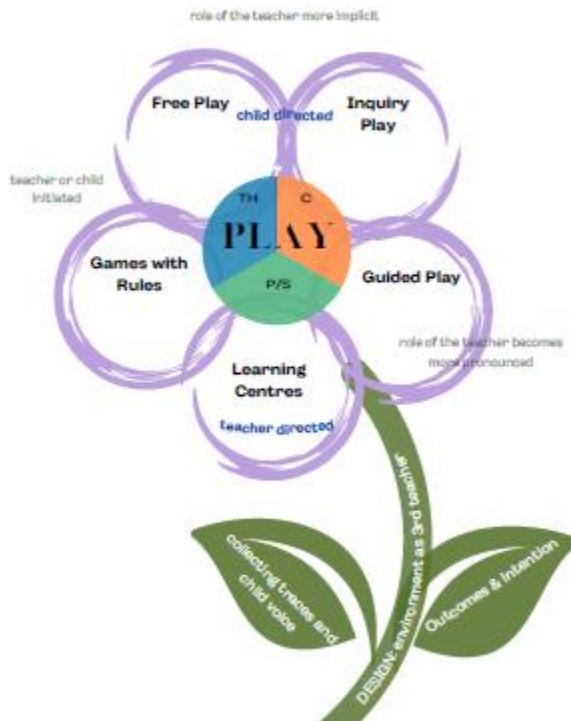


EARLY YEARS – Numeracy Foundations in Pre-School to Grade 3

In early childhood, play and hands-on learning are critical to numeracy learning. Rich tasks, authentic problem-solving, and explicit skills and strategy instruction are integrated to foster learner confidence, ability, and enjoyment.

PLAY

Play-based learning is a holistic and student-centred pedagogy that fosters the development of “communication, critical thinking, ability to make friends, responsibility, [as well as the foundations in how to] collaborate, persist, investigate, solve problems, innovate, acquire reading, writing, numeracy and digital literacy skills, and cross-cultural understanding.” (Play Today, 2019, p.22)



Play-based learning supports cognitive and numeracy development in young children. Effective play pedagogy includes:

- Student agency and voice
- Educator facilitation during play with opportunities for extended conversations to pursue numeracy learning intentions (i.e., introducing a number concept or a new skill)
- Learning environments designed to integrate learning intentions and play experiences; prompts and provocations for exploration; accessible materials for self-directed engagement
- Assessment and pedagogical documentation informed by learners’ personal interests, needs and goals, as well as focused on depth over breadth

RELATIONSHIP

Many First Peoples recognize all people are in relation with one another and the Land. Numeracy learning is informed by context, connecting people and places through everyday number sense tasks and problem-solving. As such, young children benefit from numeracy practices that enable collaboration with others and authentic engagement with nature in ways that are respectful and honouring of community and place.

NUMERACY FOUNDATIONS

Community of Mathematicians

Mathematicians work with others to analyse challenges and seek solutions, acknowledging the contributions of their peers, building on one another’s’ ideas, and sharing their research. Similarly, young children develop confidence and independence as mathematicians when they regularly share their ideas and strategies within a supportive community of peers. Sense of community fosters authentic agency as young mathematicians, creating brave spaces where children can take risks in their learning, where grappling with complexity is normalized, and collaborative efforts are expected. Additionally, discussion about their ideas and strategies makes mathematical thinking explicit and enables reflection.

Rich Numeracy Tasks

Rich numeracy tasks engage young children in authentic exploration, reasoning, and problem solving. Inquiry-based approaches, open-ended learning activities, and real-world challenges with mathematical tools deepens conceptual understanding and strategic thinking.

Structures and routines:

- ✓ Daily opportunities for guided discussion and verbal reasoning; talk routines - number talks, learning in circle, story, and Think/Pair/Share
- ✓ Regular engagement with a variety of authentic numeracy problems, play experiences, and applied investigations in diverse learning environments
- ✓ Connecting numeracy to self, other areas of learning, family traditions, and community

Skills and strategies:

- ✓ Number sense - matching, quantifying, and partitioning
- ✓ Fluency and flexibility with number, spatial reasoning, measurement, patterning, addition, and subtraction
- ✓ Problem-solving processes
- ✓ Sense-making of mathematical vocabulary and symbols
- ✓ Collaboration and communication skills for problem-solving
- ✓ Diverse ways to represent mathematical thinking, including diagrams, mental and physical models, graphs
- ✓ Making sense of the symbols and language needed for numeracy
- ✓ Reflection and consolidation; celebrating progress in numeracy learning; growth mindset as a mathematician

Assessment

- ✓ Student and class profiles (incl. student voice interests, strengths, and feelings about numeracy learning)
- ✓ Developmental continuum and diagnostic tools – First Steps in Number Sense and Operations
- ✓ Common class assessments (incl. [SNAP](#), problem-solving framework, observation tools and prompts for extended conversations)
- ✓ Pedagogical documentation (incl. ideas for portfolios)
- ✓ District Check-In Point: Grade 3 (January) – number sense, problem-solving, student voice (SNAP and First Steps diagnostics completed; problem-solving and student voice are in progress)

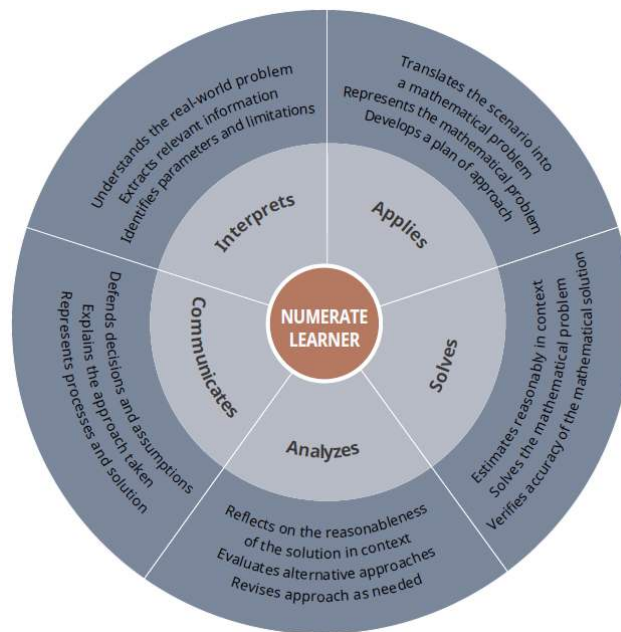
Intermediate/Middle Years – Numeracy Development in Grades 4-9

In the intermediate/middle years, learners continue to build confidence as mathematicians, learning through approaches that advantage their curiosity about the world and increasing need for independence and social belonging with peer groups. Rich tasks, authentic problem-solving, and explicit skills and strategy instruction are integrated. Hands-on learning continues to be critical to concept and skill development, as well as movement from concrete to abstract understandings and representations.

NUMERACY AND PROBLEM-SOLVING

Application of mathematical skills and strategies to engage effectively in everyday life and to address real world problems is the overarching goal of numeracy learning. Learning activities that deepen numeracy development and authentic application include:

- Student agency and voice as mathematicians and problem-solvers
- Rich experiential and hands-on numeracy tasks in a variety of learning environments (i.e., tracking water usage in the school garden, coding the movements of robots in the Learning Commons)
- Interdisciplinary learning activities that highlight how numeracy furthers understanding within and beyond the science of Mathematics (i.e., finding the math work within beadwork and design, interpreting graphs about population growth in Social Studies)
- Inquiry-based approaches that encourage foster curiosity and real-world experiences (i.e., open-ended questions, project-based learning, design challenges, place-based learning)



BC Numeracy Quick Scale – Grade 7

IMPORTANCE OF COLLABORATION

Many First Peoples recognize all people are in relation with one another and the Land. “Inherent in this view...are the understandings that everything in the universe has a place there and deserves respect, and that all things are connected. A change to one part of a system affects all other parts of a system. From this vantage point, people appreciate that what affects one person affects others as well.” ([Math First Peoples](#), 2020, p.15)

Numeracy in today’s world of complex problems requires the collective wisdom and creative solutions cultivated through collaboration among mathematicians, scientists, Indigenous Knowledge Keepers, and local communities. As such, students benefit from numeracy practices that enable collaboration with others and authentic engagement as part of nature in ways that are respectful and honouring of community and place.

NUMERACY FOUNDATIONS

Community of Mathematicians

Mathematicians work with others to analyse challenges and seek solutions, acknowledging the contributions of their peers, building on one another’s ideas, and sharing their research. Similarly, students develop confidence and independence as mathematicians when they regularly share their ideas and strategies within a supportive community of peers. Sense of community fosters authentic agency as young mathematicians, creating brave spaces where students can take risks in their learning, where grappling with complexity is normalized, and collaborative efforts are expected. Additionally, discussion about their ideas and strategies makes mathematical thinking explicit and enables reflection.

Rich Numeracy Tasks

Rich numeracy tasks engage students in authentic exploration, reasoning, and problem-solving. Inquiry-based approaches, open-ended learning activities, and real-world challenges with mathematical tools deepens conceptual understanding and strategic thinking.

Structures and routines:

- ✓ Daily opportunities for guided discussion and verbal reasoning (i.e., number talks, learning in circle, Think/Pair/Share)
- ✓ Regular engagement with a variety of authentic numeracy tasks that transfer to diverse contexts (i.e., explaining how spatial reasoning and measurement were applied to the design of a schoolyard treasure map)
- ✓ Engagement in collaborative learning structures (i.e., Thinking Classrooms); small group and partner activities
- ✓ Frequent hands-on opportunities with concrete materials and manipulatives to explore and deepen understanding of numeracy concepts and skills
- ✓ Working with mathematical vocabulary in ways that encourage further conceptual development (i.e., mini-inquiry - What does a 'million' really mean in magnitude when located on a number line that goes up to a billion?)
- ✓ Connecting numeracy to self, daily life activities, other areas of learning, culture and place, complex problems in the world
- ✓ Opportunities to reflect as mathematicians with teachers and with peers as sounding boards; journals and portfolio
- ✓ Numeracy learning at home (i.e., tips for parents on how to support, games that encourage numeracy development)

Skills and strategies:

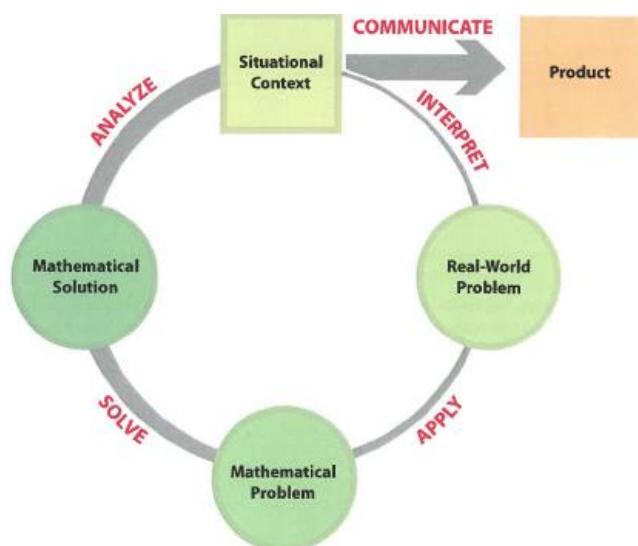
- ✓ Number sense – partitioning, factoring, and operating
- ✓ Fluency and flexibility with math facts, place value, operations, financial literacy, interpreting data and mathematical visuals and spatial reasoning
- ✓ Problem-solving processes - Introduction to and scaffolded practice in how to solve authentic numeracy tasks (i.e., interpret, apply, solve, analyze, communicate – Grade 10 Numeracy Assessment)
- ✓ Collaboration and communication skills for problem-solving
- ✓ Diverse ways to represent mathematical thinking, including diagrams, mental and physical models, graphs
- ✓ Numeracy vocabulary and symbols
- ✓ Effective use of mathematical tools and apps, including assistive technologies
- ✓ Mental math strategies, metacognition, monitoring for what makes sense, self-correction
- ✓ Reflection and consolidation; celebrating progress in numeracy learning; growth mindset as a mathematician

Assessment

- ✓ Student and class profiles (incl. student voice, interests, strengths, and feelings about numeracy learning)
- ✓ Developmental continuum and diagnostic tools – First Steps in Number Sense and Operations
- ✓ Common class assessments (incl. [SNAP](#), problem-solving framework, observation tools, prompts for conferencing with students, graphic organizers)
- ✓ Student self- and peer assessment tools, reflection ideas
- ✓ Pedagogical documentation (incl. ideas for portfolios)
- ✓ [Island Numeracy Assessments](#)
- ✓ [BC Numeracy Learning Progressions](#)
- ✓ District Check-In Points: Grade 5 – number sense, problem-solving, student voice (SNAP and First Steps diagnostics completed; problem-solving and student voice are in progress)
Grade 8 – number sense, problem-solving, student voice (SNAP and First Steps diagnostics completed; problem-solving and student voice to be developed)

Graduation Years – Numeracy Development in Grades 10-12

In the graduation years, students continue to build confidence for lifelong numeracy through approaches that advantage their strengths and interests, as well as goals for post graduation. Rich and authentic numeracy experiences and problem-solving deepen and refine mathematical thinking and application for various purposes and diverse contexts. Meaningful integration of numeracy learning across the curriculum furthers student competence and transference into adulthood.



NUMERACY AND PROBLEM-SOLVING

Application of mathematical skills and strategies to engage effectively in everyday life and to address real world problems is the overarching goal of numeracy learning. Learning activities that deepen numeracy development and authentic application include:

- Student agency, voice, and post-graduation goals
- Real world questions, problems, and challenges
- Problem-solving processes
- Cognitive apprenticeship into how to effectively apply numeracy within various fields of study
- Authentic purposes and actions in school, community, and the world

Authentic numeracy application can emerge within various structures, including interdisciplinary projects, open-ended investigations, learning in circle, inquiry, place-based learning, and design challenges.

Grade 10 Graduation Numeracy Assessment: Specifications

IMPORTANCE OF COLLABORATION

Many First Peoples recognize all people are in relation with one another and the Land. “Inherent in this view...are the understandings that everything in the universe has a place there and deserves respect, and that all things are connected. A change to one part of a system affects all other parts of a system. From this vantage point, people appreciate that what affects one person affects others as well.” ([Math First Peoples](#), 2020, p.15)

Numeracy in today’s world of complex problems requires the collective wisdom and creative solutions that is cultivated through collaboration. Students benefit from numeracy practices that enable respectful interactions and working together in ways that honour community and place.

NUMERACY FOUNDATIONS

Community of Problem-Solvers

Communities of problem-solvers can apply mathematical thinking and skills to accomplish personal and collective goals. Acknowledging others’ contributions, building on one another’s’ ideas, and seeking to include all voices underpins solutions-focused conversations. Sense of community as problem-solvers, where grappling with complexity is normalized and collaborative efforts are valued, creates brave spaces to enable innovation and action.

Rich Numeracy Tasks

Rich numeracy tasks engage students in authentic exploration, reasoning, and problem-solving. Inquiry-based approaches, open-ended learning activities, and real-world challenges using mathematical models and tools deepens understanding and supports strategic thinking. Connections to all curricular areas, diverse cultural perspectives and practices, and critical and creative thinking further numeracy development for post-graduation and adulthood.

Structures and routines

- ✓ Engagement with a variety of authentic numeracy tasks in diverse learning environments; collaborative learning activities that foster applications and problem-solving

- ✓ Cognitive apprenticeship and explicit instruction that highlights the role that mathematical thinking plays across the curriculum (i.e., interpreting timelines in History, using mathematics to achieve desired pitches and timbers in drum-making)
- ✓ Frequent hands-on practice with materials, manipulatives, models, tools, and apps to deepen specialized numeracy understanding and further skills development (i.e., using budgeting software in the development of a business plan, creating a model to test a hypothesis)
- ✓ Connecting numeracy to self, daily life activities, cultural connections and place (i.e., Traditional Ecological Knowledge), complex problems in the world, post-graduation plans
- ✓ Opportunities to reflect on progress in numeracy learning across the curriculum

Skills and strategies:

- ✓ How to use mathematical thinking within diverse fields of study, and in daily life (i.e., financial literacy, following the map on a cell phone)
- ✓ Ability to make sense of, interpret, and/or critically evaluate data and mathematical representations (i.e., blueprint)
- ✓ Problem-solving processes (i.e., interpret, apply, solve, analyze, communicate – Grade 10 Numeracy Assessment)
- ✓ Collaboration and communication skills
- ✓ Specialized vocabulary, symbols, and algorithms
- ✓ Diverse ways to represent mathematical thinking, including diagrams, mental and physical models, graphs; how to communicate about mathematical ideas and strategies (i.e., explaining interpretations and limitations of information portrayed via a pie chart)
- ✓ Mental math strategies, metacognition, monitoring for what makes sense, self-correction
- ✓ Effective use of mathematical tools and apps, including assistive technologies
- ✓ Reflection and consolidation; growth mindset as a numerate adult and lifelong learner

Assessment

- ✓ Student and class profiles (incl. interests, strengths, confidence with numeracy applications, connections to post-graduation plans and capstone)
- ✓ Common class assessments (incl. observation tools, prompts for conferencing with students, graphic organizers)
- ✓ Student self- and peer assessment tools, reflection ideas
- ✓ Pedagogical documentation (incl. ideas for portfolios)
- ✓ [Island Numeracy Assessments](#)
- ✓ [BC Numeracy Learning Progressions](#)
- ✓ [BC Grade 10 Numeracy Assessment](#)