.



Methodology and Methods

Teachers who took part in the Standards-Based Reporting initiative were surveyed about their experiences with the initiative. To measure pre- and post- initiative differences, teachers completed a survey prior to, and again immediately following their participation in the initiative. The survey asked teachers to rate their comfort level and the extent to which they implemented a variety of learning and assessment practices, as well as their perceptions of their students' learning and growth in learning. Additionally, teachers indicated how participating in the initiative would cultivate growth in student learning, and how the initiative would help teachers foster their ability to assess student learning.

EVALUATION RESULTS

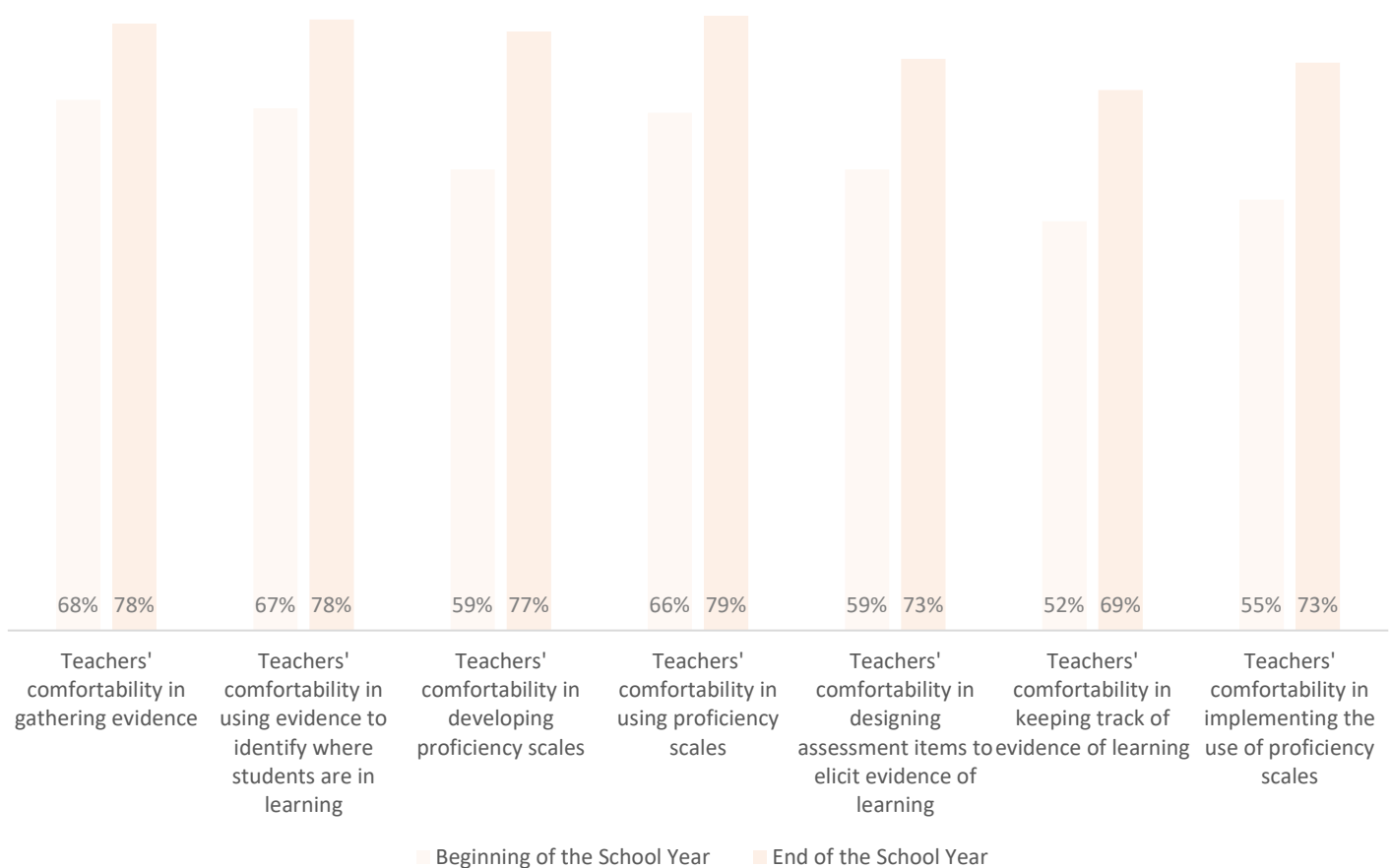
The intentions of the Standards Based Reporting initiative in Secondary Mathematics were realized as indicated within the teachers' responses and comments within the surveys. Growth was observed in teacher's confidence levels, in student's learning of and dispositions towards mathematics by the end of the school year, and in teachers' ability to assess their students' learning of mathematics. In addition, teachers have indicated that they have gained a greater awareness of their students' journey in learning, of where they are and how they can improve and grow in their learning of mathematics. The following sub-sections provides results from surveys conducted with participating school staff.

Teachers' Comfort Level in Assessments

The Standards Based Reporting in Secondary Schools survey included items that pertained to teachers' comfortability level with their understanding of, development of and use of assessments practices. The results from twenty-one secondary teachers (N = 21) representing eleven of our secondary schools demonstrate increased comfortability over the past school year in: (1) gathering evidence, not points, in relation to learning standards (2) using evidence to identify where students are in learning, (3) developing proficiency scales, (4) using proficiency scales, (5) designing assessments, (6) keeping track of evidence of learning, and in (7) implementing the use of proficiency scales, implementing the new reporting order in Math 8 and/or Math 9.

At the end of the year, almost eight in ten (78%) teachers felt they were comfortable gathering evidence of student learning. The greatest improvement in teachers' comfortability in assessments was found in both developing proficiency scales, as well as in implementing the use of proficiency scales. An 18% increase can be seen from the beginning of the year to the end of the year in teachers' feelings of comfortability in developing proficiency scales (an increase from 59% to 77%), and in implementing the use of proficiency scales (an increase of 55% to 73% by the end of the school year). These and additional results are provided in Figure 3.

Figure 3. Teachers' comfortability in their assessment practices including the use of proficiency scales

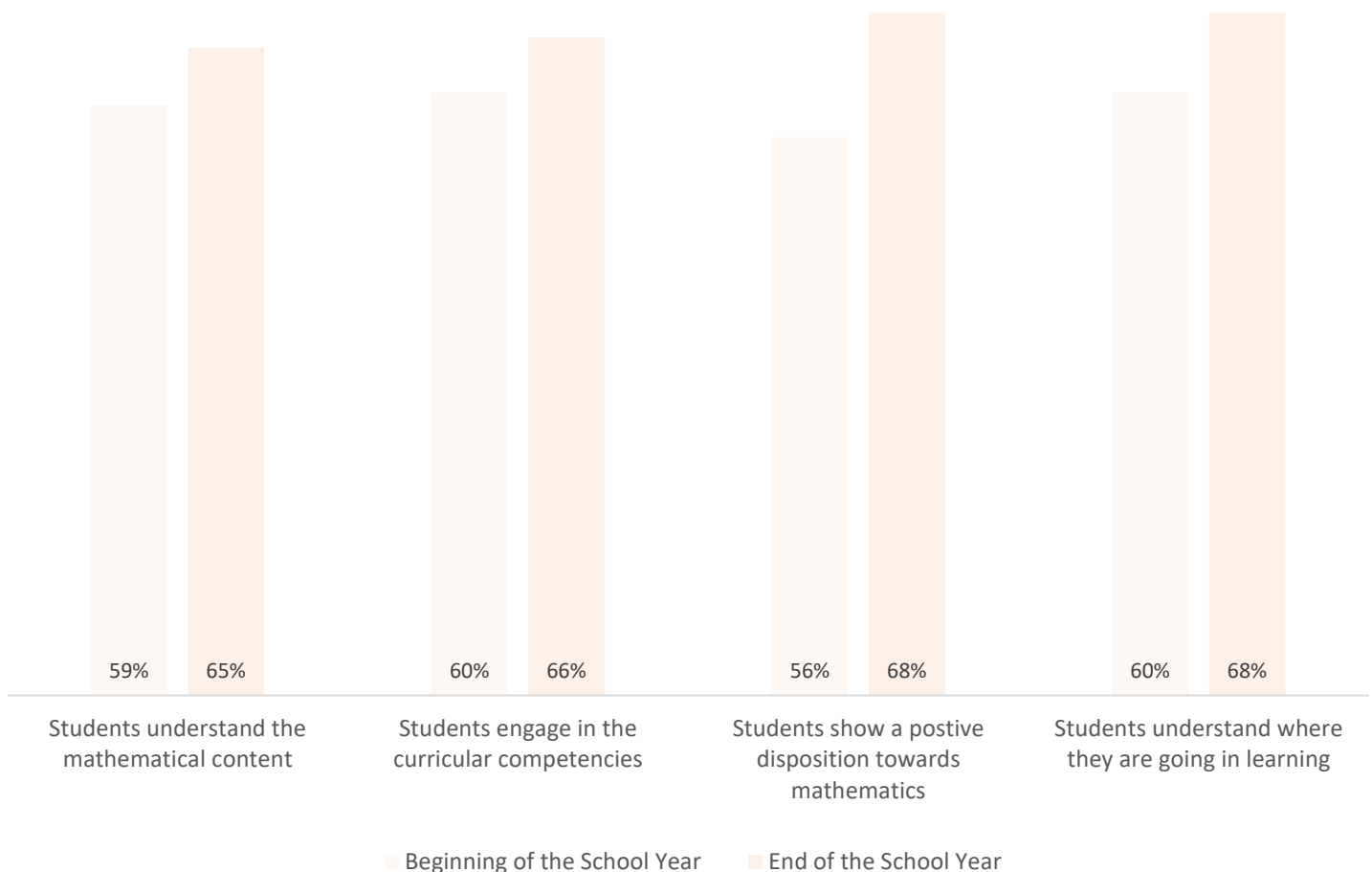


Students' Growth and Development

The Standards Based Reporting in Secondary Schools survey contained items that pertained to the secondary teachers' perception of growth within their students understanding of content, competencies and understanding of where the student is going in their learning. The results from twenty-one secondary teachers (N = 21) representing eleven of our secondary schools demonstrate that teachers have perceived growth in their students over the past school year in: (1) their students' understanding of the mathematical content, (2) their students' engagement including connecting and reflecting competencies, (3) their students' disposition towards mathematics, and (4) their students understand where they are going in their mathematical learning.

Results show that two-thirds (65%) of secondary teachers perceived that their students have a greater understanding of the mathematical content by the end of the year. The greatest improvement was seen in students gaining a more positive disposition towards mathematics with over half of teachers (56%) noticing a positive disposition towards mathematics at the beginning of the year, which increased to over two-thirds (68%) by the end of the year. These and additional results are provided in Figure 4.

Figure 4. Teachers' perceptions of their student's growth in numeracy



Teachers' Assessment of Student Learning

at the Beginning of the School Year

Eighteen secondary teachers (N = 18) from eleven of our secondary schools across the surrey school district provided their responses to how they hope that participating in the Standards Based Reporting in Secondary Schools initiative can foster their ability to assess student learning of mathematics.

Overall, teachers mentioned they hope to improve their assessment and teaching practices and anticipate making gains in their awareness of and alignment of student learning in mathematics. Teachers indicated that this will be an opportunity to not only learn directly about student assessments from this district-led initiative, but this is also an opportunity for teachers to challenge themselves and work with others across the district. Quotes and themes from teachers' responses are provided in Table 3.

Table 3. *Teachers expect that participation in the initiative will affect their ability to assess their student's learning of mathematics*

	THEMES	BEGINNING OF SCHOOL YEAR		SAMPLE QUOTES
		#	%	
ASSESSMENTS	Improved General Assessment Practices	21	38%	<i>"I hope to get better at designing the assessments and use those to fairly assess students."</i>
	Mentions of Proficiency Scales	4	7%	<i>"I would like to be able to define my proficiency scale for my learning goals. For example, what emerging, developing, proficient and extending looks like for each goal."</i>
TEACHING PRACTICES	Enhanced Teaching Practices	15	27%	<i>"To challenge our thinking and eliminate biases we currently have."</i>
	Communicating and Reporting on Student Learning	8	14%	<i>"I am looking for more efficient ways of teaching, assessing, and reporting student learning."</i>
AWARENESS & ALIGNMENT OF LEARNING	Better Awareness of Student Learning Journey	3	5%	<i>"[That students are] able to identify where they are at in math learning and how to progress/improve."</i>
	Fluency in Curricular Content, Competencies, Learning Standards & Goals	5	9%	<i>"I hope to gain fluency in the creation of learning standards with my department."</i>
TOTAL NUMBER OF MENTIONS		56		

Teachers' Assessment of Student Learning

at the End of the School Year

Twenty secondary teachers (N = 20) representing ten of our secondary schools across our district, provided their responses to how participating in the Standards Based Reporting in Secondary Schools initiative fostered their ability to assess student learning of mathematics at the end of the school year.

Responses provided by the teachers mentioned improvements in their general assessment practices, as well as with their teaching practices, which was their hope at the start of the initiative. Teachers' awareness of and focus on the student learning journey and including their fluency of and aligning their lessons and assessments to specific learning goals and competencies was realized by the end of the initiative as well. The themes that arose and sample quotes from all teachers' responses are provided in Table 4.

Table 4. Teachers' ability to assess their student's learning of mathematics due to participation within the initiative

	THEMES	END OF SCHOOL YEAR		SAMPLE QUOTES
		#	%	
ASSESSMENTS	Improved General Assessment Practices	20	24%	<i>"It allowed me to explore assessment of competencies alongside content as I was previously unsure of how to explicitly assess competencies."</i>
	Mentions of Proficiency Scales	7	9%	<i>"It has made more very aware of proficiency levels and exemplars for each learning goal at our school."</i>
TEACHING PRACTICES	Enhanced Teaching Practices	24	29%	<i>"Allowed me to feel more comfortable with [the] transition that is coming next year and pass that information along to my department members."</i>
	Communicating and Reporting on Student Learning	7	9%	<i>"This will make it easier to assess students and give both students and parents better feedback."</i>
AWARENESS & ALIGNMENT OF LEARNING	Better Awareness of Student Learning Journey	14	17%	<i>"Made me rethink how I want to design my assessments so students have a better understanding of where they stand."</i>
	Fluency in Curricular Content, Competencies, Learning Standards & Goals	10	12%	<i>"I have grown more at ease dissecting the content into discrete knowledge points, and directing specific questions towards different curricular competencies."</i>
TOTAL NUMBER OF MENTIONS		82		

Students' Growth in Mathematical Learning

at the Beginning of the School Year

Eighteen secondary teachers (N = 18) across eleven secondary schools provided their responses and comments to how participating in the Standards Based Reporting in Secondary Schools will cultivate growth in student learning of mathematics this school year. Teachers indicated that at the beginning of the initiative they hoped to have a clearer explanation of where their students are within their learning and where they should be heading towards within their individual learning journeys.

In addition, teachers hope that their students will focus more on their learning within mathematics and not focus as much on their grades. Furthermore, teachers hope that students will have a more positive outlook towards mathematics. Themes and sample quotes from teacher responses are available in Table 5.

Table 5. *Teachers' hope for their student's growth in mathematical learning*

	THEMES	BEGINNING OF SCHOOL YEAR		SAMPLE QUOTES
		#	%	
AWARENESS & ALIGNMENT OF LEARNING	Better Awareness of Student Learning Journey	19	40%	<i>"I hope that having more clear explanation of where the students are at in their learning and where they should be heading towards, would help them in their growth."</i>
	Fluency in the Curricular Content, Competencies, Learning Standards & Goals	9	19%	<i>"I hope the students will focus less on their grades and more on learning the materials."</i>
DISPOSITION	Supporting Students Positive Disposition Towards Math	10	21%	<i>"I would like to see more passion and in-depth learning among my students."</i>
TEACHING PRACTICES	Enhanced Teaching Practice	5	11%	<i>"I hope to learn how to give them a deeper understanding of concepts."</i>
	Mentions of Activities to Support Student Learning	4	9%	<i>"It is always nice to learn new ideas and techniques."</i>
TOTAL NUMBER OF MENTIONS		47		

Students' Growth in Mathematical Learning

at the End of the School Year

Twenty secondary teachers (N = 20) provided their responses and comments to how participating in the Standards Based Reporting in Secondary Schools had cultivated growth in student learning of mathematics this school year. Teachers indicated that at the beginning of the initiative they hoped that having more clear explanation of where the students are at in their learning and where they should be heading towards would help them in their students' growth and this was realized based on their responses after the initiative.

In addition to having a clearer picture of the student learning journey, teachers have learned new activities, ideas and techniques as a result of participation. Furthermore, teachers indicated that they have seen students display a more positive outlook towards their learning of mathematics, that they were more willing to make attempts and use those as opportunities to further their learning in numeracy. Themes and sample quotes are provided in Table 6.

Table 6. Teachers' indicated students learning of mathematics has grown in various ways

	THEME	END OF SCHOOL YEAR		SAMPLE QUOTES
		#	%	
AWARENESS & ALIGNMENT OF LEARNING	Better Awareness of Student Learning Journey	27	46%	<i>"Students are able to identify what they are capable of doing, types of questions and determine next steps to achieve higher proficiency."</i>
	Fluency in the Curricular Content, Competencies, Learning Standards & Goals	5	8%	<i>"I noticed that now my students don't focus on just on the test rather the learning goals that they need to improve on."</i>
DISPOSITION	Supporting Students Positive Disposition Towards Math	14	24%	<i>"Students embraced challenges and saw them as opportunities to learn and grow. Instead of avoiding difficult questions, they persevered."</i>
TEACHING PRACTICES	Mentions of Activities to Support Student Learning	8	14%	<i>"Students worked in small groups, and stronger students were responsible for helping everyone develop proficiency."</i>
	Enhanced Teaching Practice	5	8%	<i>"Participating in workshops and engaging in collaborative brainstorming sessions with fellow colleagues has been beneficial."</i>
TOTAL NUMBER OF MENTIONS		59		

EQUITY IN CLASSROOMS

At the end of the school year, both the Numeracy Focused Schools and Standards-Based Reporting initiatives enquired about equity within teacher's classrooms; about providing math lessons so that all students can access math learning at an appropriate level.

Nine out of ten (90%) of the thirty participating elementary and secondary teachers (N = 30) indicated that they have seen growth in equitable classrooms and access to mathematical learning. Results of perceived growth in equitable access to mathematical learning are presented in Figure 5.



Figure 5. Teachers' perceived growth in terms of students accessing math learning at an appropriate level



Ensuring Equitable Classrooms

Both elementary and secondary initiatives have shown commonalities in how teachers are ensuring students have equitable access to learning.

Providing multiple entry points into math lessons so that all students can access math learning at an appropriate level is one of the components of how teachers are ensuring equity in their classrooms in both elementary and secondary classrooms.

In addition, the participating secondary teachers indicated that improvements in general assessment practices can further ensure equitable classrooms and access to mathematical learning.



Table 9. *Elementary and secondary teachers ensure equitable classrooms through various means*

ELEMENTARY & SECONDARY			SAMPLE QUOTES
THEMES	#	%	
Creating and Providing Multiple and Accessible Entry Points	32	35%	<i>“By providing various activities and questions from low floor to high ceiling, including use of open-ended tasks and questions - to ensure that all levels of learners have opportunities to engage in the content and lessons.”</i>
Providing Various Activities to Support Student Learning	23	25%	<i>“Providing different problem-solving strategies and methods, projects connected to personal goals, values and experiences, as well as use of peer or small groups and hands on activities, manipulatives and other activities.”</i>
Supporting Positive Student Dispositions	23	25%	<i>“Encouraging student voice and fostering a safe environment where students feel valued and encouraged to participate, where students are motivated to learn, to not give up and to feel comfortable taking risks.”</i>
Enhanced Teacher Practice, including Resources and Teaching Supports	13	14%	<i>“Being mindful of the diversity of our learners within the classroom and leverage the supports received from their education assistants and learning support teachers and colleagues.”</i>
SECONDARY THEME			
Improved General Assessment Practices			<i>“I tried to be as equitable as possible by providing students multiple opportunities for assessment, as well as various assessment types (assignments, projects, small quizzes, tests).”</i>

sample Participant Responses from the STANDARDS-BASED REPORTING Initiative...



Students embraced challenges and saw them as opportunities to learn and grow. Instead of avoiding difficult questions, they persevered. Students also embraced mistakes and feedback, as there were growth opportunities. They understand that making errors is a normal part of the learning process, which helps them identify areas for improvement. They celebrated growth and asked fewer questions about their percentage. Students worked in small groups, and stronger students were responsible for helping everyone develop proficiency. As everyone knew what developing looked like, their goal was clear, and students could work towards it.



– Math 11 & Pre-Calculus and Calculus 12 teacher



Participating in workshops and engaging in collaborative brainstorming sessions with fellow colleagues has been beneficial. Through the implementation of proficiency scales, my students gain a clearer understanding of the specific knowledge points they need to master and areas where improvement is required. This approach facilitates tracking of their learning progress and empowers them to take ownership of their own educational journey.



– Math 9 & 10 teacher

APPENDICES

APPENDIX A: Numeracy Focused Schools Survey

To inform planning and support, we would like to ask you some questions about your teachers' experiences and your students' learning in mathematics. This is a pre-survey, meaning that it will be used in conjunction with a post-survey to measure growth over the year. Please know that we are not evaluating your teams teaching practices. So that personal anonymity is maintained, your responses will be summarized along with those of others. Thank you for your participation.

[Pre- and post- surveys closed-ended questions]

For the teachers involved in the project, how comfortable do they feel about:

All 3 of you will have differences, so try to come up with an overall picture for your team.

Scale from 1 (not at all comfortable) to 10 (completely comfortable)

1. Understanding the math that they teach?
2. Providing learning experiences that include all learners?
3. Providing learning experiences that develop conceptual understanding?
4. Providing learning experiences that integrate the curricular competencies?

To what extent do your students:

Answer in terms of the students you would be supporting through this project.

Scale from 1 (not at all) to 10 (completely)

5. Develop a deep understanding of the mathematical content they are learning?
6. Engage in the doing of mathematics (i.e. curricular competencies)?
7. Have a positive disposition towards mathematics?

[Pre- survey open-ended questions]

Your School's Focus

8. What have you identified as your focus in this project?
9. What are some strategies you intend to implement to support this focus?
10. How will you know that what you are doing is making a difference? (i.e. success criteria)

[Post-Survey closed and open-ended questions]

11. How much growth has there been this year in terms of providing multiple entry points into math lessons so that all students can access math learning at an appropriate level?

Scale from no growth, a little growth, moderate growth, to a lot of growth

12. Please describe how you have been able to incorporate equity into your mathematics classrooms this school year. Please include any challenges you have experienced, and any supports you feel you would need to better integrate equity-based practices in your classroom.

APPENDIX B: Standards-Based Reporting Survey

To inform planning and support, we would like to ask you some questions about your teaching experiences and your students' learning in mathematics. Please know that we are not evaluating you or your teaching practices. So that personal anonymity is maintained, your responses will be summarized along with those of others. Thank you for your participation.

[Pre- and post-surveys closed-ended questions]

At this point in time, how comfortable do you feel about:

Scale from 1 (not at all comfortable) to 10 (completely comfortable)

1. How to gather evidence, not points, in relation to learning standards?
2. How to use evidence to identify where students are at and what's next in their learning?
3. How to *develop* proficiency scales?
4. How to *use* proficiency scales?
5. How to design assessment items to elicit evidence of learning?
6. How to keep track of evidence of learning?
7. Implementing the new Reporting Order in Math 8 and/or 9?

At this point in time, to what extent do your students:

Scale from 1 (not at all) to 10 (completely)

8. Develop a deep understanding of the mathematical content they are learning?
9. Engage in the doing of mathematics (i.e., curricular competencies)?
10. Have a positive disposition towards mathematics?
11. Understand where they are at in their learning and what comes next?

[Pre- and post-surveys open-ended questions]

General Reflections

12. How do you hope/How did participating in this project foster your ability to assess student learning of mathematics this year?
13. How do you hope/How did participating in this project cultivate growth in student learning of mathematics this year?

[Post-survey closed and open-ended questions]

Equity

14. How much growth has there been this year in terms of providing multiple entry points into math lessons so that all students can access math learning at an appropriate level?

Scale from no growth, a little growth, moderate growth, to a lot of growth

15. Please describe how you have been able to incorporate equity into your mathematics classrooms this school year. Please include any challenges you have experienced, and any supports you feel you would need to better integrate equity-based practices in your classroom.

APPENDIX C: Thematic Analyses Theme Descriptions

Descriptions of themes that had emerged as a result of thematic analyses of the open-ended questions within the Standards-Based Reporting in Secondary Mathematics are provided below.

THEME	DESCRIPTION (WHAT IT ENTAILS)
Activities to Support Student Learning	Activities, content, or tools that support and further student learning. These activities provide opportunities for all students to find success and build confidence as mathematicians, no matter where they are currently within their learning journeys.
Better Awareness of Student Learning Journey	The awareness of the teacher or student understanding of where the student is at, and where they need to go in their learning journey. Further to this, the acknowledgement that a journey includes many steps, to identify not only where they are within their journey, but as well as the awareness of what the student should target to proceed on their learning journey, or to reach the next proficiency.
Communicating Student Learning	Teachers interesting in learning more about and what is expected within the new K-12 Student reporting Policy (specifically grade 8/9s reporting with proficiencies). As well as teachers looking for methods of recording and communicating student learning to inform their practice and to relay where the student is at in their learning, to both student and caregiver.
Creating and Providing Multiple & Accessible Entry Points to all Levels of Learners	To incorporate equity into their classrooms, teachers indicate their use of multiple entry points within their assessments, lessons, classwork, and activities to support the inclusion and entry point of all students, no matter where they are within the mathematical learning and proficiency.
Enhanced Teaching Practice	Teachers wanting to further their skills and deepen their teaching practice in a general way. Further, the hope for teachers to learn from and share ideas with colleagues or helping teachers.
Fluency in Curricular Content, Competencies, Learning standards and Goals	Teachers hope to gain fluency in the creation of learning standards and learning goals and intentionally incorporating the curricular competencies to ensure that students are meeting the content and competencies outlined by the Ministry.
Improved General Assessment Practices	The hope or the implementation of the teacher for improving overall assessment practices. Specifically, the use of more types of assessments, or the use of improved forms of assessments including assessments that are aligned towards the curricular competencies.
Supporting Positive Student Dispositions	Students developing a positive mindset toward mathematics. This includes students developing confidence in themselves, and as a result taking risks.
Use of Proficiency Scales	Teachers wanting to have a better understanding of how to use proficiency scales in their classrooms. Specifically, teachers wanting to create and use proficiency scales clearly and in a way that supports student learning and development.



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