



MEMORANDUM

March 5, 2024
Regular Board Meeting

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 <i>Education Act: 19-23, 33, 196-197</i>
SUBJECT	NUMERACY REPORT

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. Additionally, targeted professional development for Mathematics curriculum updates remain significant.

REPORT SUMMARY

This Numeracy Report provides an overview of the numeracy intervention processes and professional development 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



INSTRUCTIONAL SERVICES: NUMERACY REPORT

MARCH, 2024

Presented to the Board of Trustees, March 5, 2024

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

The work of the Instructional Services team directly aligns with the Vision, Mission, Values and Priorities of Parkland School Division. Specifically, Parkland School Division's Vision states that:

"Our students possess the confidence, resilience, insight and skills required to thrive in, and positively impact, the world."

Additionally, our Mission ensures that:

"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."

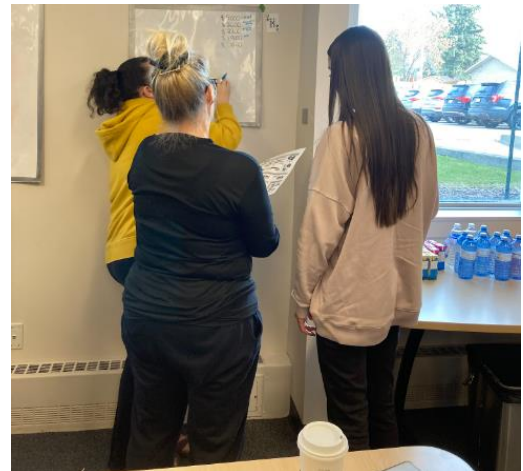
Our work supports Parkland School Division Values of:

"Learning opportunities that are purposeful, essential, relevant, authentic and responsive and Excellence in Achievement"

As an identified Priority within the Parkland School Division, Programming and Pedagogy are also a focus of the Instructional Services team.

"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."

In alignment with Parkland School Divisions Mission, Vision, Values and Priorities outlined above, the Instructional Services team has worked towards advancing numeracy skills among students and supporting teachers in implementing effective instructional practices.



Staff attending numeracy professional development at the Centre for Education.

Key areas of focus and initiatives from the 2022-23 school year to present include:

- Increasing student achievement as measured by Standardized Tests (PATs, DIPs) and Screens;
- Utilizing data to inform instructional practices and professional learning to ensure targeted interventions are tailored to students' needs;
- Improving Pedagogical Practices within Classrooms including a focus on small group instruction as a Tier 1 Intervention;
- Increasing the efficacy of middle years teachers in implementing small group instruction;
- Building the capacity of school-based Numeracy lead teachers;
- Supporting the instructional leadership of our administration to oversee and implement purposeful numeracy intervention programming within classroom and pull out (as requested);
- Supporting Parkland School Division Kindergarten - Grade 6 teachers for the implementation of the new Mathematics program of studies for the 2023-24 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);
 - Comparing an understanding of the current curriculum with the new curriculum (i.e. curriculum mapping);
 - Utilizing grade specific professional learning on the topic of Number as the foundation for Numeracy; and
 - Exploring and using resources such as *MathUp*, *Gizmos*, *Idello* and others.
- 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 Numeracy Screen;
 - Aligning this data with the Mathematical Learning Progressions
 - 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 Instructional Services team implemented purposeful changes to align with PSD goals. For the 2023-24 school year, the team welcomed Dr. Tracy Onuczko as an additional facilitator, complementing existing facilitators Kelli Holden and Division Principal Shaye Patras.

We maintain close collaboration with school administration and teachers to ensure alignment with school needs. As part of this effort, we refined the screens and diagnostics utilized to enhance support for our schools, a topic elaborated on in subsequent sections of this report.

NUMERACY DATA TO INFORM PRACTICE

During the 2022-23 school year, Instructional Services worked with schools to complete the following numeracy assessments:

Alberta Education Numeracy Screening Assessment Grades 1-4

Parkland School Division Grade 1-4 teachers administered the Alberta Education Numeracy Screening Assessment to all students in October 2022 and May 2023 (Grade 1 students administered in January 2023 and May 2023).

Alberta Education required numeracy screening for funding, and replaced the locally developed *Early Numeracy Interview*, used in 2021-22, to identify students who may qualify for learning loss funding.

PSD Numeracy Screen Results 2022-23					
Grade	Number of Students Assessed	Number/% of At-Risk Students October 2022	Number/% of At-Risk Students May 2023	Average number of months behind grade level at time of initial assessment*	Average number of months gained at time of final assessment
1	865	249/28.7%	211/24.3%	8.5	5.7
2	928	263/28.3%	224/24.1%	9.4	6.1
3	934	237/25.3%	206/22.0%	10.1	8.5
4	924	278/30.0%	254/27.4%	12.3	10.7

*Note: A school year is considered as 10 months, for the purpose of this data.

Based on the data in the table above, several observations can be made.

1. We continue to see progress in our ability to reduce the number of students who are identified as at risk through teachers' programming in classrooms and through pull out interventions (where available);
2. While students' achievement remains behind their chronological grade level, they are catching up based on the interventions being implemented; and
3. We continue to have significant work to do to close the gap for our students' lagging numeracy skills.

It is important to note that the norms established by Alberta Education that were used to identify students who are at risk set a very low level of achievement as outlined in the table below.

Alberta Education Numeracy Screen Norms June 2022-23		
Grade	At Risk Test Score (Sep 22)	At Risk Test Score (Jun 23)
1	0-41	0-54
2	0-28	0-42
3	0-34	0-49
4	0-36	0-48

While implementation of numeracy screens was initially intended to serve as a way to address "learning loss" as a result of COVID, in Parkland School Division we recognize that these screens provide a much greater opportunity for all students and teachers.

By assessing all students in grades 1-4 with the numeracy screen in both the September and June administrations of the 2022-23 school year, teachers were able to target their planning and instruction for all students, not just those identified as "At Risk" and within the bottom 25th percentile of students in the province. Specific attention on targeted interventions for those students who were identified as "at risk" can be complimented by a focus on more

“universal” in class instructional strategies to address learning gaps that may be applicable to an entire class of students.

Grade 1-4 Students Not at Risk in September 2022, but At Risk in June 2023	
Grade	Number of Students
1	48
2	49
3	56
4	46

As discussed above, the data represented in the table above was not available prior to the 2022-23 school year.

While our efforts to support our students identified in the bottom 25th percentile yielded positive results for those students, we are now aware that a small number of our students who were not identified as At-Risk on autumn assessments later fell into the bottom 25th percentile in the June administration and, therefore, entered the “At Risk” cohort. This observation resulted in an increased focus on identifying those students who may be in the 26th - 40th percentile and supporting them as necessary.

With significant provincial attention and funding, the development of screening intervention techniques continues to improve. While this presents a challenge for analyzing year-over-year data, the main purpose of the numeracy screen is to identify, for teachers, those students who require increased interventions.

Math Intervention Programming Instrument (MiPi) Grades 5-9

The 2022-23 school year saw a change to the screens being implemented in Parkland School Division Schools. Previously (2021-22) all students in grades 2-10 completed the MiPi as the primary numeracy screen. With the mandatory implementation of the Alberta Education Numeracy Screen for students in grades 1-4 in 2022-23, Parkland School Division teachers implemented the MiPi only to students in grades 5-9 (Students in grade 10 did complete the MiPi at the beginning of term 1 and term 2 to support programming but do not complete the MiPi at the end of the term so that data is not available).

September '22 Math Intervention/Programming Instrument (MiPi) Grades 5 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

In order to accurately measure the growth of students writing the MiPi a cohort comparison model is outlined in the table below. This allows us to follow a group of students (e.g. the grade 6 cohort from 2022-23 as grade 7 students in 2023-24) over time.

Cohort Comparison MiPi Gr 6-9 Sept 2022 to Sept 2023			
Cohort Grade	% of Students Requiring Attention September 2022	% of Students Requiring Attention September 2023	% Change
6 to 7	58.8	64.3	+5.5
7 to 8	68.3	60.9	-7.4
8 to 9	66.3	74.2	+7.9

Data comparison for the grade 5 to 6 student cohort is not available as Parkland School Division transitioned to the Elk Island Numeracy Screen in grades 1-6 for the 2023-24 school year. Schools reviewed MiPi results for grade 5 students in September 2022 and June 2023 to measure student numeracy growth of that specific cohort.

The data in the table above indicates mixed results. It is concerning that we saw a 5.5% increase in students who require attention in the grade 6 to 7 cohort and a 7.9% increase in students requiring attention in the grade 8 to 9 cohort. Alternatively, we saw a 7.4% decrease in the students requiring attention in the grade 7 to 8 cohort. It is difficult to determine causal factors for this data given that this is the first year in which we have used a cohort comparison model. As such, this remains an area that we will continue to monitor and explore with our schools.

PROVINCIAL ACHIEVEMENT TEST RESULTS

MATH 6 - WRITTEN IN ENGLISH							
<i>Note: no tests written in 2020-2021</i>		PARKLAND SCHOOL DIVISION			ALBERTA		
		2019	2022	2023	2019	2022	2023
Participation	Student Enrolled	885	908	947	54,778	56,019	52,551
	Students Writing	851	826	891	49,753	47,909	44,458
	Students Writing (%)	96.2	91.0	94.1	90.8	85.5	84.6
Results Based on Number Enrolled	Acceptable Standard (%)	66.7	61.1	70.1	72.5	64.1	65.4
	Standard of Excellence (%)	10.2	7.8	14.9	15.0	12.6	15.9
	Below Standard (%)	29.5	29.8	24.0	18.3	21.4	19.2
Results Based on Number Writing	Acceptable Standard (%)	69.3	67.2	74.5	79.8	75.0	77.4
	Standard of Excellence (%)	10.6	8.6	15.8	16.6	14.8	18.8
	Below Standard (%)	30.7	32.8	25.5	20.2	25.0	22.6
Based on Students ENROLLED:						PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+3.4	-7.1
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						+4.7	+0.9
Based on Students WRITING:							
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+5.2	-2.5
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						+5.2	+2.2

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 an increase in achievement in both the number of students at the Acceptable Standard and at the Standard of Excellence from pre-pandemic levels. Additionally, we exceeded the Provincial Average at the acceptable standard and significantly narrowed the gap to the province at the standard of excellence.

MATH 6 - WRITTEN IN FRENCH							
<i>Note: no tests written in 2020-2021</i>		PARKLAND SCHOOL DIVISION			ALBERTA		
		2019	2022	2023	2019	2022	2023
Participation	Student Enrolled	86	99	106	4210	4201	3921
	Students Writing	86	94	104	4128	4045	3686
	Students Writing (%)	100	94.9	98.1	98.1	96.3	94.0
Results Based on Number Enrolled	Acceptable Standard (%)	55.8	62.6	71.7	82.7	77.5	78.0
	Standard of Excellence (%)	12.8	8.1	8.5	18.1	15.2	17.6
	Below Standard (%)	44.2	32.3	26.4	15.3	18.8	16.0
Results Based on Number Writing	Acceptable Standard (%)	55.8	66.0	73.1	84.4	80.5	83.0
	Standard of Excellence (%)	12.8	8.5	8.7	18.4	15.8	18.8
	Below Standard (%)	44.2	34.0	26.9	15.6	19.5	17.0
Based on Students ENROLLED:						PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+15.9	-4.7
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						-4.3	-0.5
Based on Students WRITING:							
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+15.9	-1.4
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						-4.1	+0.4

MATH 9 - WRITTEN IN ENGLISH							
<i>Note: no tests written in 2020-2021</i>		PARKLAND SCHOOL DIVISION			ALBERTA		
		2019	2022	2023	2019	2022	2023
Participation	Student Enrolled	666	846	846	46,764	32,890	55,447
	Students Writing	614	745	763	41,612	27,331	46,587
	Students Writing (%)	92.2	88.1	90.2	89.0	83.1	84.0
Results Based on Number Enrolled	Acceptable Standard (%)	53.9	50.4	58.6	60.0	53.0	54.4
	Standard of Excellence (%)	12.6	13.9	14.8	19.0	16.7	13.5
	Below Standard (%)	38.3	37.7	31.6	29.0	30.1	29.6
Results Based on Number Writing	Acceptable Standard (%)	58.5	57.2	65.0	67.4	63.7	64.7
	Standard of Excellence (%)	13.7	15.8	16.4	21.4	20.1	16.0
	Below Standard (%)	41.5	42.8	35.0	32.6	36.3	35.3
Based on Students ENROLLED:						PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+4.9	-5.6
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						+2.2	-5.5
Based on Students WRITING:							
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						+6.5	-2.7
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						+2.7	-5.4

Based on the number enrolled, Parkland School Division experienced an increase of 4.9% of Grade 9 students achieving the acceptable standard and an increase of 2.2% of students achieving the standard of excellence. Parkland School Division students exceeded the province at the acceptable standard and at the standard of excellence.

MATH 9 - WRITTEN IN FRENCH							
<i>Note: no tests written in 2020-2021</i>		PARKLAND SCHOOL DIVISION			ALBERTA		
		2019	2022	2023	2019	2022	2023
Participation	Student Enrolled	60	75	69	2930	2296	3444
	Students Writing	60	69	66	2862	2172	3310
	Students Writing (%)	100	92.0	95.7	97.7	94.6	96.1
Results Based on Number Enrolled	Acceptable Standard (%)	61.7	44.0	49.3	78.9	71.4	71.7
	Standard of Excellence (%)	16.7	14.7	5.8	28.1	23.9	20.8
	Below Standard (%)	38.3	48.0	46.4	18.7	23.2	24.4
Results Based on Number Writing	Acceptable Standard (%)	61.7	47.8	51.5	80.8	75.5	74.6
	Standard of Excellence (%)	16.7	15.9	6.1	28.8	25.3	21.6
	Below Standard (%)	38.3	52.2	48.5	19.2	24.5	25.4
Based on Students ENROLLED:						PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						-12.4	-7.2
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						-10.9	-7.3
Based on Students WRITING:							
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)						-10.2	-6.2
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)						-10.6	-7.2

Based on the number enrolled, Parkland School Division experienced a decrease of 12.4% of students at the acceptable standard and a 10.9% decrease of students achieving the standard of excellence. While the province also saw decreases in these measures, they were not as significant as within Parkland School Division. This evaluation resulted in an increased focus on interpreting data analysis of the Provincial Achievement Results within our French Immersion Schools.

MATH 9 – KNOWLEDGE AND EMPLOYABILITY							
<i>Note: no tests written in 2020-2021</i>		PARKLAND SCHOOL DIVISION			ALBERTA		
		2019	2022	2023	2019	2022	2023
Participation	Student Enrolled	12	35	42	2,190	1,746	1,815
	Students Writing	10	33	32	1,912	1,425	1,480
	Students Writing (%)	83.3	94.3	76.2	87.3	81.6	81.5
Results Based on Number Enrolled	Acceptable Standard (%)	41.7	62.9	59.5	59.6	55.3	52.7
	Standard of Excellence (%)	8.3	11.4	14.3	13.2	11.1	11.3
	Below Standard (%)	41.7	31.4	16.7	27.7	26.3	28.8
Results Based on Number Writing	Acceptable Standard (%)	50.0	66.7	78.1	68.3	67.8	64.7
	Standard of Excellence (%)	10.0	12.1	18.8	15.1	13.6	13.9
	Below Standard (%)	50.0	33.3	21.9	31.7	32.2	35.3
Based on Students ENROLLED:						PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)						+17.8	-6.9
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)						+6.0	-1.9
Based on Students WRITING:							
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2018)						+38.1	-3.6
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2018)						+8.8	+1.1

Knowledge and Employability Math 9 includes a small sample size of students (42, or 4.9% of the grade 9 population). Given the small sample, the year-to-year averages may differ considerably.

DIPLOMA EXAMINATION RESULTS

Math 30-1						
<i>Note: no exams written in 2020-2021</i>	PARKLAND SCHOOL DIVISION			ALBERTA		
	2019	2022	2023	2019	2022	2023
Students Writing	172	91	173	18,945	8,491	19,344
Diploma Exam Acceptable Standard (%)	89.0	81.3	84.4	77.8	64.5	71.4
Diploma Exam Standard of Excellence (%)	37.8	18.7	24.3	35.1	23.2	29.2
School Awarded Acceptable Standard (%)	97.1	100	98.3	96.2	95.4	96.1
School Awarded Standard of Excellence (%)	51.2	72.5	55.5	51.3	51.1	53.9
					PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)					-5.6	-6.4
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)					-13.5	-5.9

It is important to note that due to the COVID pandemic, Diploma exams were not administered in April and June 2020. Additionally, Diploma Exams were optional during the 2020-21 school year. Finally, Diploma exams were not administered in January 2022.

Based on the students writing the Math 30-1 Diploma exam, Parkland School Division saw a 5.6% decrease in the number of students who achieved the acceptable standard from pre-pandemic levels. This result appears to align with data from the province, which saw a 6.4% decrease in the same measure. Additionally, Parkland School Division observed a 13.5% decrease in the number of students achieving the standard of excellence, which was significantly higher than the 5.9% decrease in the provincial cohort.

Math 30-2						
<i>Note: no exams written in 2020-2021</i>	PARKLAND SCHOOL DIVISION			ALBERTA		
	2019	2022	2023	2019	2022	2023
Students Writing	223	185	226	14,012	7,409	13,974
Diploma Exam Acceptable Standard (%)	86.5	77.3	85.4	76.4	62.5	71.5
Diploma Exam Standard of Excellence (%)	17.9	22.2	16.4	16.6	12.0	15.3
School Awarded Acceptable Standard (%)	94.6	91.9	93.8	94.2	94.4	93.9
School Awarded Standard of Excellence (%)	25.1	32.4	23.9	28.3	29.8	29.1
					PSD	AB
Acceptable Standard: Improvement (+) or Decline (-) from pre-pandemic (2019)					-1.1	-4.9
Standard of Excellence: Improvement (+) or Decline (-) from pre-pandemic (2019)					-1.5	-1.3

Parkland School Division saw a 1.1% decrease in the number of students who achieved the acceptable standard on the Math 30-2 Diploma exam as compared to pre-pandemic levels. Despite this decrease, we continue to exceed the provincial average by 13.9% on this measure. Additionally, Parkland School Division saw a 1.5% decrease in the number of students achieving the standard of excellence which closely mirror the provincial decrease of 1.3%.

INSTRUCTIONAL SERVICES – EXPANDING NUMERACY THROUGH OUR WORK

Based on the data outlined throughout this report, the work of the Instructional Services team in the area of Math continues to evolve.

School-Based Numeracy Plans

- Instructional Services established and implemented Fall planning meetings with each school's administration and Instructional Services team members in order to examine available data and develop a numeracy plan to address areas for growth within each school;
- Monthly school based numeracy meetings take place with Instructional Services facilitators, school based numeracy leads, school administration and the Division Principal (when necessary) to monitor progress on the numeracy plan and to make adjustments where appropriate. Follow up meetings, as required, to examine numeracy screen data and to inform planning take place as requested.

New Curriculum Implementation

Ongoing support for the implementation of the New Alberta Education *Math Program of Studies* for teachers in Kindergarten - Grade 3 as they enter year 2 of implementation in addition to working with teachers in Grades 4-6 who are in year 1 of their new Math curriculum. Instructional Service strategic implementation for improvement included:

- Numeracy facilitation and professional development sessions to all grade 4-6 teachers and Numeracy leads (ongoing);
- Modeled lessons by facilitators, Division Principal and teacher leaders to support pedagogical best practices that align with individual school numeracy plans
- A renewed focus to support the unique needs of our French Immersion teachers and administration has taken place. Dr. Onuczko purposefully examined French resources to support this work;
- Collaboration with French Immersion administrators and numeracy lead teachers to examine data, to review pedagogical practices and to analyze screens and/or diagnostics;
- Professional Development and support for the Numeracy Lead teacher in every school, including:
 - Ensuring all Screens are implemented successfully;
 - Learning how to analyze the data from screens to inform programming
 - Leading pedagogical shifts in classrooms for mathematics;
- Professional Development for all teachers beginning with research-based training, followed by modeling lessons and “at-elbow” support for teachers working on their pedagogical craft;
- Supporting school-based administration, numeracy leads and teachers to understand how to analyze the data provided by screens; teachers and facilitators work together to identify gaps in understanding and finding resources to support teachers to target programming in these areas. While this work is in its early stages, it is vital to ensuring growth for all students;
- Ongoing Professional Development and Implementation of research based instructional practices to support Numeracy Intervention programming, notably:
 - Fact Fluency,
 - Small Group Numeracy Instruction,

- Counting Collections,
 - Choral Counting,
 - Number Line/Clothesline Math,
 - Number Talks, and
 - Push in Numeracy Intervention;
- Continuing focus and implementation of Building Thinking Classrooms as a model for instruction math classrooms. Participatory events included a Year-Two “working group”, and a Year-One book study and ongoing modeling and professional development on this model; and
 - Purposeful professional learning opportunities to support teachers in effective use of Numeracy resources to support their instruction and new curriculum implementation; specifically:
 - Professional development for Mathology, Math Up, Gizmos and Idello are areas of focus.



Lesson modeling through Instructional Services facilitation (K. Holden).