

Literacy and Numeracy Progressions - An Overview



This work was made possible through funding from Alberta Education

The background is split diagonally from the top-left to the bottom-right. The upper-left portion is a solid light beige color, while the lower-right portion is a dark charcoal grey color filled with a repeating pattern of small, light grey circles.

Setting the Context

Importance of Literacy and Numeracy



Strong literacy and numeracy skills are essential in today's society.

Alberta Education recognized the importance of these skills in the *Ministerial Order on Student Learning* (2013), which states that:

“all students will use and employ literacy and numeracy to construct and communicate meaning.”

Guiding Framework for Design & Development of K-12 Curriculum, AB ED 2016

Standard 7: Curriculum provides clear evidence of support for literacy and numeracy within and across subjects.

- Learning outcomes are designed to support the development of literacy and numeracy skills within and across subjects.
- Assessments and learning and teaching resources align with the literacy and numeracy progressions.

GOAL:

Conceptual Knowledge + Procedural Knowledge + Competencies + Progressions = Learning Outcome



Looking Closer at Literacy and Numeracy

Definitions from Alberta Education, 2015

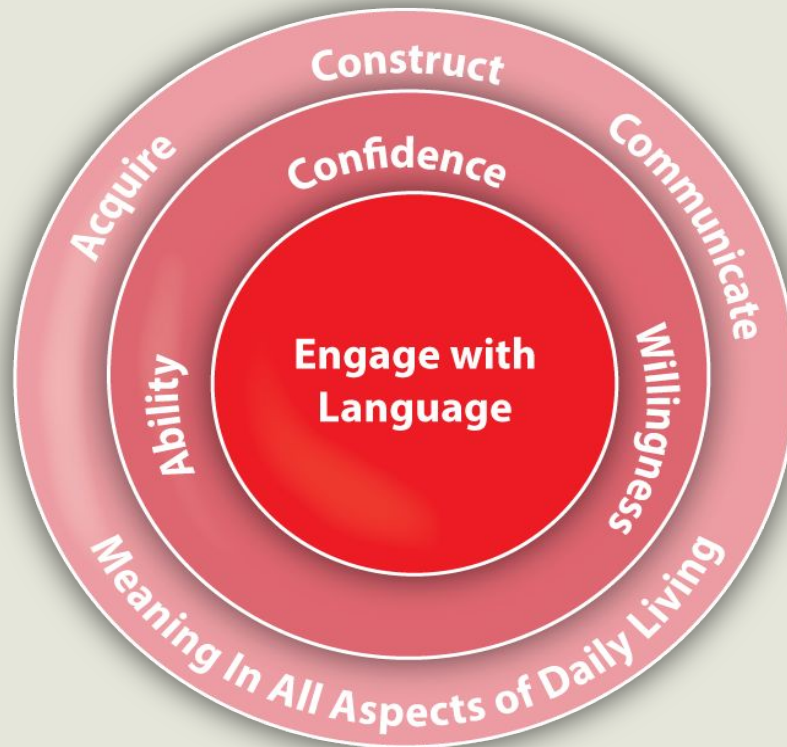
Literacy is the ability, confidence and willingness to engage with language* to acquire, construct and communicate meaning in all aspects of daily living.

*Language is a socially and culturally constructed system of communication.

Numeracy is the ability, confidence and willingness to engage with quantitative or spatial information to make informed decisions in all aspects of daily living.

Definitions Reframed, ARPDC

What is Literacy?



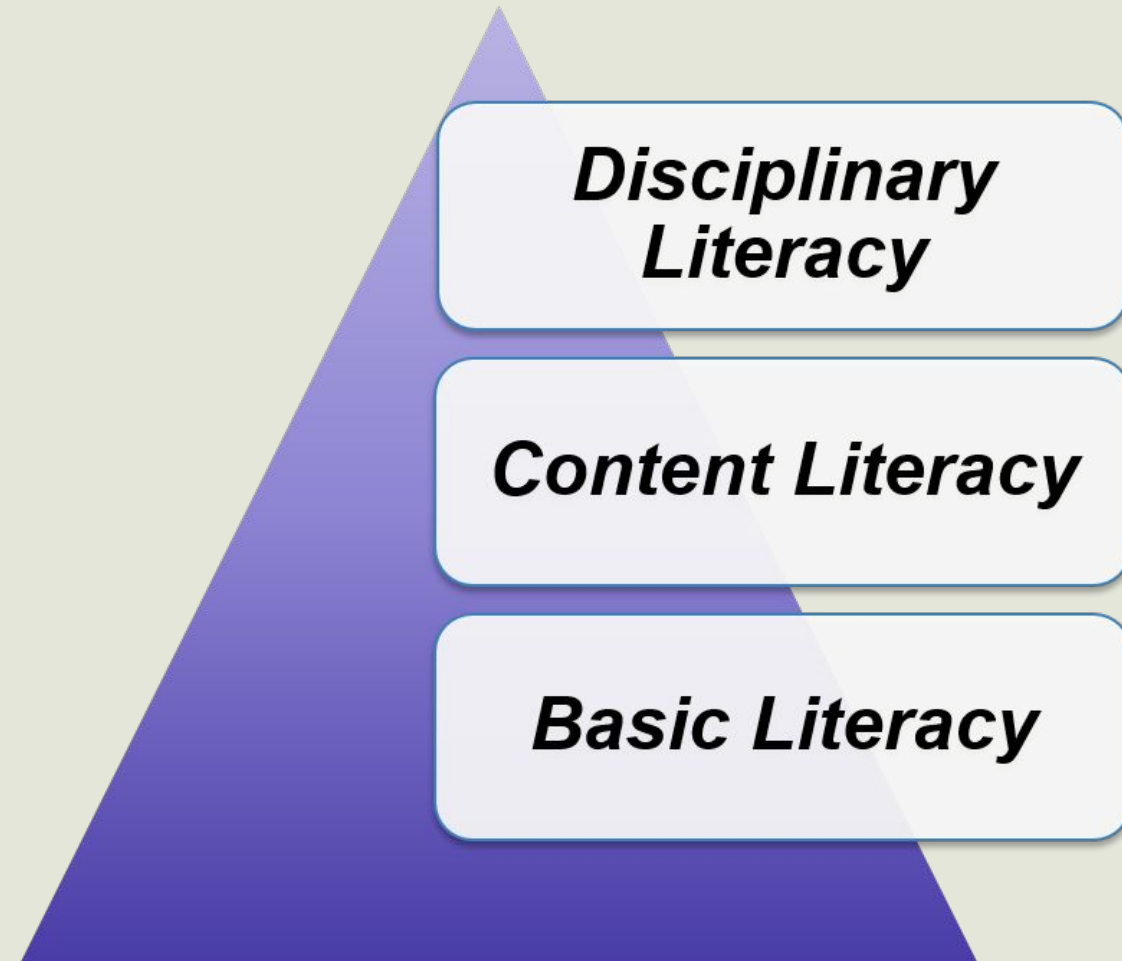
What is Numeracy?



Literacy - Alberta Education Video



Tiers of Literacy Instruction



Disciplinary Reading

Math

- Requires precision of meaning
- Emphasize rereading and close reading
- Looking for key info, decoding numerical data
- Determining operation/steps required
- Visualize problems, understand symbols

Social Studies

- Pay attention to author/source/perspective/bias
- Uses description, narrative, and chronological structures
- Connect to geographical, historical and background knowledge (context)
- Higher Order Thinking: Predicting, applying, evaluating
- What led up to? What is the result of?

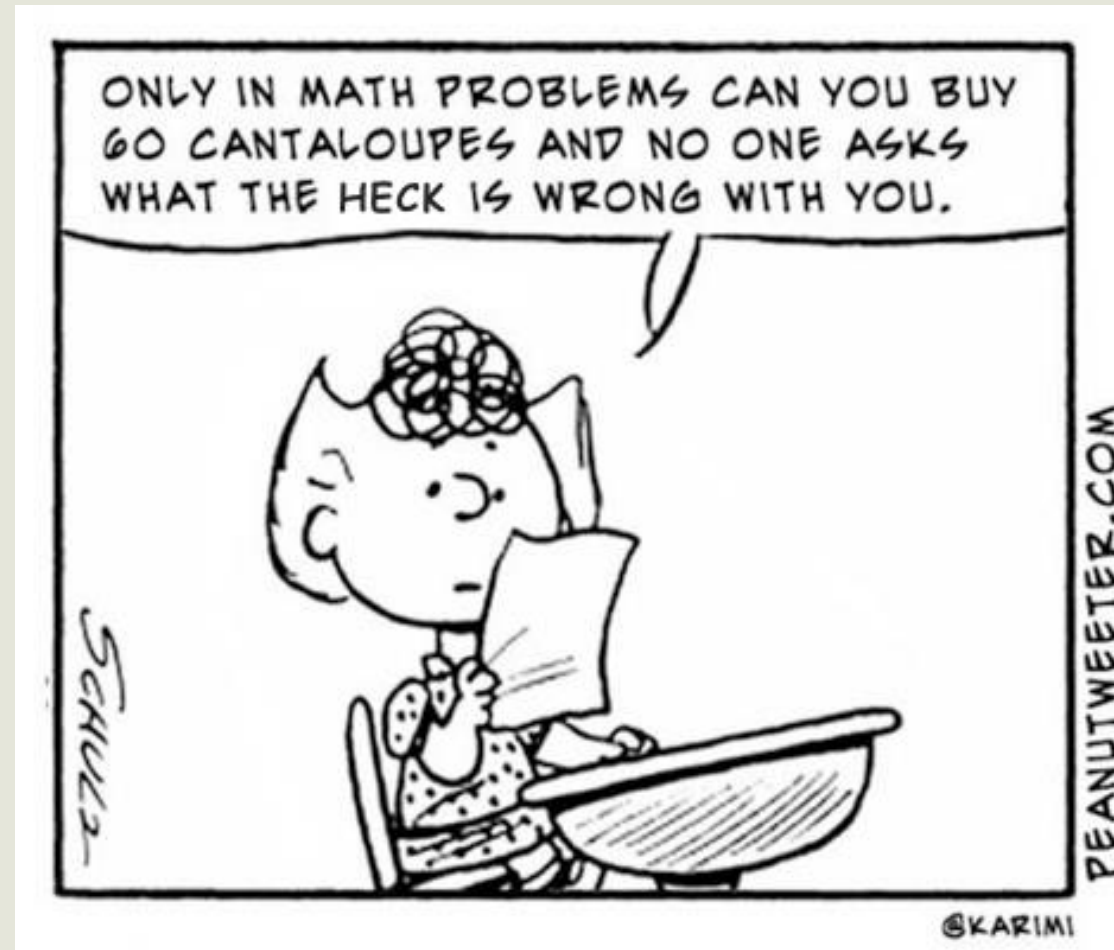
Science

- Factual, precision, step by step process
- Alternate between visuals/diagrams and text
- Technical vocabulary and definitions
- Classifying, Cause-Effect

Language Arts

- Interpret
- Predict
- Analyze craft
- Make connections
- Creative thought

Ever felt like this.....?



Numeracy - Alberta Education Video



Alberta Education's Definition of Numeracy



*Numeracy is the ability, confidence and willingness to engage with **quantitative** or **spatial** information to make informed decisions in all aspects of daily living.*

Quantitative information

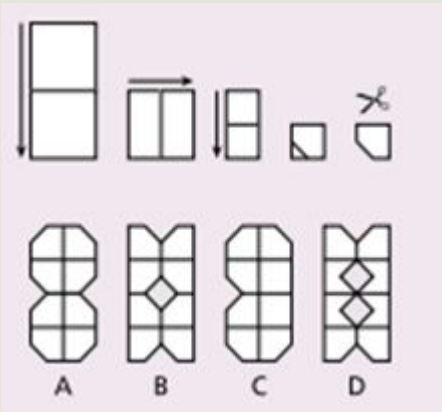
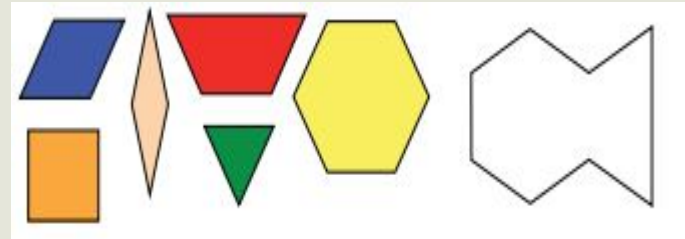
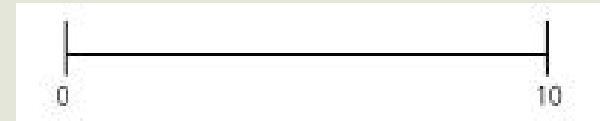
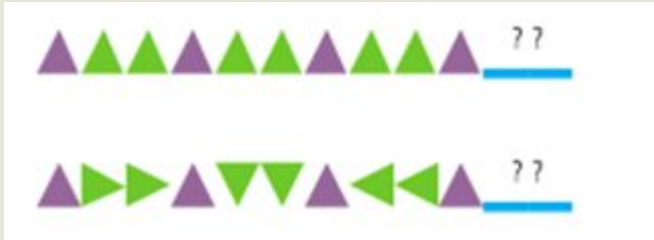
is information that can be measured and expressed as an amount.

- Quantity
- Patterns and relationships
- Data and probability

Spatial information is the physical location of objects or people, or the relationship between objects or people.

- Shape and space
- Measurement
- Location and direction

Examples of Spatial Reasoning

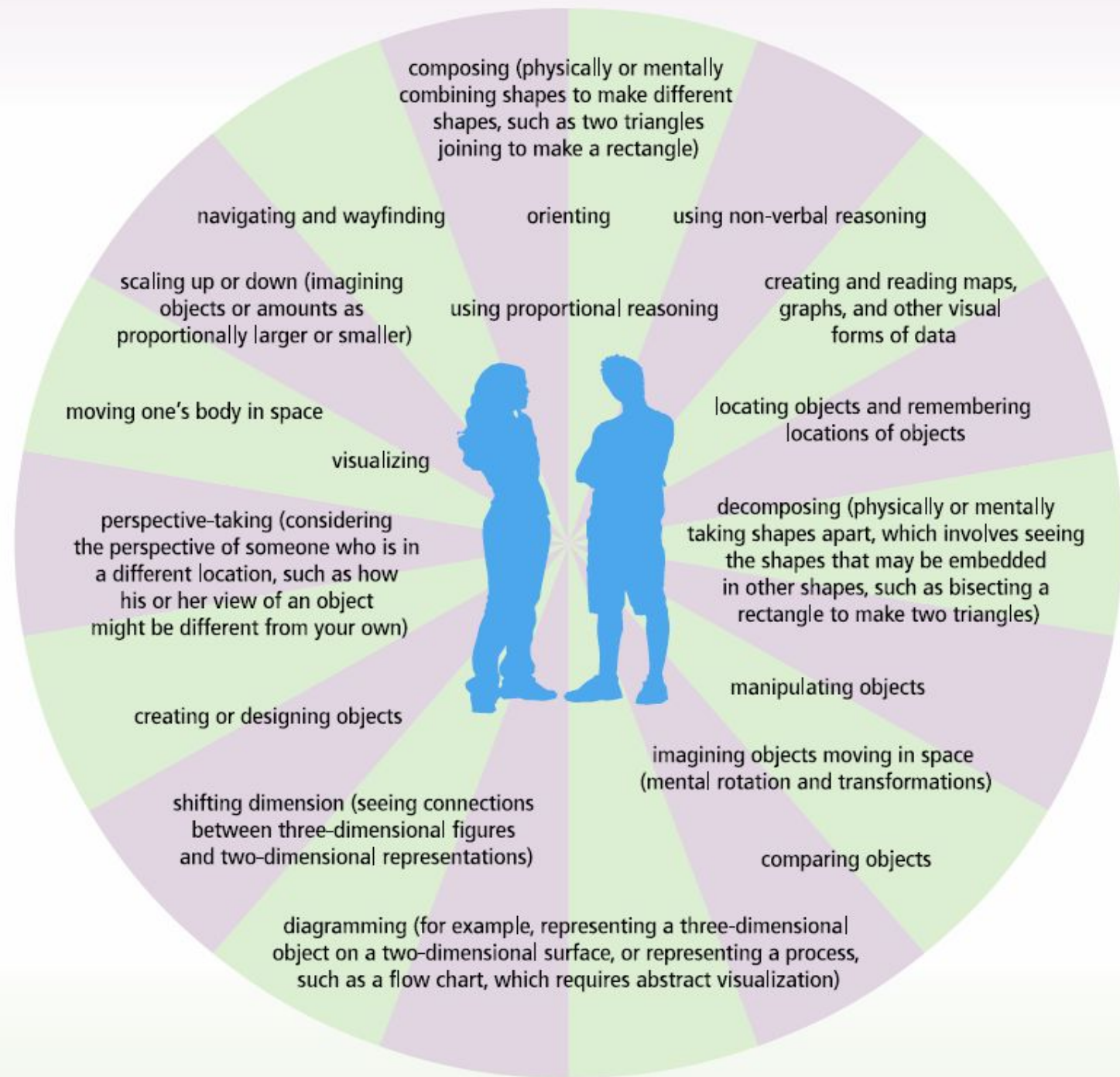


The discovery of the structure of DNA, the theory of relativity and the invention of the motor were all creations borne of spatial visualization!

Why Should We Include Spatial Reasoning?

- + **Relation between spatial ability and math is well established** (Cheng 2012)
- + The **block play** of 4 yr olds is a **predictor** of **high school math** achievement (Wolfgang 2001). More predictive than general math scores! (Farmer, 2013)
- + Playing with **jigsaw puzzles** and **blocks** leads to strong number sense and word problem solving (Nath 2014)
- + “Most of us have been taught to think and talk about the world using words, lists, and statistics. These are useful but do not come close to telling the full story. **Thinking spatially opens the eye and mind to new connections, new questions, and new answers.**” (Center for Spatial Studies, UCSB, n.d.)

Spatial Reasoning Can Involve...



Spatial Reasoning Can Be Taught



A recent meta-analysis revealed that spatial thinking can be improved through an assortment of activities across all age groups (Uttal et al., 2013).

Specific approaches shown to improve spatial thinking skills include puzzles, video games (e.g., Tetris), block building, practising spatial activities, art and design tasks, and in-class spatial thinking lessons and activities.

Studies have shown that improvements in one type of spatial reasoning task often transfer to other types of tasks (even novel, unfamiliar tasks).



How the Literacy and Numeracy Progressions are Organized



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Literacy Components and Elements

Component	Elements
Literacy Awareness	Importance of Literacy (LA1) Students recognize that literacy provides enjoyment and enables them to make sense of and participate in the world around them.
	Learner Awareness (LA2) Students identify what they know, are able to do and need to learn when engaging in tasks that involve literacy.
	Task Awareness (LA3) Students are aware of the literacy demands within a task.
Component	Elements
Literacy Knowledge and Understanding	Rules of Language (LKU1) Students use rules of language to acquire, construct and communicate meaning.
	Acquire Information (LKU2) Students use efficient and effective strategies to acquire, evaluate and ethically use information.
	Construct Meaning (LKU3) Students use efficient and effective strategies to construct meaning.
	Communicate Meaning (LKU4) Students communicate to convey concepts, ideas and understandings.

Numeracy Components and Elements

Component	Elements
Numeracy Awareness	Importance of Numeracy (NA1) Students recognize that numeracy enables people to make informed decisions in all aspects of daily living.
	Learner Awareness (NA2) Students identify what they know, are able to do and need to learn when engaging in tasks that involve numeracy.
	Task Awareness (NA3) Students are aware of the numeracy demands within a task.
Component	Elements
Numeracy Knowledge and Understanding	Quantitative Information (NKU1) Students apply knowledge of quantitative information to make an informed decision.
	Spatial Information (NKU2) Students apply knowledge of spatial information to make an informed decision.
	Interpret, Represent, Communicate (NKU3) Students interpret, represent and communicate in a variety of digital and non-digital formats to support decisions in situations involving numeracy.
	Strategies, Methods and Tools (NKU4) Students use efficient and effective strategies, methods or tools to manage quantitative or spatial information.

Literacy and Numeracy Progressions - Descriptors for Every Element

	Kindergarten (typically ages 4–5)	Division I (typically ages 6 – 8)	Division II (typically ages 9– 11)	Division III (typically ages 12 – 14)	Division IV (typically ages 15– 18+)
NKU2 SPATIAL INFORMATION <i>Students apply knowledge of spatial * information to make an informed decision.</i> * Spatial Information refers to the physical location of objects or people, or the relationship between objects or people.	Measurement Children compare two familiar objects according to measurement attributes to complete a task (e.g., taller, shorter, heavier, smaller).	Measurement Students select and use basic measuring instruments to complete a task (e.g., ruler, calendar, stopwatch, thermometer).	Measurement Students identify and use appropriate measuring instruments and read simple meters, dials and weigh scales in their environment.	Measurement Students identify, select and use suitable instruments to take measurements at an appropriate level of precision.	Measurement Students identify, select and use precise instruments or methods to take accurate measurements.

Why were the Progressions created?

- + To help teachers to plan effective learning experiences that foster the development of literacy/numeracy
- + To see all of the elements that are to be integrated across grades
- + As a reference when gathering information about strengths and needs
- + To assist in determining when a student might require support

Progressions are not to be assessed

Cautions

- + The literacy and numeracy progressions are not intended to be an add-on to current curriculum.
- + They should not be used to teach or to formally evaluate and/or report literacy and numeracy separately from subject learning outcomes.



The progressions are organized by two **components**—Awareness, and Knowledge and Understanding.

Component: LITERACY KNOWLEDGE AND UNDERSTANDING (LKU)

Literacy Knowledge and Understanding Descriptors

The descriptors identify what students are typically able to demonstrate as their literacy knowledge and understanding increases. This is a cumulative process. It is expected that learning experiences, while developmentally appropriate, will become increasingly complex.

	Kindergarten (typically ages 4–5)	Division I (typically ages 6–8)	Division II (typically ages 9–11)	Division III (typically ages 12–14)	Division IV (typically ages 15–18+)
LKU3 Construct Meaning <i>Students use efficient and effective strategies to construct meaning.</i>	Vocabulary Children use familiar, high-frequency vocabulary and begin to acquire new vocabulary related to learning experiences (e.g. school-related words).	Vocabulary Students use an increasing amount of high-frequency vocabulary and acquire new vocabulary related to learning experiences (e.g. describe, compare, life-cycle, province).	Vocabulary Students acquire and use precise and descriptive vocabulary, general academic vocabulary (e.g., identification, definition), and subject/discipline-specific vocabulary (e.g., pulley, ecosystem) related to learning experiences.	Vocabulary Students acquire and use precise, effective, and descriptive vocabulary, general academic vocabulary (e.g., procedure, interpret) and subject/discipline specific vocabulary (e.g., nebulae, consumerism) related to learning experiences.	Vocabulary Students purposefully acquire, select, and expand their use of precise, effective and descriptive vocabulary, general academic vocabulary and subject/discipline specific vocabulary (e.g., nationalism, Lewis structure) related to learning experiences.

Elements assist in exploring the breadth and depth of each literacy or numeracy component.

The **descriptors** explain what students can typically demonstrate by the end of their particular age/division grouping.

The progressions are organized by two **components**—Awareness, and Knowledge and Understanding.

Component: NUMERACY KNOWLEDGE AND UNDERSTANDING (NKU)

Numeracy Knowledge and Understanding Descriptors

The descriptors identify what students are typically able to demonstrate as their numeracy knowledge and understanding increases. This is a cumulative process. It is expected that learning experiences, while developmentally appropriate, will become increasingly complex.

	Kindergarten (typically ages 4–5)	Division I (typically ages 6–8)	Division II (typically ages 9–11)	Division III (typically ages 12–14)	Division IV (typically ages 15–18+)
NKU2 SPATIAL INFORMATION <i>Students apply knowledge of spatial* information to make an informed decision.</i> *Spatial information refers to the physical location of objects or people, or the relationship between objects or people.	Measurement Children compare two familiar objects according to measurement attributes to complete a task (e.g., taller, shorter, heavier, smaller).	Measurement Students select and use basic measuring instruments to complete a task (e.g., ruler, calendar, stopwatch, thermometer).	Measurement Students identify and use appropriate measuring instruments and read simple meters, dials and weigh scales in their environment.	Measurement Students identify, select and use suitable instruments to take measurements at an appropriate level of precision.	Measurement Students identify, select and use precise instruments or methods to take accurate measurements.

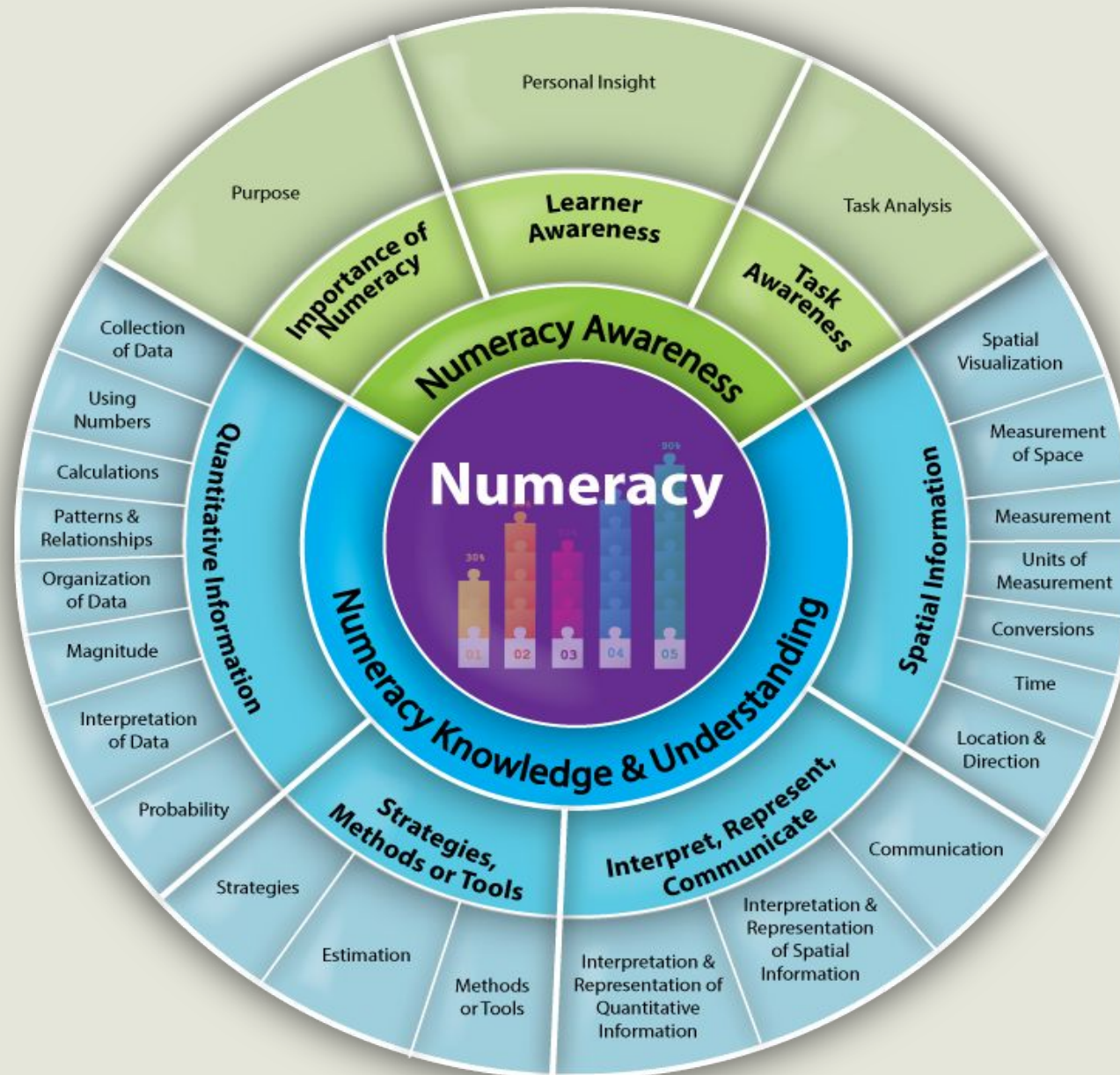
Elements assist in exploring the breadth and depth of each literacy or numeracy component.

The **descriptors** explain what students can typically demonstrate by the end of their particular age/division grouping.

Literacy Progressions



Numeracy Progressions



Planning with the Literacy and Numeracy Progressions



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Using the Progressions with the Current Curriculum

The progressions can be used to

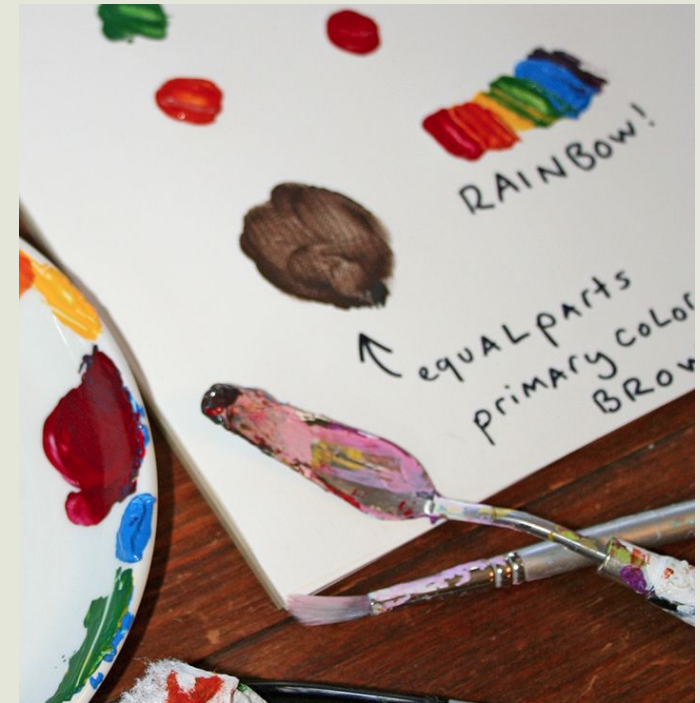
- + support learning experiences that teachers are already incorporating into their instructional practices.
- + provide teachers, *who may not be experts in literacy and numeracy*, with insights on how to develop students' literacy and numeracy skills in order to better access subject content.
- + provide a common vocabulary.

Scenario: Art Level One (Grades 1 and 2)

Level One Art Outcome

Students will:

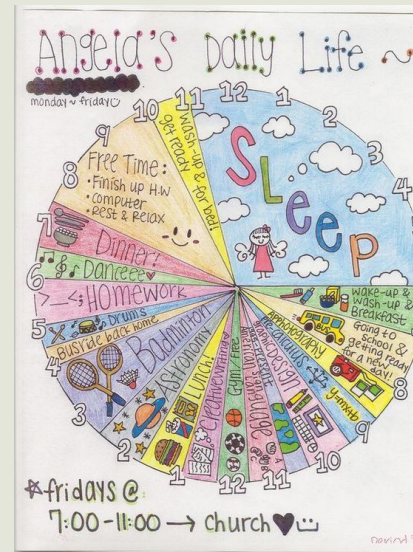
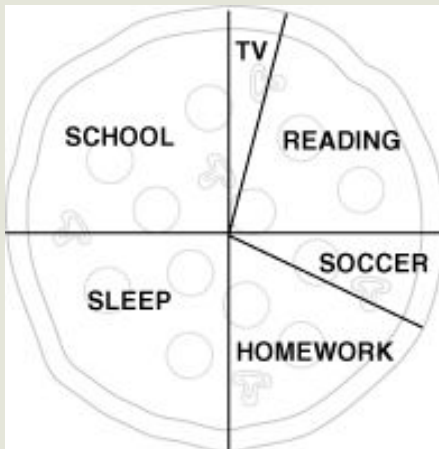
- Mix primary colours and lighten and darken colours.



Scenario: Grade 5 Health Class

Grade 5 Health and Life Skills Outcome
Students will:

- identify and implement an effective time management plan, e.g., prioritize goals



Where Does My Time Go? Time Log

How to Find Your Lost Minutes

- First, record your activities in half-hour increments for an entire day.
- Later, determine whether each activity was a Priority 1, 2, 3, or 4. See the chart below.
- Finally, decide which activities deserve more of your time (Priority 1 & 2) and which deserve less (Priority 3 & 4).
- Make plans to spend more of your time tomorrow on Priority 1 & 2 activities.

URGENT IMPORTANT 1	NOT URGENT IMPORTANT 2
URGENT NOT IMPORTANT 3	NOT URGENT NOT IMPORTANT 4

RESULTS

Activities that deserve more time:

Activities that deserve less time:

Plan for tomorrow:

Sage Grayson
LIFE EDITOR
sagegrayson.com

TIME	ACTIVITY	PRIORITY
5:00 am		
5:30 am		
6:00 am		
6:30 am		
7:00 am		
7:30 am		
8:00 am		
8:30 am		
9:00 am		
9:30 am		
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4:00 pm		
4:30 am		

Scenario: Grade 7 Science Class

Issue

Some students find it challenging to make sense of quantitative information (data and charts) while researching alternative forms of energy.

Related SC 7 Skill Outcomes

Students will:

- Conduct investigations into the relationships between and among observations, and gather and record qualitative and quantitative data
- Analyze qualitative and quantitative data, and develop/assess possible explanations



Grade 10-1 Social Studies



Issue 1: To what extent should globalization shape identity?

1.9 evaluate efforts to promote languages and cultures in a globalizing world (language laws, linguistic rights, cultural content legislation, cultural revitalization, linguistic revitalization) (I, CC)

How could progressions support these outcomes?

Health 8

R–8.8 describe and explain the positive and negative aspects of conformity and dissent as they relate to individuals in a group or on a team

Drama Grade 8

- develop the ability to interact effectively and constructively in a group process

Physical Education Grade 8

B8–6 analyze the personal effects of exercise on the body systems before, during and after exercise

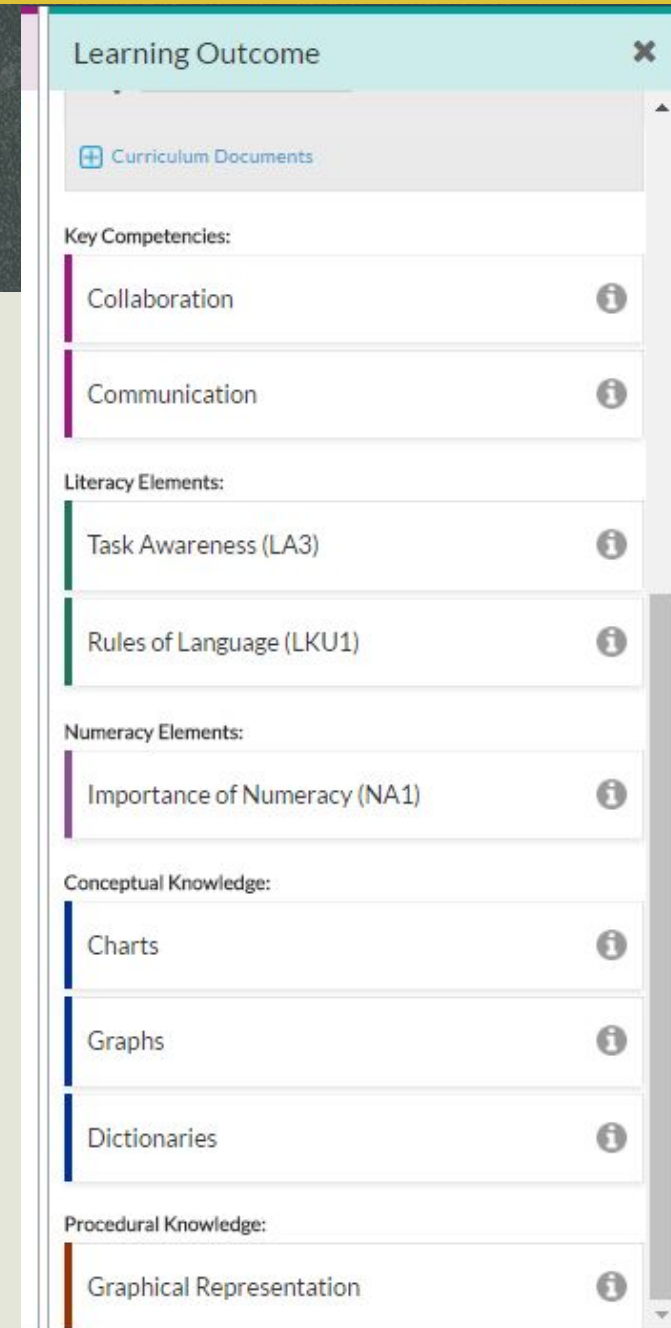


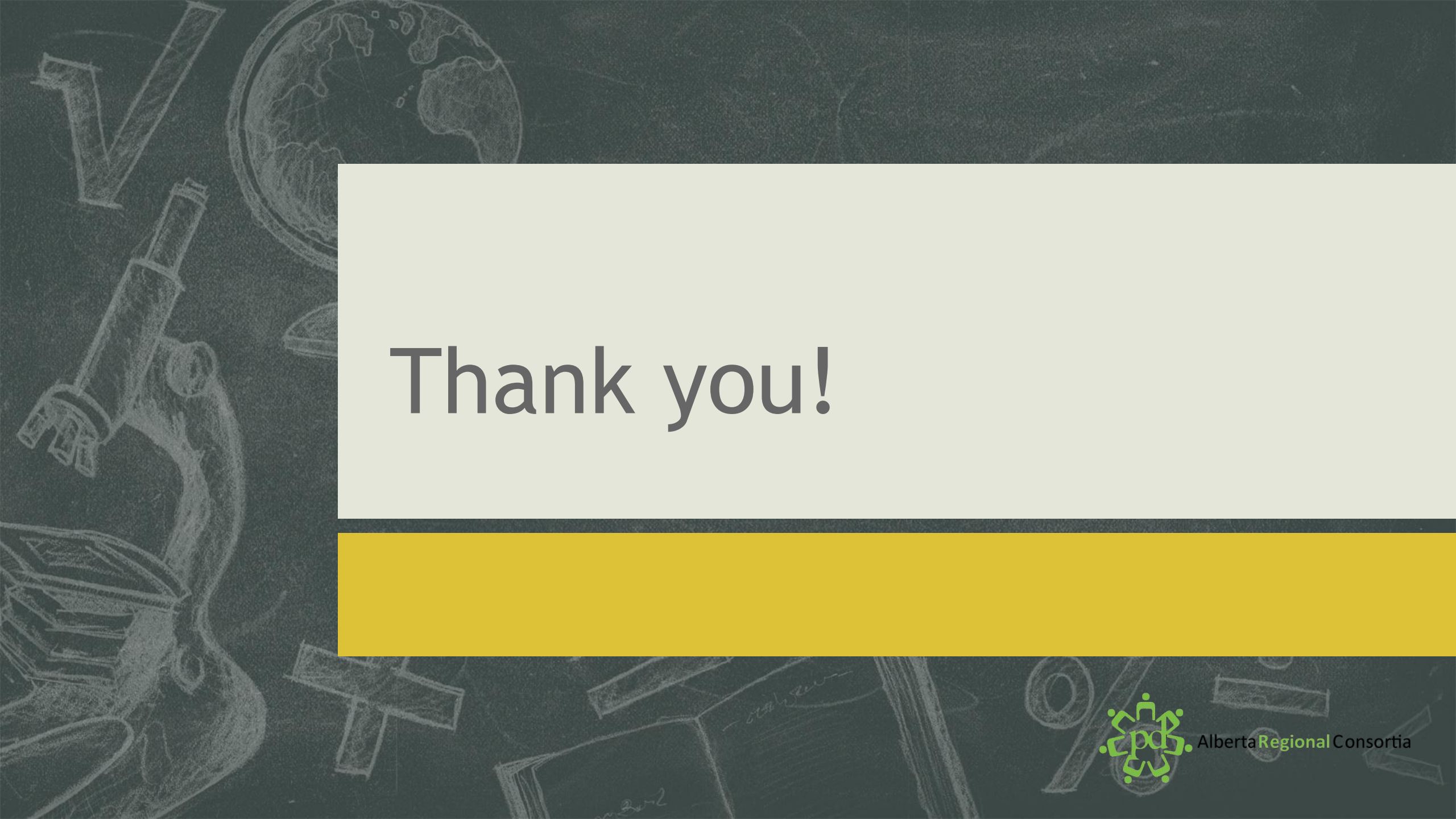
In development...

Alberta Education is developing a **Curriculum Development Application** (CDMA) to host new curriculums as they are released.

This online tool will be the predominant way that curriculum materials will be shared with teachers and administrators. This site will allow teachers to create personalized unit plans linking learning outcomes across subjects, competencies and progressions, etc.

The more that teachers are familiar with progressions and competencies now, the easier the transition will be.



The background is a dark chalkboard with various light-colored chalk sketches. On the left, there is a large sketch of a microscope. Above it, a globe is drawn. To the right of the globe, there are some faint, abstract sketches. Below the microscope, there are sketches of what look like books or papers. In the bottom right corner, there is a logo for the Alberta Regional Consortia, which consists of a stylized green flower-like shape made of dots and lines, followed by the text "Alberta Regional Consortia".

Thank you!



Alberta Regional Consortia