



Discussion Paper

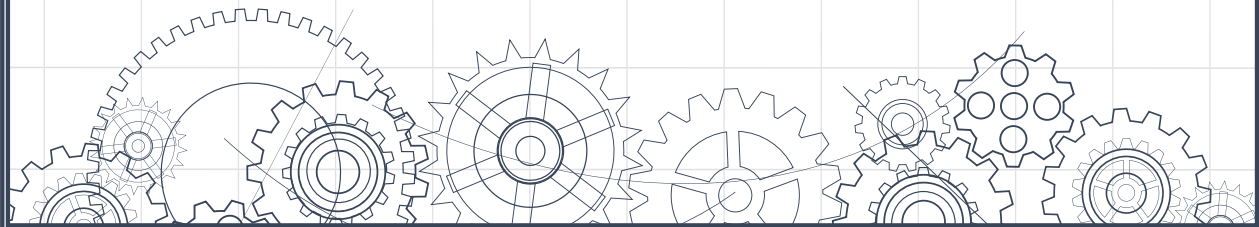
Graduation Assessments: Design Framework and Assessment Structure

This summary provides a draft of the design and structure of British Columbia's new graduation literacy and numeracy assessments.

Design Framework

Strong assessments are constructed on research-based frameworks designed to assess what is valued in the system conducting the assessment. In BC, literacy and numeracy have been identified as high priorities for the education system. The new curriculum recognizes higher-level thinking as a desired goal in all learning. To that end, the design of the new assessments include:

- clear and concise definitions of what is being assessed (literacy and numeracy), developed in consultation with educators
- an evidence-centred design (ECD) process currently used in some large-scale international assessments
- Norman L. Webb's "Depth of Knowledge" framework (also currently used in classroom and large-scale assessments) to assist writers in developing assessment questions that address higher-level thinking

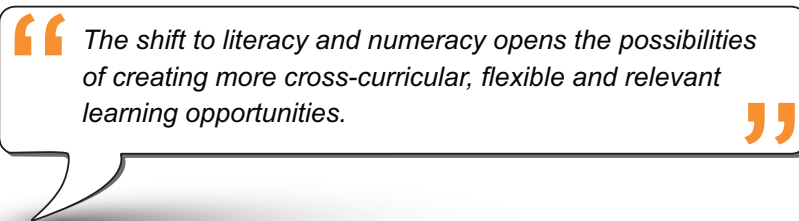


Literacy and numeracy defined

Literacy and numeracy are cornerstones of the ongoing education transformation in BC. Literacy and numeracy are more than the skills and content of particular language arts and math courses.

The following definitions are used to clarify what is being assessed and reported on:

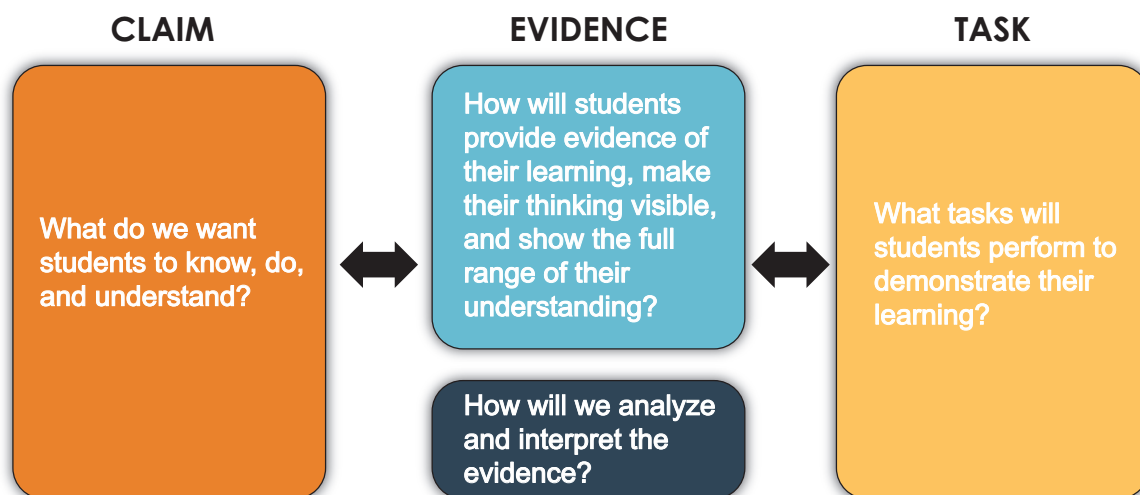
- *Literacy* is the ability to make meaning from text and express oneself in a variety of modes and for a variety of purposes. This includes making connections, analyzing critically, comprehending, creating, and communicating.
- *Numeracy* is the willingness to interpret and the ability to apply mathematical understanding to solve problems in complex situations, and the perseverance to analyze and communicate these solutions in ways relevant to the given context.



Evidence-centred design

Evidence-centred design introduces a framework for designing, producing, and delivering educational assessments (Mislevy, Steinberg, and Almond, 1999). Evidence-centred design focuses on:

- making claims about student learning (what you want students to know, do, and understand) based on the purpose of the assessment
- determining the evidence that needs to be demonstrated to provide support for the claims and how this evidence will be analyzed and interpreted
- writing task specifications to create tasks so that students can demonstrate the depth of their learning

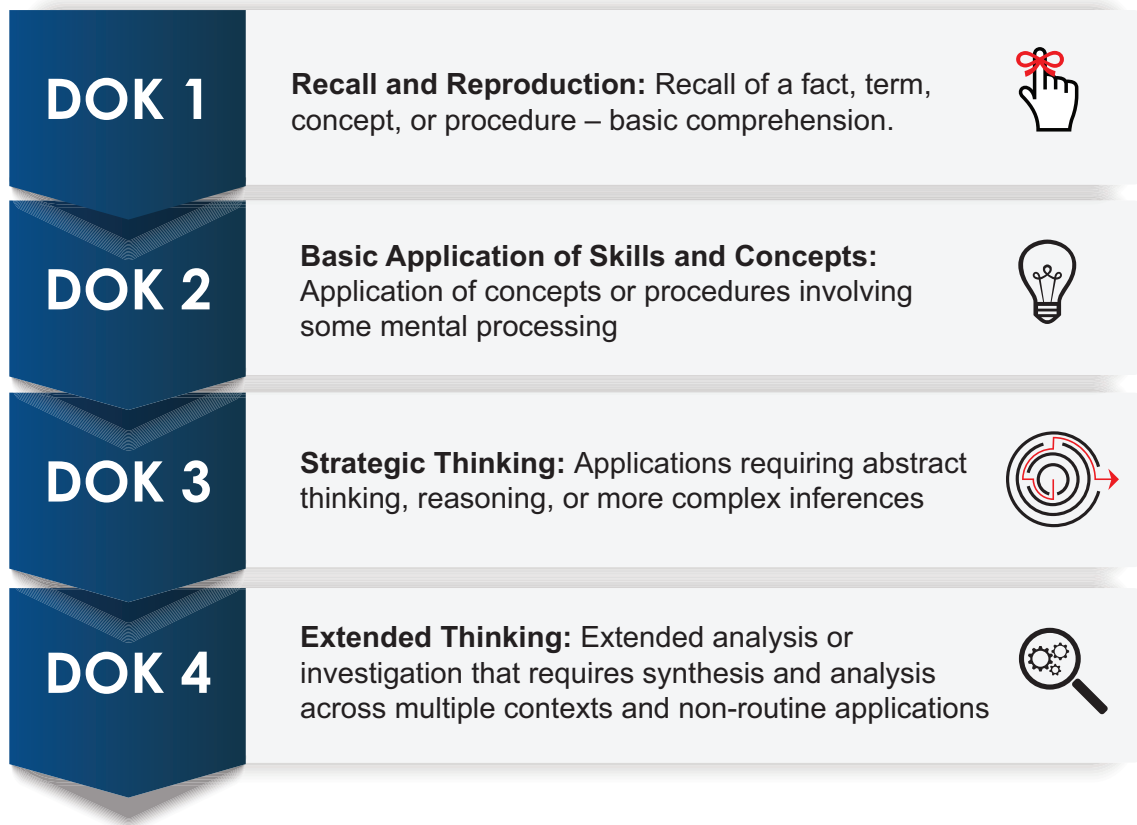


(Adapted from Pellegrino, DiBello, and Brophy, 2014)

Webb’s Framework for Depth of Knowledge

The Curriculum and Assessment Advisory Framework Group (2011–2012) set as a priority that the learning standards of the new curriculum should “emphasize higher-order concepts over facts to enable deeper learning and understanding.” Subsequent feedback received from the field reinforced the importance of addressing deeper learning and transfer in BC’s renewed curriculum and assessment. This direction led to an investigation of the Framework for Depth of Knowledge (DOK framework) as a tool to use in the design of assessment questions.

Depth of Knowledge, researched and developed by Dr. Norman Webb, outlines the complexity or depth of understanding needed to answer or explain an assessment question. Currently, Webb’s DOK framework is used in the design of BC’s Foundation Skills Assessment at Grades 4 and 7, the Smarter Balanced Assessment Consortium, the Program for International Student Assessment (PISA), and the National Assessment of Educational Progress (NAEP) to assess deeper learning. The BC literacy and numeracy assessments will also use the DOK framework in the process of designing assessment questions. The DOK framework has four levels.



(DuFour, Richard, and Rebecca DuFour, 2015)

Applying the design framework to the graduation literacy and numeracy assessments

The following illustrates how the framework for the literacy and numeracy assessments has applied evidence-centred design and DOK levels.

		Literacy/Litt�ratie	Numeracy
		<ul style="list-style-type: none"> – English – Franais langue premi�re – Franais langue seconde — immersion 	
CLAIMS	What do we want students to know, do, and understand?	<p>These assessments will require students to demonstrate the following literacy processes:</p> <p>Comprehend: Students are able to make meaning from a variety of texts by reading (and listening in Franais langue premi�re and Franais langue seconde — immersion). Aspects of comprehension include accessing and retrieving, integrating and interpreting, and reflecting and evaluating.</p> <p>Communicate: Students are able to express themselves effectively for a range of purposes and audiences in writing (and orally in Franais langue premi�re and Franais langue seconde — immersion).</p>	<p>This assessment will require students to demonstrate the following numeracy processes:</p> <p>Interpret: Students are able to read and decode a range of complex situations in order to identify real-world problems that need to be solved.</p> <p>Apply: Students are able to identify and activate their mathematical understanding (mathematize) in order to translate real-world problems into mathematical problems.</p> <p>Solve: Students are able to use a variety of approaches and representations to solve mathematical problems.</p> <p>Analyze: Students are able to interpret mathematical solutions in context, such that the solutions make sense within complex situations.</p> <p>Communicate: Students are able to clearly and precisely construct valid logical arguments to defend their decisions and assumptions, explain their tools and approaches used, and present their solutions in context.</p>

		Literacy/Litt�ratie – English – Franais langue premi�re – Franais langue seconde — immersion	Numeracy
EVIDENCE	How will students provide evidence of their learning to show the full range of their understanding?	<p>Students will respond to questions written across three of the four Depth of Knowledge (DOK) levels. (Level four is not included, as it requires extensive time-involvement, not suited to a provincial assessment.)</p> <p>Level 1</p> <p>The student is able to use simple skills to recall or locate information from the text. The responses require only literal understanding of text presented. The student records simple facts and basic ideas.</p> <p>Level 2</p> <p>The student is able to show initial comprehension, understands important concepts and literal main ideas and is beginning to connect ideas using a simple organizational structure. The student is engaged in first draft writing for a limited purpose and audience.</p> <p>Level 3</p> <p>The student is able to apply deep knowledge to go beyond the text to explain, generalize, or connect ideas and is able to support their thinking, making references to and interpretations from the text or other sources. The student is developing multi-paragraph compositions that may include complex sentence structures or demonstrate some synthesis and analysis. Revisions improve precision of language to produce a logical progression of ideas.</p>	<p>Students will respond to questions written across three of the four Depth of Knowledge (DOK) levels. (Level four is not included, as it requires extensive time-involvement, not suited to a provincial assessment.)</p> <p>Level 1</p> <p>The student is able to recall or locate information such as a fact, definition, or term; use a procedure; or apply a formula.</p> <p>Level 2</p> <p>The student is able to demonstrate conceptual understanding through models and explanations, and to make decisions about how to approach a problem or activity.</p> <p>Level 3</p> <p>The student is able to solve a problem and explain their thinking through reasoning, planning, and using evidence.</p>

		Literacy/Litt�ratie	Numeracy
		– English – Franais langue premi�re – Franais langue seconde — immersion	
EVIDENCE	How will students provide evidence of their learning to make their thinking visible?	<p>Students will demonstrate their thinking using both selected- and constructed-response questions.</p> <p>Selected-response questions provide a limited range of possible answers. These may include matching, sequencing, sorting, highlighting, or multiple-choice-type questions.</p> <p>Constructed-response questions require students to develop and compose answers. Responses to these questions may be shorter or longer in nature. Shorter responses may include writing phrases or sentences, completing tables, manipulating graphs, or entering numeric responses. Longer responses may include writing a paragraph, producing a multi-paragraph composition, designing a graphic, or composing other written communication.</p>	
	How will we analyze and interpret the evidence?	<p><i>Currently in progress:</i> Development teams composed of educators from across BC are constructing scoring rubrics for these assessments. More information, including models and samples, will be provided when available.</p>	
TASKS	What are examples of tasks that students will perform to demonstrate their learning?	<p><i>Currently in progress:</i> Development teams composed of educators from across BC are constructing the tasks for these assessments using Depth of Knowledge (DOK) levels as a guideline. More information, including models and samples, will be provided when available.</p> <p>Students will be asked questions within various scenarios. The scenarios will reflect situations that are natural and relevant to students of this age. The contexts will be cross-curricular in nature. These contexts may be connected to place, story, cultural practices, and perspectives relevant to local First Peoples communities, local communities, and other cultures.</p>	

“ The shift to numeracy from mathematics is exciting because we are engaging students with realistic complex scenarios and asking them to apply a variety of math skills in one problem. Additionally, each problem unfolds like a story with more information given as you work through a variety of related questions and each question independent of the previous one. ”

Assessment structure

At this stage of their development, each Graduation Assessment will have four components. This structure evolved through discussions and efforts to have assessment structure to mirror better classroom practices and give students more ways to demonstrate their learning and reflect on their thinking. The general structure below is being considered as a model for all of BC's provincial assessments:

Activate Thinking/Collaboration Component

The Graduation Assessments begin with an activity to engage students and build connections to their knowledge and experience.

Common Component

The Graduation Assessments include engaging and interactive questions that all students will answer.

Student-Choice Component

The Graduation Assessments provide students with choice; students select a path that allows them to highlight and use their strengths.

Self-Reflection Component

The Graduation Assessments conclude with students reflecting on and analyzing their own experiences in the process and in the assessment tasks.

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Questions for discussion

The Ministry is seeking input on the design and implementation of these assessments.

Questions about Design

- The design framework includes the definitions of literacy and numeracy that will be used for the assessments. Do you have any suggestions to improve these definitions?
- The claims for the assessments identify what we want students to demonstrate. Are the claims appropriate for both literacy and numeracy? What suggestions do you have to improve them?

Questions about Implementation

- Since the literacy and numeracy assessments are not tied specifically to courses or individual classrooms, and school organizations vary throughout the province, who in your school will help students prepare for graduation assessments? Who will intervene and put supports in place when necessary?
- How can we make the information from these assessments useful to teachers, parents, and students? What information would be useful in the individual student results report?

Please respond to any of the questions as individuals or groups. Send responses to these questions or feedback about other information in this discussion paper to curriculum@gov.bc.ca.

Contacts:

Nancy Walt
Executive Director
Curriculum and Assessment Branch
nancy.walt@gov.bc.ca
250-217-4978

Markus Baer
Director
Provincial Graduation Assessments
markus.baer@gov.bc.ca
250-589-0277

