



## MEMORANDUM

March 7, 2023 Regular  
Board Meeting

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**TO** Board of Trustees

**FROM** Shauna Boyce, Superintendent

**ORIGINATOR** Scott Johnston, Associate Superintendent

**RESOURCE** Shaye Patras – Division Principal, Numeracy and Achievement

**GOVERNANCE POLICY** Board Policy 1: Division Foundational Statements  
Board Policy 2: Role of the Board  
Board Policy 12: Role of the Superintendent

**ADDITIONAL REFERENCE** BP 1: Vision, Foundational Statements  
BP 2: Education Planning and Programming  
*Education Act: 19-23, 33, 196-197*

**SUBJECT** **NUMERACY REPORT**

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### PURPOSE

For information. No recommendation required.

### BACKGROUND

The Board is charged with the responsibility of providing, for its students and their parents, an education system organized and operated in the students' best interests. It exercises this responsibility through setting of local educational policy and the wise use of resources. An ongoing focus on numeracy education and intervention aligns to the Provincial Government's grant for unfinished learning (learning loss) and supports our students' success and well-being.

### REPORT SUMMARY

This Numeracy Report provides an overview of the numeracy intervention processes currently in place across the Division. The report includes current results reporting to support an understanding of the requirement for intervention.

Administration would be pleased to respond to any questions.

SJ:kz



**PARKLAND**  
SCHOOL DIVISION

## Instructional Services: Numeracy Report

March, 2023

Presented to the Board of Trustees, March 7, 2023

Scott Johnston, Associate Superintendent, Education and System Services

Resources: Shaye Patras, Division Principal, Numeracy and Achievement

*Our Students Possess the confidence, resilience, insight and skills required to thrive in, and positively impact, the world.*

### BACKGROUND

In alignment with our numeracy goals, Parkland School Division's Mission and Values state:

*"We assure supportive learning environments, meaningful experiences and healthy relationships that create opportunities to develop resilience, to gain diversity in perspectives and to achieve enduring success. We value learning opportunities that are purposeful, essential, relevant, authentic and responsive. We value excellence in achievement."*

Additionally, ensuring effective programming and improving pedagogy are identified priorities within Parkland School Division.

*"Student programming and continual improvement of teaching practices continues to be a priority for PSD. The Division is proud to offer diverse programs to students because that's how learning comes alive for them. Programs showcase the breadth of the work. The depth of our work gets recognized in our attention to pedagogy."*

Throughout the 2021-2022 school year, the Instructional Services department continued to focus on building the numeracy skills of our students and the pedagogical practices of our teachers. Parkland School Division added the role of Numeracy Facilitator, Mrs. Kelli Holden, to the Instructional Services team in the Spring of 2022. The focus of the work with respect to Numeracy remains:

- Supporting the instructional leadership of our administration to implement purposeful numeracy intervention programming;
- Utilizing diagnostic screens effectively to inform programming;
- Preparing Parkland School Division early years teachers (Kindergarten - Grade 3) for the implementation of the new Mathematics program of studies for the 2022-2023 school year. Professional learning sessions focused on:
  - Examining the structure of the new curriculum (i.e. Organizing Idea, Guiding Question, Learning Outcome, Knowledge, Understandings, Skills and Procedures);
  - A comparison of the current curriculum with the new curriculum (i.e. curriculum mapping); and
  - Grade specific professional learning on the topic of Number as the foundation for Numeracy;
- Supporting administration as strong stewards of our resources with Learning Loss Funding through:
  - Identifying the students who have significant gaps in their numeracy understanding, through the use of the Early Years Interview;
  - Placing identified students on *Learning Trajectories* to inform programming;
  - Implementing targeted, purposeful numeracy intervention in a small group, pull-out setting; and
  - Measuring the learning growth of these students to determine effectiveness of programming and to inform future programming.

## THE CURRENT STATE OF NUMERACY IN PARKLAND SCHOOL DIVISION

### Utilizing Data to Inform Practice and Programming

During the 2021-22 school year, Instructional Services worked with schools to complete the following numeracy assessments:

PSD implemented the *Early Years Interview* for students in grades 1-3 who were deemed to be “at risk,” based on teacher assessment data and classroom observations.

Data, provided by the Early Years Interview, identified the students achieving below grade level and where, on the Learning Trajectories, they could be placed. Our data collection informed our intervention programming.

These students comprised the “Numeracy Learning Loss” cohort. The number and percentage of total grade level students can be found in the following table.

Numeracy Learning Loss Students Served 2021-22 and 2022-23 by Number (#) and Percentage (%)		
Grade	2021-2022	2022-2023
Grade 1	223 (37%)	TBD
Grade 2	236 (31%)	202 (30%)
Grade 3	265 (33%)	212 (31%)
Grade 4	Not Assessed	267 (39%)

Our Grade 1 “to be determined” (TBD) is a result of numeracy screens having been completed in mid-January throughout Parkland School Division and Alberta. Data from these assessments was not available at the time of this report.

Our Grade 4 “Not Assessed” indicates that Grade 4 students were not part of the learning loss initiative in 2021-22.

Summary of Numeracy Intervention Results (2021-2022)   Months Growth					
Grade	Subitization	Compare/Order	Counting	Addition/Subtraction	Average Overall
1	12	8	7	10	9
2	11	13	7	9	10
3	10	14	8	9	10

The data provided in the previous tables highlights two important points. First, the percentage of students being served through the learning loss initiative decreased year over year for the grade 1 and 2 cohorts from 2021-22 to 2022-23. With 37% of grade 1 students in 2021-22 being identified as at risk and achieving below grade level in 2021-22 and only 30% of that same cohort having been identified as at risk and achieving below grade level in their grade 2 year of 2022-23.

Notably, the grade 3 cohort of 2021-22 consisted of 33% of students being identified as at risk and achieving below grade level and this rose to 39% of that same cohort being identified as at risk and achieving below grade level in 2022-23 (as grade 4 students). We anticipate that this increase has contributory factors, including the different screens used in 2021-22 (Early Numeracy Interview) and 2022-23 (Alberta Education Numeracy Screens).

Also notable is that while all Grade 1-4 students completed screens in 2022-23 based on the new Math program of studies, they received instruction in 2021-22 using the previous program of studies. Students identified as at risk and achieving below grade level in 2021-22, based on the *Early Years Interview*, were identified as such based on the *Learning Trajectories*. Students identified as at risk and achieving below grade level in 2022-23 were identified through provincially established norms based on data gathered from the implementation of the Alberta Education Numeracy Screens.

2021-2022: Math Intervention/Programming Instrument (MiPi) for Grades 2 through 10				
Grade	Percentage (%) of students who:			Top 2 Box (May Require, Require)
	<u>Do Not Require Attention</u>	<u>May Require Attention</u>	<u>Require Attention</u>	
2	63.5	20.3	16.2	36.5
3	39.1	27.9	33.0	60.9
4	24.1	27.7	48.2	75.9
5	25.9	31.6	42.4	74.0
6	28.6	30.7	40.8	71.5
7	25.6	22.6	51.8	74.4
8	27.9	24.1	48.0	72.1
9	23.5	20.2	56.3	76.5
10	14.2	17.1	68.7	85.8

2022-2023: Math Intervention/Programming Instrument (MiPi) for Grades 2 through 9		
Grade	Percentage (%) of students who:	
	<u>Do Not Require Attention</u>	<u>Require Attention</u>
5	35.8	64.2
6	49.6	51.4
7	13.7	72.3
8	13.5	76.5
9	43.4	56.6

Grade 10 data cannot be accurately compared, as Term 2 MiPi data was not available at the time this report was created.

The 2021-22 school year saw Parkland School Division Schools implement the MiPi from grades 2-10 inclusive, in addition to the Early Years Interview for students in grades 1-3 who were deemed “at-risk” by classroom teachers based on in class observations and assessments.

During the 2022-23 school year, Alberta Education mandated Numeracy Screens for all students in grades 1-4. As a result of this mandate, Parkland School Division schools implemented the *Alberta Education Numeracy Screen* in grades 1 through 4 and the MiPi in grades 5 through 10.



The Division experienced a decrease in the percentage of students as “Requiring Attention” year-over-year in the grade 4, grade 5 and grade 8 cohorts. We experienced a very slight increase in the percentage of students identified as “Requiring Attention” in the grade 6 and grade 7 cohort.

The “May Require Attention” standard was not used in 2022-2023.

## Alberta Education Screen | October, 2022

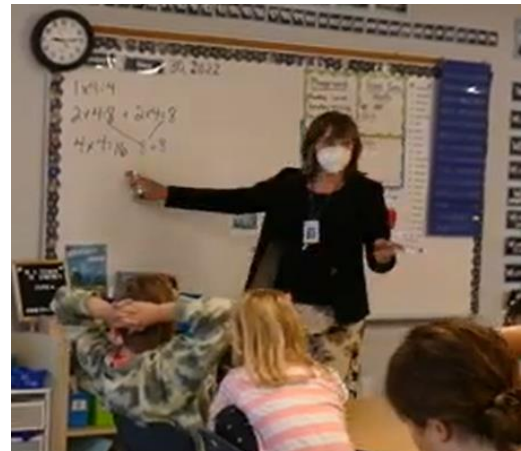
The Alberta Education Numeracy Screens, for students in grades 1 through 4, assessed students’ conceptual understanding of the Mathematical concepts of:

- Comparing Numbers
- Writing Numbers
- Numbers on the Number Line
- Number Facts Addition
- Number Facts Subtraction
- Ordering of Numbers
- Equations (grade 3&4 only)
- Number Facts Multiplication (grade 4 only)
- Calculation Addition (grade 4 only)
- Calculation Subtraction (grade 4 only)

Numeracy Screening Assessments (English)			
Grade	Number (#) and Percentage (%) of Students:		Not Available
	<u>At Risk</u>	<u>Not at Risk</u>	
2	232 (29%)	564 (70%)	5 (1%)
3	200 (25%)	586 (74%)	7 (1%)
4	266 (33%)	525 (65%)	13 (2%)
Numeracy Screening Assessments (French Immersion)			
2	36 (33%)	54 (50%)	18 (17%)
3	37 (35%)	69 (65%)	0
4	14 (19%)	57 (78%)	2 (3%)
Note: “Not Available” refers to students who did not finish the assessment			

It is important to note that the norms used to identify students as “At Risk,” based on the Alberta Education Numeracy Screens, were developed by Alberta Education and were based on the current cohorts of students in each grade level (1-4). As a result of this process, some of the norms applied to subtests could be considered quite low.

For example, the Number Facts Subtraction subtest (provided to students in the second grade) identified “At Risk” students as those who answered 0 to 2 of 39 questions correctly. Students who correctly answered 3 to 39 questions were identified as “Not At-risk”. Students in grade 2 who achieved an overall score of 0 to 28 out of 100 were deemed to be “At-Risk” while those scoring 29 to 100 were categorized as “Not At-risk”.



## Provincial Achievement Test Results

MATH 6 - WRITTEN IN ENGLISH											
		PARKLAND SCHOOL DIVISION					ALBERTA				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Participation	Student Enrolled	815	885	NA	NA	908	51,486	54,778	NA	NA	56,019
	Students Writing	768	851	NA	NA	826	49,753	49,753	NA	NA	47,909
	Students Writing (%)	94.2	96.2	NA	NA	91.0	90.8	90.8	NA	NA	85.5
Results Based on Number Enrolled	Acceptable Standard (%)	69.6	66.7	NA	NA	61.1	72.5	72.5	NA	NA	64.1
	Standard of Excellence (%)	6.9	10.2	NA	NA	7.8	15.0	15.0	NA	NA	12.6
	Below Standard (%)	24.7	29.5	NA	NA	29.8	18.3	18.3	NA	NA	21.4
Results Based on Number Writing	Acceptable Standard (%)	73.8	69.3	NA	NA	67.2	79.8	79.8	NA	NA	75.0
	Standard of Excellence (%)	7.3	10.6	NA	NA	8.6	16.6	16.6	NA	NA	14.8
	Below Standard (%)	26.2	30.7	NA	NA	32.8	20.2	20.2	NA	NA	25.0
<b>Based on Students ENROLLED:</b>							<b>PSD</b>		<b>ALBERTA</b>		
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-8.5		-8.4		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+0.9		-2.4		
<b>Based on Students WRITING:</b>											
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-6.6		-4.8		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+1.3		-1.8		

The summary for the number of students “enrolled” includes all students; those who are absent or excused will factor in as a grade of zero. Based on the number enrolled, Parkland School Division experienced a similar decline in achievement from pre-pandemic levels, and we closed our gap to the province at the standard of excellence.

MATH 9 - WRITTEN IN ENGLISH											
		PARKLAND SCHOOL DIVISION					ALBERTA				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Participation	Student Enrolled	770	666	NA	NA	846	46,603	46,764	NA	NA	32,890
	Students Writing	723	614	NA	NA	745	41,359	41,612	NA	NA	27,331
	Students Writing (%)	93.9	92.2	NA	NA	88.1	88.7	89.0	NA	NA	83.1
Results Based on Number Enrolled	Acceptable Standard (%)	57.0	53.9	NA	NA	50.4	59.2	60.0	NA	NA	53.0
	Standard of Excellence (%)	10.5	12.6	NA	NA	13.9	15.0	19.0	NA	NA	16.7
	Below Standard (%)	36.9	38.3	NA	NA	37.7	29.5	29.0	NA	NA	30.1
Results Based on Number Writing	Acceptable Standard (%)	60.7	58.5	NA	NA	57.2	66.7	67.4	NA	NA	63.7
	Standard of Excellence (%)	11.2	13.7	NA	NA	15.8	16.9	21.4	NA	NA	20.1
	Below Standard (%)	39.3	41.5	NA	NA	42.8	33.3	32.6	NA	NA	36.3
<b>Based on Students ENROLLED:</b>							<b>PSD</b>		<b>ALBERTA</b>		
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-6.6		-6.2		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+3.4		+1.7		
<b>Based on Students WRITING:</b>											
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-3.5		-3.0		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+4.6		+3.2		

Similar to the achievement for grade 6, our grade 9s experienced a similar decline from pre-pandemic levels, and closed the gap at the standard of excellence.

MATH 9 – KNOWLEDGE AND EMPLOYABILITY											
		PARKLAND SCHOOL DIVISION					ALBERTA				
		2018	2019	2020	2021	2022	2018	2019	2020	2021	2022
Participation	Student Enrolled	12	12	NA	NA	35	2,049	2,190	NA	NA	1,746
	Students Writing	12	10	NA	NA	33	1,739	1,912	NA	NA	1,425
	Students Writing (%)	100.0	83.3	NA	NA	94.3	84.9	87.3	NA	NA	81.6
Results Based on Number Enrolled	Acceptable Standard (%)	83.3	41.7	NA	NA	62.9	57.4	59.6	NA	NA	55.3
	Standard of Excellence (%)	8.3	8.3	NA	NA	11.4	13.6	13.2	NA	NA	11.1
	Below Standard (%)	16.7	41.7	NA	NA	31.4	27.5	27.7	NA	NA	26.3
Results Based on Number Writing	Acceptable Standard (%)	83.3	50.0	NA	NA	66.7	67.6	68.3	NA	NA	67.8
	Standard of Excellence (%)	8.3	10.0	NA	NA	12.1	16.0	15.1	NA	NA	13.6
	Below Standard (%)	16.7	50.0	NA	NA	33.3	32.4	31.7	NA	NA	32.2
<b>Based on Students ENROLLED:</b>							<b>PSD</b>		<b>ALBERTA</b>		
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-20.4		-4.3		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+3.1		-2.1		
<b>Based on Students WRITING:</b>											
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)							-16.6		-0.5		
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)							+2.1		-0.2		

Knowledge and Employability Math 9 includes a small sample size of students (35, or 4.3% of the grade 9 population). Given the small sample, the year-to-year averages may differ considerably (each students’ progress contributes to 3% of the Division’s total performance).

### Instructional Services - Our Strategic Plan to Improve Student Learning

Our assessments and baseline data indicate that the following key areas for focus are required:

#### School-Based Interventions

- Fall planning meetings, established with school administration and Instructional Services in order to examine MiPi data and improve School Based Numeracy Plans;
- Follow up meetings, as required, to examine Alberta Education numeracy screen data and revise planning;
- Mid-Point meetings (January – February) to examine Provincial Achievement Data (PAT) and revise School Based Numeracy Plans accordingly;
- Ongoing support for the implementation of the New Alberta Education *Math Program of Studies* for Kindergarten - Grade 3; notably,
  - Numeracy facilitation and professional development sessions to all grade 1-3 teachers and Numeracy leads (ongoing);



- Collaboration with French Immersion administrators and numeracy leads to examine data, to review pedagogical practices and to analyze screens and/or diagnostics. Translation of the Early Years and Middle Years Interviews supports this work.
- Professional Development and support for the Numeracy Lead teacher in every school, including:
  - Ensuring Alberta Education Screens are implemented successfully;
  - Leading pedagogical shifts in classrooms for mathematics;
  - Assisting with data analysis; and
  - Exploring the role of diagnostics to appropriately program for all students
- Professional Development for teachers, based on their grade level and need, beginning with research-based training, followed by modeling lessons and “at-elbow” support for teachers working on their pedagogical craft
- Furthering early years teachers understanding of the [Early Learning Trajectories in Mathematics](#) and how to use this to inform programming;
- Revision and Implementation of the [Early Years Interview](#);
- Professional Development and Implementation of research based instructional practices to support Numeracy Intervention programming, notably:
  - Small Group Numeracy Instruction,
  - Counting Collections,
  - Choral Counting,
  - Number Line/Clothesline Math,
  - Number Talks, and
  - Push in Numeracy Intervention
- Implementation of Building Thinking Classrooms as a model for instruction in middle years and high school classrooms.

