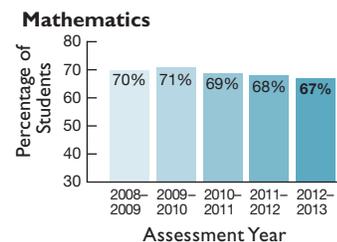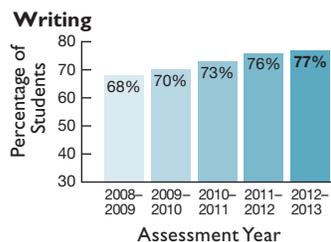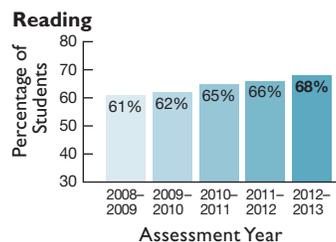# Summary of Results and Strategies for Teachers, 2012–2013

ASSESSMENTS OF READING, WRITING AND MATHEMATICS, PRIMARY AND JUNIOR DIVISIONS

PRIMARY DIVISION Comparison of Provincial Results Over Time

Percentage of All Grade 3 Students at or Above the Provincial Standard (Levels 3 and 4) Over Time

	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013
NUMBER OF STUDENTS	# = 125 481	# = 127 789	# = 124 117	# = 126 455	**# = 127 645**
READING	61%	62%	65%	66%	**68%**
WRITING	68%	70%	73%	76%	**77%**
MATHEMATICS	70%	71%	69%	68%	**67%**

Reading — Percentage of Students by Assessment Year: 2008–2009: 61%, 2009–2010: 62%, 2010–2011: 65%, 2011–2012: 66%, 2012–2013: 68%

Writing — Percentage of Students by Assessment Year: 2008–2009: 68%, 2009–2010: 70%, 2010–2011: 73%, 2011–2012: 76%, 2012–2013: 77%

Mathematics — Percentage of Students by Assessment Year: 2008–2009: 70%, 2009–2010: 71%, 2010–2011: 69%, 2011–2012: 68%, 2012–2013: 67%

- There were 127 645 Grade 3 students at the time of the 2012–2013 assessment.

- The primary-division assessment is based on *The Ontario Curriculum, Grades 1–8: Language* (revised 2006) and *The Ontario Curriculum, Grades 1–8: Mathematics* (revised 2005).
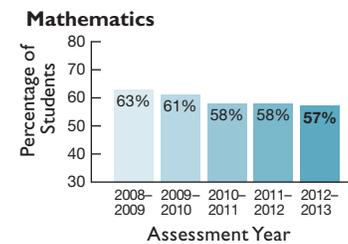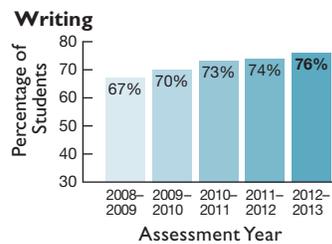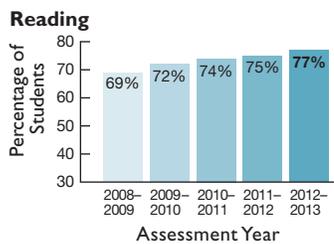
Observations

- Over the past five years, the percentage of students performing at or above the provincial standard in reading has increased steadily, by seven percentage points, from **61%** to **68%**.

- Over the past five years, the percentage of students at or above the provincial standard in writing has increased steadily, by nine percentage points, from **68%** to **77%**.

- Compared to five years ago, the percentage of students at or above the provincial standard in mathematics decreased by three percentage points, from **70%** to **67%**.

For more information, please visit the EQAO Web site, www.eqao.com. EQAO's Provincial Elementary School Report: Results of the 2012–2013 Assessments of Reading, Writing and Mathematics, Primary Division (Grades 1–3) and Junior Division (Grades 4–6) *will be released publicly on September 18, 2013.*

JUNIOR DIVISION Comparison of Provincial Results Over Time

Percentage of All Grade 6 Students at or Above the Provincial Standard (Levels 3 and 4) Over Time

	2008–2009	2009–2010	2010–2011	2011–2012	2012–2013
NUMBER OF STUDENTS	# = 136 076	# = 134 294	# = 132 308	# = 129 477	**# = 131 589**
READING	69%	72%	74%	75%	**77%**
WRITING	67%	70%	73%	74%	**76%**
MATHEMATICS	63%	61%	58%	58%	**57%**

- There were 131 589 Grade 6 students at the time of the 2012–2013 assessment.

- The junior-division assessment is based on *The Ontario Curriculum, Grades 1–8: Language* (revised 2006) and *The Ontario Curriculum, Grades 1–8: Mathematics* (revised 2005).

Observations

- Over the past five years, the percentage of students performing at or above the provincial standard in reading has increased steadily, by eight percentage points, from 69% to 77%.

- Over the past five years, the percentage of students at or above the provincial standard in writing has increased steadily, by nine percentage points, from 67% to 76%.

- Compared to five years ago, the percentage of students at or above the provincial standard in mathematics decreased by six percentage points, from 63% to 57%.
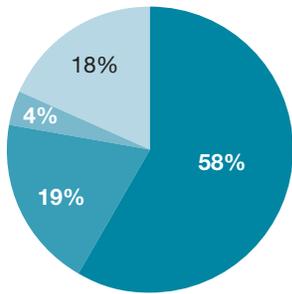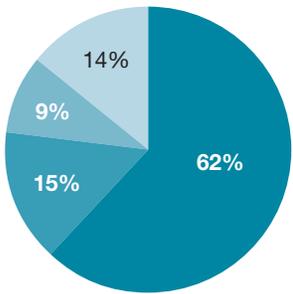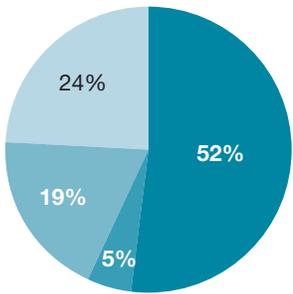
TRACKING STUDENT PROGRESS FROM GRADE 3 IN 2010 TO GRADE 6 IN 2013

Early Identification of Students Who Are Not Meeting the Standard in Grade 3 Is Key for Their Success in Grade 6

The pie charts below compare the performance of Grade 6 students on the junior-division assessment in 2013 with their performance in Grade 3 on the primary-division assessment in 2010. The numbers and percentages of students whose results on the two assessments were available (including those who participated, were exempted or did not provide enough work to be scored) are indicated below each pie chart.

The pie charts have been divided into four categories to reflect the four possible ways students can progress from one assessment to the next:

- **Maintained Standard**—Met the provincial standard in Grade 3 and Grade 6
- **Rose to Standard**—Did not meet the standard in Grade 3 but met it in Grade 6
- **Dropped from Standard**—Met the standard in Grade 3 but did not meet it in Grade 6
- **Never Met Standard**—Did not meet the standard in Grade 3 and also did not in Grade 6

READING From Grade 3 in 2010 to Grade 6 in 2013	WRITING From Grade 3 in 2010 to Grade 6 in 2013	MATHEMATICS From Grade 3 in 2010 to Grade 6 in 2013
18% / 4% / 19% / 58%	14% / 9% / 15% / 62%	24% / 19% / 5% / 52%

■ Maintained Standard   ■ Rose to Standard   ■ Dropped From Standard   ■ Never Met Standard

The reading results for the 117 730 students in the cohort are as follows:

- 58% (68 485) met the provincial standard in Grade 3 and Grade 6;
- 19% (22 607) did not meet the standard in Grade 3 but met it in Grade 6;
- 4% (5189) met the standard in Grade 3 but did not meet it in Grade 6 and
- 18% (21 449) achieved below the standard in both Grade 3 and Grade 6.

The writing results for the 117 708 students in the cohort are as follows:

- 62% (73 022) met the provincial standard in Grade 3 and Grade 6;
- 15% (17 510) did not meet the standard in Grade 3 but met it in Grade 6;
- 9% (10 206) met the standard in Grade 3 but did not meet it in Grade 6 and
- 14% (16 970) achieved below the standard in both Grade 3 and Grade 6.

The mathematics results for the 121 495 students in the cohort are as follows:

- 52% (63 597) met the provincial standard in Grade 3 and Grade 6;
- 5% (6053) did not meet the standard in Grade 3 but met it in Grade 6;
- 19% (22 781) met the standard in Grade 3 but did not meet it in Grade 6 and
- 24% (29 064) achieved below the standard in both Grade 3 and Grade 6.

Note: Student results in the analyses throughout this document have been linked using the students' names and their Ontario Education Numbers (OENs). Not all students could be matched. Reasons include the student's recent arrival in Ontario (i.e., he or she was not in the school system for the previous assessment), misspelled names or inaccurate OENs. Numbers have been rounded off to the nearest whole percent throughout this document.

STRATEGIES FOR TEACHERS: PRIMARY DIVISION

The following observations and suggested strategies for improvement are meant to assist educators in helping students develop and demonstrate their knowledge and skills in reading, writing and mathematics. The suggestions are based on an analysis of students' performance on the 2012–2013 Assessment of Reading, Writing and Mathematics, Primary Division, as well as on those of the previous four school years (2008–2009 to 2011–2012), and on feedback from teachers who scored the 2012–2013 assessment.

The released 2012–2013 *Language 2* booklet can be accessed on the EQAO Web site, www.eqao.com.

For more information on the skills assessed and the kinds of questions used to measure them, see the primary-division *Framework,* on the EQAO Web site. For more information on the terms in bold print, refer to the list of resources at the end of this section.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: READING

Through a combination of multiple-choice and open-response questions about narrative, informational, poetic and graphic reading texts, the primary EQAO assessment focuses on three reading skills:
Reading Skill 1: understanding explicitly stated information and ideas
Reading Skill 2: understanding implicitly stated information and ideas
Reading Skill 3: making connections between information and ideas in a reading selection and personal knowledge and experience

PRIMARY DIVISION: READING	
Observations	**Strategies for Improvement**
As in previous years, primary students performed better on multiple-choice than on open-response questions when demonstrating their reading comprehension. Students continued to perform best on multiple-choice questions measuring Reading Skill 1 (understanding explicitly stated information and ideas). This year, they performed slightly better on Reading Skill 3 (making connections between information and ideas in the reading selection and personal knowledge and experience) than on Reading Skill 2 (understanding implicitly stated information and ideas). On open-response questions, students performed slightly better on the question measuring Reading Skill 3 than on that measuring Reading Skill 1. As in 2012, performance on questions measuring Reading Skill 2 was lowest. For Reading Skill 3 open-response questions, scorers noted that students made fewer irrelevant personal connections to texts (e.g., "This reminds me of…" and "I remember when…") than in previous years. More students understood that the direction to "use your own ideas" required them to provide their ideas as a response to the question and provide specific and relevant evidence from the text. For example, in response to question 11 of the long narrative text "The Board," when asked to "Explain how the student is feeling," scorers noted that successful students included specific and relevant details from the text and avoided personal connections such as "When I was breaking a board" and "I would feel that way too."	**Reading Skills and Expectations** Teach reading by combining knowledge of student reading skills through systematic **assessment for learning** with effective teaching practices and careful text selection. Implement an appropriate balance of reading, using recommendations from the Primary Reading Discussion Paper (e.g., systematic assessment of student progress, teaching through **gradual release of responsibility,** oral language instruction, **accountable talk,** metacognitive development, strategy use, extensive time reading, finding ways to motivate students to engage in literacy activities) to help all students improve their reading achievement. Encourage students to reread open-response questions carefully and focus on key words to ensure they answer all parts of the question. Teach students that the different instructions (e.g., explain how, explain why, explain whether, describe, compare) signal different requirements for responses. Regularly use text-dependent questions that require students to go back to the text to find evidence. Use questions that require students to reread and think about the text. Continue to model how to begin a response using a few key words from the question and to support the response with evidence from the text. Have students practise going back to the text to find relevant examples and evidence that supports or proves their answer. A requirement of any response includes the need to demonstrate comprehension using evidence from the text that directly supports the student answer.

PRIMARY DIVISION: READING (continued)

Observations	Strategies for Improvement

Observations

Students continued to perform best on questions measuring Overall Reading Expectation 3 (use knowledge of words and cueing systems to read fluently). This expectation is measured by multiple-choice questions only. Students' performance was about the same on questions measuring Overall Reading Expectation 1 (read and demonstrate an understanding of a variety of literary, graphic and informational texts, using a range of strategies to construct meaning) and on questions measuring Overall Reading Expectation 2 (recognize a variety of text forms, text features and stylistic elements and demonstrate understanding of how they help communicate meaning).

On open-response questions, students continued to perform somewhat better on questions measuring Overall Reading Expectation 1 than on those measuring Overall Reading Expectation 2.

Scorers reported that students who scored the top codes (Codes 30 and 40) on open-response reading tasks tended to use key words from the question to focus their response and consistently provided specific and relevant details from the text to support their answers. Students who explained the relationship between their support and the rest of their answer received higher scores.

Reading Skills and Expectations (continued)

To prompt student analysis and rereading of the text, use probes and follow-up questions like "How do you know?" "Why?" "Explain your thinking further" to encourage students to "unpack" their thinking and describe how they have arrived at a particular answer. Have students return to the text to find evidence of their thinking in order to "prove it."

Ensure that the **four resource model** components (i.e., code user, meaning maker, text user, text analyzer) are present in reading instruction. To help address Overall Reading Expectation 2, lead students through text to demonstrate how to become meaning makers who think about the clues provided by the author and ask questions about the implied meaning beyond what is explicitly stated in the text. Provide opportunities for students to be text analyzers to determine the author's purpose, intentional organization and inclusion of details. Model how to use the **arc of inquiry** to critically think about what the author has presented in a text.

Provide multiple approaches when explicitly showing students how to **make inferences** about gaps in texts (e.g., "Who is speaking in this poem?" "When and where is this story happening?" "What might this word mean?" "What words signal how this paragraph is organized?"). Consider implications for **teacher professional learning** needs connected to these student learning needs.

Continue to demonstrate how to activate background knowledge during reading and how students can **make connections** to the text by thinking about its content and relating it to what they have learned already.

Promote a **word detective** approach to vocabulary acquisition. Use expository texts to examine **morphology** and discuss unknown words. Give students practice at using the unknown words in various contexts and subject areas.

Provide inquiry-driven, challenging tasks involving student choice, which integrate subjects to enable students to build **content area knowledge** and **vocabulary.**

Teach what it means to do a **close reading** of a selected excerpt, and regularly expect students to reread texts for deeper comprehension. Present strategy use through short pieces of text that have been chosen carefully to ensure appropriate complexity. Have students read, reread and discuss the selection in small groups in order to uncover the layers of meaning (i.e., **main idea,** how events develop, how the text is structured) and understand the implied messages. Then support their reading of more difficult texts by thinking aloud together to reinforce their strategy use, questioning of the text and understanding of multiple text components. Continue to have students revisit a text and challenge them to engage in **deep thinking** about other possibilities for analysis. Help students to **make thinking visible** to improve reading comprehension and reading independence.

PRIMARY DIVISION: READING (continued)

Observations	Strategies for Improvement
Students performed best on questions relating to the short narrative and the long narrative. Performance on the poem and graphic text was similar and somewhat better than on the information text. Scorers noted that in response to question 6 of the graphic text "The Eurasian Eagle Owl," when asked how the "information in the pictures and text boxes works together to help the reader understand the Eurasian eagle owl," successful students provided a response and then explained their answer with specific and relevant details from the text. Higher-scoring responses included an explanation of how these graphic features helped the reader understand this particular text. Students whose responses were not as successful responded with explanations about the general use of pictures and text boxes without providing examples from the text.	**Text Features, Forms and Genres** Teach students what to expect from different **genres** so they can approach text with a framework for understanding. They should expect that factual texts will focus on information, and graphic texts will use a variety of visual, graphic and **text features** to organize information, emphasize important ideas and provide additional information. When students are responding to questions about text features, ensure that students understand how the text feature helps readers to understand that specific text, including details from the specific text in their responses. During **shared reading,** examine **graphic features in information texts** (diagrams, pictures, charts) and have students demonstrate how to use this knowledge to show their comprehension of the text. Make one focus of **poetry** instruction a puzzle to be solved. Challenge readers to draw their own conclusions about meaning and the poet's key ideas through an examination of the subtext of poetry. Present poems through shared reading and new media (e.g., hyperlinks, digital poems) to engage students and have them work together in small groups to share ideas through **accountable talk.** Use poems that introduce unfamiliar **vocabulary** and help students use context clues to figure out the meaning of the words. Use large group **grand conversations** for authentic, lively talk concerning a "big" question about the text. Engage students in these conversations about texts to support the development of **robust and higher-order thinking skills.** Read aloud from informational texts and encourage students to select these for independent reading. Use these as springboards to authentic inquiry and writing activities. Refer to **question-answer relationships** as a type of question hierarchy to ensure students have experience with a variety of questions. Guide students in **questioning the author,** using queries such as "What is the author trying to say?" "What does the author want us to know?" "Why is the author telling us that now?" to help students analyze the specific intentions of the author.
	Assessment Practices Use **assessment for learning** classroom evidence to analyze what has been learned about students' thinking. Once the areas of student learning needs have been identified, engage in professional dialogue to consider which teaching strategies may be most effective, and provide for **teacher professional learning** needs in order to change practices. Use **collaborative teacher inquiry** networks to explore these professional learning questions. Work with colleagues to undertake **moderated marking** of EQAO-type questions and common assessment tools. Collaborate to deconstruct the scoring rubrics and anchors for Codes 30 and 40 reading responses on the EQAO Web site with attention to identifying support from the text and demonstrating comprehension of the text. Share learning targets and co-construct **success criteria** (e.g., similar to those in EQAO's scoring guides for reading responses) with students at the outset of learning. Have students articulate their learning and describe the evidence of comprehension they have provided in their response.

PRIMARY DIVISION: READING (continued)

Observations	Strategies for Improvement

Assessment Practices (continued)

Ask students to check their responses using classroom success criteria in order to **self-assess** and set next steps. Have them collect evidence of their own learning and debrief with peers. Use **descriptive feedback** related to success criteria to provide precise information to students about what they are doing well, what needs improvement and what specific steps they can take to improve their level of understanding.

Investigate the analysis of student levels and the suggested next steps in *Understanding Levels of Achievement: Using EQAO Information to Improve Student Learning (Primary Division)* to help identify student areas that need improvement.

Use Ministry of Education video resources and *Growing Success* for ideas about how to **assess for learning,** how to provide specific descriptive feedback on work and how to provide opportunities for students to **self-assess** and develop their own learning goals.

School Improvement Planning

Investigate the various data sources provided by **EQAO's reporting applications** for student groups.

Use a variety of data to confirm or **challenge practices** that are currently being used for instruction, discussing how to use the information to make positive changes. Provide opportunities for teachers and instructional leaders in **networks** to conduct and lead **collaborative teacher inquiry** into narrow, specific areas of effective reading instruction. Investigate any new teacher learning that may be necessary to change classroom practice.

Use **"if/then"** statements based on a **theory of action** to focus on the relationship between a specific practice and student learning, using classroom data as one measure of success.

Student Groups

An analysis of the performance of all student groups shows that they follow the same trends as the student population as a whole, with the following observations:

Girls continue to outperform boys on multiple-choice and open-response questions for all reading selections. The overall performance gap between girls and boys for all reading selections is moderate but has increased slightly since 2012.

The smallest gap occurred on questions relating to the long narrative. The largest gap occurred on questions relating to the poem and short narrative. A smaller and similar gap occurred on questions relating to the information and graphic texts.

Refer to EQAO's 2013 research paper *Starting Early: Teaching, Learning and Assessment: Linking Early-Childhood Development with Academic Outcomes— A Detailed Look* to inform understanding of factors that might intersect to affect academic outcomes before Grade 3 (e.g., gender, age, ELL and special education status), and to consider long-term programming initiatives to address these factors.

Target reading achievement by individual and groups of students and monitor the evidence of interventions. Use individual and small-group instruction to support each child's literacy development. **Differentiate instruction** to optimize student reading comprehension through focused lessons in small groups.

Use recommendations from *Learning in the Field: The Student Work Study Teachers Initiative, 2009–2010* (e.g., rich instructional tasks connected to students' experience and schema; co-creating criteria and scaffolding for guided practice) to help all students improve their performance. In addition, select the most appropriate **high-yield strategies** to address diverse needs and improve student work (e.g., immediate feedback, ongoing small-group assessment, differentiated writing instruction, mind maps and visualization).

PRIMARY DIVISION: READING (continued)

Observations	Strategies for Improvement
As in 2012, boys' performance declined on multiple-choice questions measuring Overall Reading Expectation 3 and has continued to do so since 2011.	**Student Groups (continued)** Adopt practices identified in *Towards an Understanding of Gender Differences in Literacy Achievement,* an EQAO research study examining strategies employed by schools with small gender gaps in assessment results, as follows: set high academic and behavioural expectations regardless of gender or background; develop consistent standards and an understanding of effective literacy instruction among teachers of all subjects, informed by practice and research; foster positive attitudes toward reading and use male role models to promote literacy as part of the school culture.

The performance of English language learners closely matched that of the general population on questions related to all text types, and the performance gap between these students and the general population decreased and is very minimal.

Additionally this year, and in contrast to the general population, the performance of these students improved on Overall Reading Expectation 3.

English language learners continue to experience the greatest difficulty with questions measuring Overall Reading Skill 3. However, since 2012, the performance of English language learners on questions measuring Overall Reading Skill 3 has improved.

Students with special education needs had more difficulty with questions measuring Overall Reading Expectations 1 and 2 than with those measuring Overall Reading Expectation 3. However, as in 2012, the largest gap in performance between students with special education needs and the general population was for Overall Reading Expectation 3.

As in 2012, the smallest gap in performance occurred for questions relating to the graphic text. The performance gap for all text types remains similar to that of 2012, except for that related to the information text, which has decreased slightly.

Give **male students** many opportunities to practise the skills required by Overall Reading Expectation 3 by having them use **context clues** to figure out unfamiliar **vocabulary** in texts in all subject areas. In **shared reading,** explicitly discuss the **denotations** (literal meanings) and **connotations** (implied meanings) of words and how these can help students make inferences when reading.

Refer to "Lessons from EQAO Data on English Language Learners in Ontario Schools" for whole-school initiatives to provide high-quality instruction and support the needs of **English language learners.**

Focus on developing **academic language** proficiency for all students, including English language learners, and scaffold students so that they can participate fully in classroom discussions. Help English language learners to adopt new sentence structures in a variety of contexts and use simple vocabulary side by side with more sophisticated new terms. Use **text walks** in a large group as part of a pre-reading scan, and record words to revisit. Have students work together to make inferences about word meanings using **graphophonic** and **context clues.** Think aloud about what the author may want readers to pay attention to when they read.

Continue to use visual tools (e.g., **anchor charts**) and scaffolds (e.g., paragraph frames) in all subject areas. Provide **students with special education needs** with **assistive technologies** for idea generation, organization and completion of writing tasks whenever possible.

Use a **tiered approach** to teaching the strategies of reading comprehension, along with precise and intensive instruction. Teach all students, including those with special education needs, how to use the set of four comprehension strategies featured in **reciprocal teaching** to focus on the important components of the reading process and to develop their comprehension monitoring abilities.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: WRITING

Through a combination of multiple-choice questions, short-writing tasks and long-writing tasks, the primary-division assessment focuses on the following writing skills:

Topic Development
- Content—developing a main idea with sufficient supporting details
- Organization—organizing information and ideas in a coherent manner
- Conventions—use of spelling, grammar, punctuation

PRIMARY DIVISION: WRITING	
Observations	**Strategies for Improvement**

Observations

Students performed better on the multiple-choice writing questions than on the short- and long-writing tasks measuring Overall Writing Expectations 1 (develop and organize content) and 2 (use knowledge of form and style).

In contrast, they performed better on the short- and long-writing tasks than on the multiple-choice writing questions measuring Overall Writing Expectation 3 (apply knowledge of language conventions and present written work effectively).

As in the previous five years, when responding to the short- and long-writing tasks, students performed better on Writing Skill 3 (using conventions—spelling, grammar, punctuation—in a manner that does not distract from clear communication) than on Writing Skill 1 (developing a main idea with sufficient supporting details) and Writing Skill 2 (organizing information and ideas in a coherent manner). However, this year, students' performance on Writing Skill 3 declined slightly for all three tasks.

For topic development, performance on the long-writing task was about the same as in 2012, and performance on the two short-writing tasks declined somewhat.

Scorers reported that, for topic development, written work at Code 20 tended to list several ideas or details with minimal development. Responses that usually received a Code 30 or 40 provided effective opening and/or concluding sentences, developed ideas with relevant details and linked these together using appropriate transitional words and phrases that signaled an identifiable organizational framework.

For example, on the short-writing task, when asked to write a paragraph about a new form of transportation and how it helps people, Codes 30 and 40 responses tended to provide a description of several design features of the transportation method and included relevant and specific supporting details to explain how each of these features helped people.

Strategies for Improvement

Writing Skills and Expectations

Model careful reading of the EQAO writing prompts to identify the topic, written form, purpose and audience specified. Provide opportunities for students to become familiar with the vocabulary of the assessment booklets on the EQAO Web site, so that they gain confidence in their ability to write the assessment.

Continue to introduce students to the written text forms required by the curriculum and chart **mentor texts** (models of good writing). Discuss the key elements that readers will expect writers to provide. Pose writing prompts that require students to organize ideas in various ways.

Use **criterion-based feedback** to address the proper use of writing conventions, clarity of ideas and effective language choices. Give feedback on adherence to **writing conventions** when the writing is almost complete, and focus on one or two features that could be improved, identifying a pattern rather than every error.

Encourage the use of a few well-chosen **graphic organizers** (e.g., idea web, four square and components of narrative and of non-fiction writing). Teach students to move information from a graphic organizer to a written paragraph. Start with organizers, such as a **scaffold,** and help students develop their use beyond formulaic linking words and styles of response.

Prompt students to incorporate the various **elements of writing** into their written work, with a particular focus on **ideas** and **organization.** Model how to develop effective opening and concluding sentences. Explicitly share how to focus on a few ideas and details relevant to the **writing form, purpose and audience** required by the prompt rather than listing many underdeveloped ideas and details.

PRIMARY DIVISION: WRITING (continued)

Observations	Strategies for Improvement
	Assessment Practices Link expectations, learning goals and **success criteria,** and use these to help students set goals for their writing. Use examples of quality work to co-construct success criteria (e.g., similar to those in EQAO's scoring guides for writing responses) with students at the outset of learning. Have students apply the criteria, independently and with teacher guidance, to samples of their own and others' work.
	School Improvement Planning Engage in professional dialogue about student writing to find patterns and trends. Make samples of student writing the focus of **teacher professional learning, collaborative teacher inquiry** and reflection on practice to better understand student learning needs, generate next steps and gain a clearer understanding of what quality work looks like. Investigate the various data sources provided by the online **EQAO reporting applications** for student groups.
All student groups follow the same trends as the student population as a whole, with the following observations: As in previous years, girls outperformed boys on all multiple-choice writing questions and short- and long-writing tasks. The performance gap in favour of girls for topic development for both short- and long-writing tasks has remained consistent over time. Again this year, girls received approximately twice the number of Code 40 scores as boys. The gap between girls and boys in the use of conventions also continued. The percentage of English language learners performing at or above the provincial standard for topic development on the short- and long-writing tasks has continued to increase over the past five years, and the gap between their results and those of the general population has disappeared. The performance of English language learners in the use of conventions on short- and long-writing tasks was slightly better than that of the general population. There continues to be a significant gap between students with special education needs and the general population on multiple-choice items for all three writing skills, although the gap decreased this year for Writing Skill 3.	**Student Groups** Target writing achievement of students and monitor the evidence of interventions. Use individual and small group instruction to support each child's literacy development. **Differentiate instruction** to optimize skill development in student writing through focused lessons in small groups. Encourage students to use the ideas from their reading in their writing. Make connections between what students have heard, read and talked about and what they can write. Provide authentic reasons for students to develop their writing skills through **non-fiction writing** about their interests. Before writing, rehearse through drama, **storytelling** or visualization (construction of a sequence of mental images from experience or imagination) to help students develop and revise ideas. During writing, have students share their work with peers and teachers to increase their motivation to write and their desire to improve. Develop student interest in verbal and written expression, and enhance students' **vocabulary** through games, activities and word collections. Show how different word choices can make a difference so that writing becomes more descriptive, detailed and precise.

PRIMARY DIVISION: WRITING (continued)

Observations	Strategies for Improvement
	Student Groups (continued)
The overall performance of students with special education needs in topic development on the long-writing task has improved steadily since 2009. This year, the percentage of students with special education needs performing at or above the provincial standard increased for the long-writing task, but decreased for both short-writing tasks.	Actively involve **English language learners** in learning about how words work. Explore words through modelled, shared, guided and independent formats. Expose students to a wide variety of print and non-print materials, both fiction and non-fiction. Examine new words in a number of ways to address a variety of learning styles. Model for all students, including **English language learners,** the use of linking words and phrases that help to organize ideas in a coherent fashion, such as sequence ("first," "next," "then," "after that," "finally") and cause and effect ("because," "because of," "as a result"). Start students with basic linking words through repetition and practice, and then build on this foundation to develop more breadth and depth of word usage. Help all students develop **word consciousness.** Have students do daily **quick writes** to reinforce skills that have been taught in **mini-lessons** and to promote reflective thinking. Provide **students with special education needs** with **assistive technologies** for idea generation, organization and completion of writing tasks whenever possible. **Differentiate instruction** to optimize student writing through the use of focused lessons in small groups. Use a **writer's workshop** approach so that students can write with support. **Conference** with students to provide feedback on their writing to assist them in making the connection between the criteria that they have satisfied and those that they have not. Regularly conduct topic-development-focused conferences to encourage students to clarify their main idea and develop it with relevant specific details. After the conference, explain the next steps so that the student can make his or her writing more clear and coherent. Model how to apply feedback, using samples of student work. Guide students in reflecting on how the feedback helps them improve their work.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: MATHEMATICS

Through a combination of multiple-choice and open-response questions based on the *Ontario Curriculum* expectations from the strands Number Sense and Numeration, Measurement, Geometry and Spatial Sense, Patterning and Algebra, and Data Management and Probability, the primary-division EQAO assessment focuses on the following cognitive skills:

- Knowledge and Understanding—facility with subject-specific content (knowledge) and comprehension of its meaning and significance (understanding);
- Application—ability to select the appropriate "tool" or get the necessary information and apply it effectively to solve the problem and
- Thinking—ability to select and sequence a variety of tools to solve a problem and demonstrate a critical-thinking process.

PRIMARY DIVISION: MATHEMATICS

Observations	Strategies for Improvement
General This year, male and female students performed equally well on all strands and cognitive skills. In 2013, students performed best on questions mapped to the cognitive skill Knowledge and Understanding and least well on questions mapped to the cognitive skill Thinking. Students continued to perform better on multiple-choice questions than on open-response questions. English language learners closed the gap in achievement and had similar trends across all strands, cognitive skills and question types. Students with special education needs performed approximately 15 percentage points below the general population on all strands, cognitive skills and question types. The largest gaps in performance occurred in the Number Sense and Numeration and Measurement strands.	Provide opportunities for teachers and instructional leaders to participate in **collaborative teacher inquiry** to examine evidence-based teaching strategies that engage all learners. Focus on the relationship between specific practices and student learning, using various sources of data. Determine areas of **teacher learning needs,** and integrate new knowledge about effective instructional strategies into classroom practice. Using **assessment for learning** evidence and **moderated marking** of student work, analyze the learning reflected in the student's work to consider further learning and methods of assessment. Observe student interactions for evidence of mathematical understanding in students' oral and written communication, and use this information for responding and planning next steps. Create **physical and social environments** that optimize mathematical learning. Display student solutions, and collaboratively construct **math strategy walls,** anchor charts and visual displays of mathematics ideas. Nurture positive attitudes for learning math through engaging learning opportunities and **real-world problem solving.** Use recommendations from **"Eight Tips for Asking Effective Questions"** (e.g., anticipate student thinking, link to learning goals, pose open questions, pose questions that actually need to be answered, pose questions that open up the conversation to include others). Apply the **math scales** from *Understanding Levels of Achievement: Using EQAO Information to Improve Student Learning, Primary Division* to student work and to determine next steps. Engage students in **math talk** dialogue as part of robust thinking. Have students work in pairs and small groups to answer both open-response and multiple-choice questions. To ensure that students understand that multiple-choice questions often involve calculations, expect them to provide evidence of the solution process they used. Work with students to make their **thinking visible** and provide models of how to answer open-response questions using accurate and precise **written communication** of mathematical thinking.

PRIMARY DIVISION: MATHEMATICS (continued)

Observations	Strategies for Improvement
General (continued)	Emphasize the process of problem solving by teaching students to develop, select, apply and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations. Use the **Four-Step Problem-Solving Model,** and continue to integrate the **mathematical process** expectations.
	Combine classroom evidence with the information available through EQAO's reporting application to examine the needs of individual students and groups of students. Differentiate to ensure each student's success and engagement. Target and monitor the evidence of interventions. Incorporate the allowed accommodations listed in *EQAO's Guide for Accommodations, Special Provisions and Exemptions.*
	Use **EQAO sample assessment questions and scoring guides** to generate discussions and help students become aware of common errors and misconceptions, and what the requirements are for a complete solution.
Number Sense and Numeration	Continue to promote mental math. Give students the opportunity to be exposed to a variety of problem-solving strategies related to real-life examples.
In 2013, the general population performed best on the questions from this strand.	Provide opportunities for students to practise rounding a variety of two-digit numbers with a focus on numbers with a five as the "ones" digit.
Scorers of the open-response question requiring students to relate multiplication of one-digit numbers to real-life situations noted that most students were able to multiply, but some students did not find the difference between the two totals.	
Scorers of the open-response question requiring students to round two-digit numbers to the nearest 10 noted that most students were able to round numbers to the nearest 10 but were less successful when the "ones" digit was a five.	
Measurement	Continue to reinforce the difference between perimeter and area by teaching them simultaneously.
Students performed well on the questions requiring them to calculate area and perimeter.	Emphasize the importance of including units in calculations when using linear measurements to compare objects in order to demonstrate understanding.
Scorers of the open-response question involving comparing objects using linear measurements noted that most students demonstrated an understanding of the relationship between centimetres and metres, but some students omitted units in their calculations and answer.	

PRIMARY DIVISION: MATHEMATICS (continued)

Observations	Strategies for Improvement
Geometry and Spatial Sense In 2013, the general population performed least well on the questions from this strand. Scorers of the open-response question requiring students to complete and describe lines of symmetry on a shape noted that many students were able to complete the shape and identify one additional line of symmetry but had difficulty explaining lines of symmetry. Scorers of the open-response question requiring students to solve problems requiring the least number of pattern blocks to cover a shape noted that many students were able to cover the shape with the least number of pattern blocks and name each pattern block used but did not discuss the relationships between the pattern blocks.	Engage students to communicate their understanding of lines of symmetry by creating a **responsive mathematics learning environment.** Encourage students to describe their thinking using appropriate mathematical language.
Patterning and Algebra Overall, students performed well on questions from this strand. Scorers of the open-response question requiring students to represent geometric patterns using a number line noted that most students were able to represent the pattern on the number line, but some incorrectly labelled the numbers on the number line.	Have students extend patterns using a variety of starting points and pattern rules. Continue to provide various manipulatives for students to use to display their patterns.
Data Management and Probability Students performed well on questions requiring them to read and interpret graphical data or complete a pictograph. Scorers of the open-response question requiring students to predict the frequency of an outcome in a probability game noted that most students were able to relate space on the spinner to fairness in a game but did not always use probability language to explain their answer.	Continue to provide opportunities for students to work with scales and keys on graphs that have a many-to-one correspondence, especially pictographs where half of the representative symbol is shown. Provide opportunities for students to work in small group settings to encourage all students to participate and explain their answers in order to encourage communication using probability language.

STRATEGIES FOR TEACHERS: JUNIOR DIVISION

The following observations and suggested strategies for improvement are meant to assist educators in helping students develop and demonstrate their knowledge and skills in reading, writing and mathematics. The suggestions are based on an analysis of students' performance on the 2012–2013 Assessment of Reading, Writing and Mathematics, Junior Division, as well as on those of the previous four school years (2008–2009 to 2011–2012), and on feedback from teachers who scored the 2012–2013 assessment.

The released 2012–2013 *Language 2* booklet can be accessed on the EQAO Web site, www.eqao.com.

For more information on the skills assessed and the kinds of questions used to measure them, see the junior-division *Framework* on the EQAO Web site.

For more information on the terms in bold print, refer to the list of resources at the end of this section.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: READING

Through a combination of multiple-choice and open-response questions about narrative, informational, poetic and graphic reading texts, the junior EQAO assessment focuses on three reading skills:

Reading Skill 1: understanding explicitly stated information and ideas

Reading Skill 2: understanding implicitly stated information and ideas

Reading Skill 3: making connections between information and ideas in a reading selection and personal knowledge and experience

JUNIOR DIVISION: READING

Observations	Strategies for Improvement
As in previous years, Grade 6 students continued to perform better on multiple-choice questions measuring Reading Skill 1 (understanding explicitly stated information in the reading selection) than on those measuring Reading Skill 2 (understanding implicitly stated information in the reading selection) or 3 (making connections between the reading selection and their own knowledge and experience).	**Reading Skills** Focus on questioning strategies to improve reading skills. Provide instruction in **question-answer relationships** to help students identify what they are being asked to do (e.g., "right-there" questions signal a need to locate explicitly stated information, frequently found in one place in a text; "think-and-search" questions signal a need to read the entire passage in order to **make inferences** about the gaps between text components; "author-and-you" questions require making connections between one's knowledge and experience and textual components).
Again this year, students performed better on open-response items measuring Reading Skill 3 than on Reading Skill 2. Performance on questions measuring both skills improved slightly this year. Reading Skill 1 is not assessed in open-response questions.	Teach what it means to do a **close reading** and regularly expect students to reread text for deeper comprehension. Carefully choose texts to ensure appropriate complexity. Continue to model **before-, during- and after-reading strategies** across all content areas.
Over the past three years, the percentage of Grade 6 students scoring a Code 30 or 40 on open-response questions measuring Reading Skill 2 and Reading Skill 3 has also increased.	Additionally, introduce the **questioning the author** strategy, using prompts such as the following: What is the author's purpose? What is the author talking about? Does this make sense in light of what we already know? How does this connect with what we have read before? What does the author mean here?
For all open-response reading tasks, scorers noted that students made fewer irrelevant personal connections to texts than in previous years (e.g., "This reminds me of…" and "I remember when…"). More students understood that the direction to "use your own ideas" required specific and relevant ideas about the content of the texts themselves.	See the new EQAO article "Making Connections Makes Sense," listed in the resources section of this document, for more information on accessing one's content area knowledge both to enhance reading comprehension and to generate writing content.

JUNIOR DIVISION: READING (continued)

Observations	Strategies for Improvement
For example, in response to question 6 of the graphic text, when asked to "Explain how the information in 'Spring Sweetness' would be useful to someone who is starting a maple syrup farm," scorers noted that successful students included specific and relevant details regarding a maple syrup farm and avoided irrelevant personal connections such as "I visited a maple syrup farm" and "I would enjoy starting a maple syrup farm."	**Reading Skills (continued)** As in past years, scorers also emphasized that, while formulaic response models (e.g., APE, RAP) may initially be helpful to guide some students in their thinking, these often promote the inclusion of irrelevant connections, as well as preventing students from answering the entire question.
	Assessment Practices Use classroom information provided through **assessment for learning** to identify and implement the most effective strategies to improve comprehension. Once the areas of student learning needs has been identified, engage in professional dialogue to consider **teacher professional learning** needs. Additionally, use **moderated marking** of EQAO-type questions to decide on courses of action. Use the scoring rubrics and anchors available on the EQAO Web site to illustrate the reading comprehension required to score a Code 30 or 40 on open-response questions. Use EQAO's *Understanding Levels of Achievement* to clarify what levels of performance on the language component look like and to acquire specific strategies for improving aspects of student work. Through think-aloud methods, model the understanding required to develop effective responses to open-response reading questions. Subsequently, have students both rewrite Code 20 responses to include more relevant and specific details, and practise generating the quantity and quality of writing required to demonstrate Codes 30 and 40 understanding.
Grade 6 students continue to perform best on multiple-choice questions measuring Overall Reading Expectation 1 (read and demonstrate an understanding of a variety of literary, graphic and informational texts, using a range of strategies to construct meaning). Student performance on multiple-choice questions measuring Overall Reading Expectation 3 (use knowledge of words and cueing systems to read fluently) improved this year. Students' weakest performance was on multiple-choice questions measuring Overall Reading Expectation 2 (recognize a variety of text forms, text features and stylistic elements and demonstrate an understanding of how they help communicate meaning). Students continue to perform better on multiple-choice questions than on open-response questions	**Reading Expectations** To address Overall Reading Expectation 1, teach strategies for locating information and determining its importance, such as using text features, skimming and scanning, highlighting, recognizing **signal words** and using the structure of the text for clues to meaning. Regularly teach **summarizing** strategies. Provide frequent opportunities for students to summarize brief text excerpts orally and in writing. Have small groups read these summaries to one another and identify which ones are most effective in providing the **main idea** of the selection and sufficient supporting details. This practice also provides students with the opportunity to hear what paraphrasing sounds like and to use language more flexibly. Familiarize students with the **four resource model** components (i.e., meaning maker, code user, text user, text analyzer) and balance opportunities for them to apply all roles. Continue emphasizing **organizational patterns** and associated **signal words** (e.g., problem and solution, action or cause and reaction or effect,

JUNIOR DIVISION: READING (continued)

Observations	Strategies for Improvement

Reading Expectations (continued)

when demonstrating comprehension of both text content and form. However, when measuring overall expectations, performance on multiple-choice questions has declined slightly, while performance on open-response questions has improved slightly.

Although performance on open-response questions for both Overall Reading Expectations 1 and 2 improved slightly over 2012, students continue to perform less well on questions assessing Overall Reading Expectation 2. Overall Reading Expectation 3 is not assessed through open-response questions.

Scorers reported that students who scored the top codes (Codes 30 and 40) on open-response reading tasks tended to use key words from the question to focus their answer and consistently provided specific and relevant details from the text to support their answers. Students who explained the relationship between their support and the rest of their answer received higher scores.

For example, when asked after reading the graphic text ("Spring Sweetness") to "Choose one of the graphic images and explain how it helps the reader understand the process of making maple syrup," successful students included specific references to a graphic image (e.g., labels, close-up), provided details of the maple-syrup-making process and explained the connection between the graphic image and the process. Scorers noted that, at lower scores, the text support was often vague and referred to graphic images in general.

In response to question 12 of the narrative text "Iceberg Wranglers," when asked to "Explain why the first journal entry is effective in creating a sense of adventure for the reader," scorers noted that, from this entry, successful students identified and linked specific details about the setting to the emotional state of the journal writer, and explained that this linkage created excitement and engaged the reader.

Scorers noted that the most common reason for a lower score was due to a lack of relevant and specific support from the text.

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sequence) in all text types. Have students select and use the most appropriate **graphic organizers** to show the relation between ideas in texts. Also provide instruction in how to analyze questions for the organizational patterns that they signal.

To address Overall Reading Expectation 2, model and give students the opportunity to identify **text features, text forms** and stylistic elements, and explain how they relate to the meaning of a text. Additionally, provide charts of text features, forms and genres for student reference.

To address Overall Reading Expectation 3, use a variety of instructional methods and activities to build **academic language and vocabulary.** Focus on **morphology** to build word knowledge and use **word study,** word walls and word-learning strategies to ensure the acquisition of concepts and subject-specific terms in all courses.

Text Types

Students performed best on the short narrative and the long narrative. Their performance on the graphic and information text was similar. They experienced the most difficulty when answering questions related to the poem. Compared with last year's results, performance declined somewhat for the long narrative and the poem, and improved slightly for the information text and short narrative. The greatest improvement was on the graphic text, for which, in 2012, performance was the weakest.

Provide students with text sets (a collection of texts from a variety of genres that examine a specific subject or theme). Have small groups identify the conventions of each genre and present their findings on how these are evident.

Include **poetry** in text sets to encourage students to develop meaning, expand their vocabulary, make inferences, identify the main idea, make judgments and draw conclusions.

JUNIOR DIVISION: READING (continued)

Observations	Strategies for Improvement
	Text Types (continued) Based on mentor texts, create anchor charts of **text features, forms and genres** to help students understand the characteristics of these texts. In all subject areas, continue guided and shared reading of graphic texts, with a focus on identifying specific textual features and explaining how they work together to provide information. Lead guided questioning of the components. For example, students could be asked to consider how the three numbered components, with their headings, in the graphic text in Section D relate to one other: Do they show a comparison of items? Parts of a process? And how do the headings relate to the illustrations beside them? Provide students with opportunities to find and share graphic texts that relate to the subject of study (both from print sources and the Internet).
	School Improvement Planning Consider how to implement and integrate key research-based **elements of effective practice** (e.g., providing timely mini-lessons; previewing and linking prior and newly introduced concepts and knowledge; using participation structures to present content in manageable chunks, such as through a jigsaw, or **reciprocal teaching;** and using macro strategies such as reviewing and summarizing information). Provide multiple opportunities for students to become familiar with the vocabulary, **success criteria** and tools of assessment, so that they can gain the confidence and expertise to **self-assess** their reading comprehension and skills. Guided by data, use **collaborative teacher inquiry** to refine planning, instruction and the assessment of student learning. Engage in **teacher moderation** to help develop an understanding of what makes an open-response question effective. After identifying student and teacher learning needs, use **networked learning communities** to establish a focus for teacher thinking and practice.
An analysis of the performance of all student groups shows that they follow the same trends as the student population as a whole, with the following observations: As in 2012, for multiple-choice reading questions, the performance gap between female and male students for Overall Reading Expectations 2 and 3 was minimal. This year, the performance gap between female and male students for Overall Reading Expectation 1 disappeared.	**Student Groups** Model and employ questioning strategies from **critical literacy** to help students analyze, interpret and evaluate texts (e.g., examining texts for point of view, for the construction of gender roles and for use of connotative language). Focus on how literacy can be used to help students read the world and exercise power over their environments. To address connections between gender and literacy, identify the degree to which **boys' underachievement** intersects with other factors (socio-economic status, culture) in order to determine the most effective interventions for struggling readers and students at risk. Use the online **EQAO reporting applications** to fine-tune an analysis of the performance of students and student groups.

JUNIOR DIVISION: READING (continued)

Observations	Strategies for Improvement

Observations

The gender gap for performance on open-response questions is larger than that for performance on multiple-choice questions. Over the past five years, the performance gap between female and male students for open-response reading questions has been consistent.

This year, the gender gap for performance on multiple-choice and open-response questions combined was smallest for the information text.

This year, the performance gap between the general population and English language learners decreased for both multiple-choice and open-response reading questions. The gap was smallest for questions measuring Overall Reading Expectation 2. For open-response reading questions, the gap was minimal for performance on both Overall Reading Expectations 1 and 2.

Since 2009, the largest gap between the general population and English language learners regarding reading skills continues to be on questions measuring Reading Skill 1.

The smallest gap between the general population and English language learners occurred for combined multiple-choice and open-response questions related to the graphic text. The largest gap was for the long narrative.

The pattern of relative strengths and weaknesses across questions for students with special education needs was similar to that of the general population.

The gap in performance between the general population and students with special education needs has been smallest over time for questions measuring Overall Reading Expectation 1.

When assessing reading skills, the largest gap between the general population and students with special education needs continues to be for questions measuring Reading Skill 1.

The performance gap for overall reading expectations for both multiple-choice and open-response reading questions has remained constant over time.

Strategies for Improvement

Student Groups (continued)

Adopt practices identified in *Towards an Understanding of Gender Differences in Literacy Achievement*, an EQAO research study examining strategies employed by schools with small gender gaps in assessment results, as follows: set high academic and behavioural expectations regardless of gender or background; develop consistent standards and understanding of effective literacy instruction among teachers of all subjects, informed by practice and research; foster positive attitudes toward reading; and use male role models to promote literacy as part of school culture.

Review the monograph entitled "Canadian-born English Language Learners" to fine-tune understanding of these students' needs (e.g., any gaps between basic interpersonal communication skills and academic language proficiency, the specific nature of the scaffolding that will help them interpret any miscues during reading).

Refer to the monograph entitled **"Reading fluency"** for ideas on how to provide intentional instruction in phonological awareness, letter knowledge and patterns and sound-letter correspondences. Use shared and repeated reading of texts to build fluency.

Provide opportunities for all students, especially those who struggle, to demonstrate their ability to use both high and lower frequency words and apply specific cueing systems to read fluently (e.g., use words from oral vocabulary and grade-level texts, terminology used regularly in discussions and posted on anchor charts and words from shared-, guided- and independent-reading texts and resource materials in the curriculum subject areas).

Use recommendations from *Learning in the Field: The Student Work Study Teachers Initiative, 2009–2010* (e.g., rich instructional tasks connected to students' experience and schema; assessment for learning, including co-creating criteria and scaffolding for guided practice) to help all students improve their performance. In addition, select the most appropriate **high-yield strategies** to address diverse needs and improve student work (e.g., immediate feedback, ongoing small-group assessment, differentiated writing instruction, accountable talk, mind maps and visual organizers).

Use inclusive small-group discussion strategies (e.g., Placemat; Four Corners; Graffiti; "I" Message; Inside-Outside Circle; Jigsaw; Retell, Relate, Reflect; Say Something) to help all students, including **students with special education needs,** engage with resources, contribute their own ideas and benefit from those of their peers.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: WRITING

Through a combination of multiple-choice questions and short- and long-writing tasks, the junior-division assessment focuses on the following writing skills:

Topic Development
- Content—developing a main idea with sufficient supporting details
- Organization—organizing information and ideas in a coherent manner
- Conventions—use of spelling, grammar, punctuation

JUNIOR DIVISION: WRITING	
Observations	**Strategies for Improvement**
This year, students performed better on multiple-choice writing questions measuring Overall Writing Skill 3 (use conventions—spelling, grammar, punctuation—in a manner that does not distract from clear communication) than on those measuring Overall Writing Skills 1 (develop a main idea with sufficient supporting details) and 2 (organize information and ideas in a coherent manner). Performance on questions measuring Overall Writing Skill 3 improved, stayed the same on those measuring Overall Writing Skill 2 and declined on those measuring Overall Writing Skill 1. Students' overall performance on the short- and long-writing tasks improved, with performance on the long-writing task increasing by about four percentage points. With respect to topic development, performance was slightly better on the short-writing tasks than on the long-writing task. Students continue to perform better on conventions than on topic development for all writing tasks. The number of students scoring at Codes 30 and 40 for topic development on all short- and long-writing tasks increased this year. Scorers noted in student work the specific characteristics of effective writing as described in the writing rubrics. Scorers noted that the most effective responses to the short-writing prompt "Get Active Day" presented information about the topic (e.g., how the day would be organized and/or the activities being participated in and/or the purpose of the day), were logically organized and included specific, relevant details (e.g., including comparisons, descriptions and situations). In contrast, work at Code 20 often read as a simple list of activities. For the long-writing prompt "Return a Ring" the most effective student responses demonstrated the skill of presenting a well-developed narrative in which each idea was developed with an idea followed by specific and relevant details.	**Writing Skills and Expectations** Use **writing to learn** strategies to help students consolidate their thinking, build understanding of ideas and information, and gain proficiency in formulating and recording their thoughts. Use the **gradual release of responsibility model,** differentiate teaching strategies and provide sufficient time for all aspects of the **writing process** (e.g., inquiry, generating ideas, selecting a form, drafting and developing content, revising and organizing content). Frequently emphasize and demonstrate that the writing process is not linear in application. Use a **writer's workshop** approach to provide whole-class direct-teaching of a specific topic, guided writing lessons and independent writing time during which students either write on their own or with support, or participate in peer or teacher-student **conferencing.** Extend opportunities for **non-fiction writing** in all subject areas. Introduce students to commonly used non-fiction forms (e.g., recountings, reports, procedures, persuasive texts) and have them identify their features (e.g., a report might include headings and subheadings, an opening statement, factual information organized by subtopic and a conclusion offering recommendations). Model how to find, select and organize information about a topic, using specific and relevant details. Emphasize that these details should include subject-area vocabulary and concepts (e.g., the topic of getting active should prompt students to use words associated with health units, human biology and physical education). Have students practise careful reading of writing prompts, with a focus on how to identify the topic, **writing form, purpose and audience.** Use media literacy forms to nurture all aspects of the writing process. For example, blogs, podcasts, fan fiction, Web sites, advertisements, wikis, public service announcements and lyrics all require students to determine the audience and purpose, develop a main idea with relevant and sufficient details, use appropriate vocabulary and language conventions, and adhere to the features and conventions of the form.

JUNIOR DIVISION: WRITING (continued)

Observations	Strategies for Improvement
As in past years, students also performed best on both multiple-choice and open-response tasks relative to Overall Writing Expectation 3 (apply knowledge of language conventions and present written work effectively) and were less successful on questions measuring Overall Writing Expectation 1 (develop and organize content) and Overall Writing Expectation 2 (use knowledge of form and style in writing). Performance remained the same as in 2012 for Overall Writing Expectation 1 and improved for Overall Writing Expectations 2 and 3.	**Writing Skills and Expectations (continued)** Continue to work with students on the written **text forms** required by the curriculum, and model how to organize writing in each. Model careful reading of the writing prompts, with a focus on using a highlighter to identify the topic, written form, purpose and audience. When introducing a **writing form,** have students analyze **mentor texts** and co-construct **success criteria** for identifying its features and producing effective samples of the form. To build writing proficiency and flexibility, and to acquire a hands-on understanding of text forms, elements and conventions, have students practise transforming content into different writing forms. Use school-based common writing tasks (e.g., description, narrative, letter, report) to have students identify the writing's form, use of detail, organization and use of conventions, as well as the criteria for effective and ineffective topic development. Have students practise revising lower-level work samples by deleting irrelevant information, adding specific and relevant details and reorganizing information. Coach students on developing strategies for figuring out the logic of how to spell correctly (e.g., using prefixes, suffixes, roots) in the context of authentic writing situations. Teach grammar and conventions in the context of writing, providing brief mini-lessons as necessary. Have students practise combining sentences to build their understanding of syntax and to learn to write more fluidly as they revise their own work. Impress on students the need to attend to the clarity of their handwriting, and to following the rules for proper grammar, spelling and punctuation (such as correct comma placement), both for formal in-class writing and on the language components of EQAO assessments. When working with students to prepare them for the language component of the junior-division assessment, ask them to score responses using the generic scoring rubrics (available on the EQAO Web site) and to compare and explain their scores. Help students understand the learning goals and the success criteria (e.g., those in EQAO's scoring guides for short- and long-writing tasks). **Assessment Practices** Provide checklists for proofreading work, and opportunities for **feedback** (peer and teacher) to help students examine work for specific criteria such as writing form, words that signal an organizational pattern and number of specific and relevant details.

JUNIOR DIVISION: WRITING (continued)

Observations	Strategies for Improvement
	Assessment Practices (continued) Conference with students to provide timely and specific **descriptive feedback** on their writing to assist them in making the connection between the criteria they satisfied and those they did not. Focus on one or two of the students' immediate needs for improvement to cultivate thoughtful **revision.** Show students examples of high-quality responses that use a variety of words and phrases, and continue to reinforce the use of descriptive language and the addition of adjectives and adverbs to sentences. Involve all students in defining the criteria for effective work using language that is meaningful to them, and provide them with concrete examples of work at a variety of levels to help them understand the criteria and the differences among the levels. Use Ministry of Education video resources and *Growing Success* for ideas on how to **assess for learning,** how to provide specific descriptive feedback on work and how to provide opportunities for students to **self-assess** and develop their own learning goals.
	School Improvement Planning Engage in professional dialogue about student writing to find patterns and trends. Make samples of student writing the focus of **teacher professional learning, collaborative teacher inquiry** and reflection on practice to better understand student learning needs, generate next steps and gain a clearer understanding of what quality work looks like.
An analysis of the performance of all student groups shows that they follow the same trends as the student population as a whole, with the following observations: As in previous years, female students outperformed male students on all multiple-choice writing questions and on all the short- and long-writing tasks. This year, girls were considerably more successful than boys at obtaining Codes 30 and 40 for topic development on all writing tasks. However, the largest number of both male and female students continue to perform at Code 20 for topic development on all writing tasks. English language learners performed similarly to previous years, maintaining the gains that have been made with respect to the performance of the overall population since 2010. These students showed considerable improvement in all categories over 2012.	**Student Groups** To support **male students,** review recent Ministry "Supports for Boys' Literacy" resources for strategies to engage male students, improve their literacy skills and have a positive impact on all students (e.g., **literature circles, differentiated instruction**). Continue to incorporate visual tools (e.g., concept maps), vocabulary tools (e.g., word charts) and scaffolds (e.g., paragraph frames) to assist **English language learners** across all subject areas. Promote **literacy in multilingual contexts** by encouraging English language learners to read and write extensively in their own language, in order to build fluency and proficiency. Support them, and all students, with purposeful and **accountable talk.**

JUNIOR DIVISION: WRITING (continued)

Observations	Strategies for Improvement
	Student Groups (continued)
This was the first year since 2009 that English language learners performed about the same as the general population in terms of both topic development and use of conventions on the short- and long-writing tasks.	Additionally, refer to "Lessons from EQAO Data on English Language Learners in Ontario Schools" for whole-school initiatives to provide high-quality instruction and support for English language learners.
While a large proportion of students with special education needs continue to have difficulty getting beyond a Code 20 on all open-response writing tasks, the percentage of these students performing at or above the provincial standard in writing has also continued to increase over the past five years.	Develop all students' **listening skills** and build language and concept proficiency through structured literacy strategies such as Four Corners, Placemat, Inside-Outside Circles, Three-Step Interview and Jigsaw.
However, the performance gap between the students with special education needs and that of the student population as a whole for both topic development and conventions on the short- and long-writing tasks remained about the same this year.	Provide **students with special education needs** opportunities to use **assistive technologies** for idea generation, organization and completion of writing tasks whenever possible.
	Engage students in **robust and higher-order thinking** about how content, text form, purpose, audience and language work together.

OBSERVATIONS AND STRATEGIES FOR IMPROVEMENT: MATHEMATICS

Through a combination of multiple-choice and open-response questions based on the *Ontario Curriculum* expectations from the strands Number Sense and Numeration, Measurement, Geometry and Spatial Sense, Patterning and Algebra, and Data Management and Probability, the junior-division EQAO assessment focuses on the following cognitive skills:

- Knowledge and Understanding—facility with subject-specific content (knowledge) and comprehension of its meaning and significance (understanding);
- Application—ability to select the appropriate "tool" or get the necessary information and apply it effectively to solve the problem and
- Thinking—ability to select and sequence a variety of tools to solve a problem and demonstrate a critical-thinking process.

JUNIOR DIVISION: MATHEMATICS

Observations	Strategies for Improvement
General This year, male and female students performed equally well on all strands and cognitive skills. They performed about 15 percentage points better on questions mapped to the cognitive skill Knowledge and Understanding than on questions mapped to the cognitive skills Application and Thinking, on which their performance was about the same overall. English language learners performed slightly below the general population with similar trends in achievement across all strands, cognitive skills and question types. Students with special education needs performed about 18 percentage points below the general population on all strands, question types and cognitive skills.	Provide opportunities for teachers and instructional leaders to participate in professional dialogue, such as through **collaborative teacher inquiry,** to examine evidence-based teaching strategies that engage all learners. Focus on the relationship between specific practices and student learning, using various sources of data. Together, develop **rich tasks** that will help lead to further student understanding. Determine areas of **teacher learning needs,** and integrate new knowledge about effective instructional strategies into classroom practice. Use a developmental framework such as **landscape of learning** to consider how students acquire mathematical skills and concepts. Analyze the learning reflected in the student work from **assessment for learning** evidence and **moderated marking** of student work to consider further learning and methods of assessment. Observe student interactions for evidence of mathematical understanding in students' oral and written communication, and use this information for responding and planning next steps. Create **physical and social environments** that optimize mathematical learning. Use **interactive white boards** to bridge ideas and mathematical representation with the additional purpose of increasing engagement. Display student solutions, and collaboratively construct **math strategy walls,** anchor charts and visual displays of mathematics ideas. Nurture positive attitudes for learning math through engaging learning opportunities and **real-world problem solving.** Use recommendations from **"Eight Tips for Asking Effective Questions"** (e.g., anticipate student thinking, link to learning goals, pose open questions, pose questions that actually need to be answered, pose questions that open up the conversation to include others). Apply the **math scales** from *Understanding Levels of Achievement: Using EQAO Information to Improve Student Learning, Junior Division* to student work and to determine next steps.

JUNIOR DIVISION: MATHEMATICS (continued)

Observations	Strategies for Improvement
General (continued)	Engage students in **math talk dialogue** as part of robust thinking. Have students work in pairs and small groups to answer both open-response and multiple-choice questions. To ensure that students understand that multiple-choice questions involve calculations, expect them to provide evidence of the solution process they used. Work with students to make their **thinking visible** and provide models of how to answer open-response questions using accurate and precise **written communication** of mathematical thinking. Emphasize the process of problem solving by teaching students to develop, select, apply and compare a variety of problem-solving strategies as they pose and solve problems and conduct investigations. Use the **Four-Step Problem-Solving Model,** and continue to integrate the **mathematical process** expectations. Combine classroom evidence with the information available through EQAO's reporting application to examine the needs of individual students and groups of students. Differentiate to ensure each student's success and engagement. Target and monitor the evidence of interventions. Incorporate the allowed accommodations listed in *EQAO's Guide for Accommodations, Special Provisions and Exemptions.* Continue to provide opportunities for students to answer both open-response and multiple-choice questions. Model how to answer open-response questions using accurate and precise **written communication** of mathematical thinking. Use **EQAO sample assessment questions and scoring guides** to stimulate discussions and help students become aware of common errors and misconceptions, and what the requirements are for a complete solution.
Number Sense and Numeration In 2013, the general population performed least well on the questions from this strand. Scorers of the question requiring students to represent, compare and order decimal numbers noted that most students made attempts to convert the numbers to a common representation to compare them, but some students confused the term "hundreds" with "hundredths." Students had difficulty with questions involving unit rate.	Continue to teach the **conceptual understanding** of fractions and decimals through diagrams and **manipulatives.** Require students to explain and communicate their answers using appropriate terminology. Continue to promote mental math. Give students the opportunity to be exposed to a variety of mental math strategies. Provide students with opportunities to calculate unit rate in varied contexts using **proportional reasoning,** and encourage students to judge the reasonableness of their answer.

JUNIOR DIVISION: MATHEMATICS (continued)	
Observations	**Strategies for Improvement**

Measurement

Students continued to have difficulty with questions involving calculating the area of a triangle.

Scorers of the open-response question requiring students to solve problems that involved converting kilograms to grams noted that most students were able to convert units correctly but had difficulty completing all the steps required for the question.

Provide opportunities for students to develop the formula for the area of a triangle.

Continue to have students work on converting units in problem-solving contexts.

Geometry and Spatial Sense

Scorers of the open-response question requiring students to sort polygons according to the number of lines of symmetry noted that some students were able to make the connection between the number of equal sides with the number of lines of symmetry, but some confused number of pairs of parallel lines with number of lines of symmetry.

Students had difficulty with the questions requiring transformations. Scorers of the open-response question noted that most students were able to label coordinates correctly but confused rotating the shape on the point with rotating it about the point.

Continue to have students identify lines of symmetry in a variety of polygons and explain them using mathematical terminology.

Continue to provide students with opportunities to perform rotations with points in, on and outside the shape being rotated. Reinforce the difference between rotating about a point and on a point. Require students to give accurate descriptions that include all necessary details for the three types of transformations.

Patterning and Algebra

In 2013, the general population performed best on the questions from this strand.

Students continued to perform well on the multiple-choice questions requiring them to solve equations to determine the value of an unknown.

Scorers of the open-response question requiring students to extend patterns to solve a problem noted that students who used an organized list of terms with their associated term numbers were more successful than those who did not. Some students had difficulty identifying that one of the patterns involved taking half of the previous term.

Provide students with multiple opportunities to solve problems that involve extending a variety of patterns.

Continue to reinforce and clarify the difference between term and term number in patterns. Have students use **graphic organizers** when solving problems involving patterns.

JUNIOR DIVISION: MATHEMATICS (continued)

Observations	Strategies for Improvement

Data Management and Probability

Students performed relatively well on the questions involving probability. Scorers of the open-response question involving representing the probability of an event noted that some students did not use fractions, decimals or percentages to compare the probabilities for the colours on the spinners.

Students did not perform as well on the questions involving mean. Scorers of the open-response question requiring students to demonstrate an understanding of mean noted that most students were able to calculate at least one mean, but some students confused mean with median.

Continue to require students to show the connections between probabilities and their **fraction,** decimal number and percentage equivalents.

Reinforce understanding of mean using the same data set to demonstrate how mean is calculated and how it is different from median, mode and range.

LIST OF RESOURCES: READING AND WRITING

If you are reading the version of this document found on the EQAO Web site, www.eqao.com, please use the hyperlinks to the listed resources.

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING

Main resources

Literacy and Numeracy Secretariat. (2010, September). *Word study instruction: Enhancing reading comprehension* (What Works? Research into Practice: Research Monograph 27). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/WW_Word_Study.pdf

• Connotations
• Denotations
• Word study

Literacy and Numeracy Secretariat. (2010, October). *Improving student writing: Using feedback as a tool* (What Works? Research into Practice: Research Monograph 29). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/WW_Improving_Student_Writing.pdf

• Criterion-based feedback
• Feedback (self, teacher, peer)
• Self-assess
• Writing conventions
• Writing process

Literacy and Numeracy Secretariat. (2012, Spring). *Primary reading discussion paper.* Available at http://resources.curriculum.org/secretariat/primary/files/PrimaryDiscussionPaper.pdf

• Accountable talk
• Arc of inquiry
• Four resource model
• Gradual release of responsibility

Literacy and Numeracy Secretariat. (2013, January). Canadian-born English language learners (Capacity Building Series: Secretariat Special Edition 31). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_CBELL.pdf

• Academic language
• Graphophonic
• Quick writes
• Scaffold
• Text walks

Ministry of Education of Ontario. (2003). *A guide to effective instruction in reading, kindergarten to Grade 3.* Available at http://www.eworkshop.on.ca/edu/resources/guides/Reading_K_3_English.pdf

• Graphic features in information texts: Sample lesson 4, pages 115–132
• Graphic organizers: Chapter 10
• Non-fiction: pages 5.26–5.31
• Poetry: pages 5.19–5.21
• Robust and higher-order thinking skills: pages 8.14–8.15
• Text features: pages 5.26–5.31
• Vocabulary: pages 3.29 ("Go charts for picture walk") and 8.11–8.13

Ministry of Education of Ontario. (2005). *A guide to effective instruction in writing, kindergarten to Grade 3.* Available at http://www.eworkshop.on.ca/edu/resources/guides/Guide_Writing_%20K_3.pdf

• Conference: Appendix 6-3: Sample writing conference record
• Conventions: pages 1.16–1.18 and throughout
• Elements of writing: pages 1.14–1.20 and appendices
• Graphic organizers: appendices
• Ideas: throughout
• Mini-lessons

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

- Organization: throughout
- Revision: pages 1.8, 1.13, Appendices 6-4, 6-7
- Writer's workshop: throughout

Ministry of Education of Ontario. (2006). *A guide to effective literacy instruction, Grades 4–6: Volume 1. Foundations of literacy instruction for the junior learner.* Available at http://eworkshop.on.ca/edu/resources/guides/Guide_Lit_456_Vol_1_Assessement.pdf

- Question-answer relationships: pages 143–144
- Questioning the author: pages 144–145

Ministry of Education of Ontario. (2008). *A guide to effective literacy instruction, Grades 4–6: Volume 5. Reading.* Available at http://www.eworkshop.on.ca/edu/resources/guides/Guide_Lit_456_Vol_5_Reading.pdf

- Academic language: pages 24–25
- Before-, during- and after-reading strategies: page 24
- Main idea: pages 32–39
- Shared, guided and independent reading: pages 60–85
- Signal words: pages 40–41
- Summarizing: pages 32–35

Ministry of Education of Ontario. (2008). *A guide to effective literacy instruction, Grades 4–6: Volume 6. Writing.* Available at http://www.eworkshop.on.ca/edu/resources/guides/Guide_Lit_456_Vol_6_Writing.pdf

- Conferencing: pages 25–27
- Graphic organizers: page 50
- Mentor texts: page 42
- Poetry: pages 111–114
- Revise/revision: pages 39–42
- Text forms: pages 11–13
- Writing process: pages 36–45

Other resources

Accountable talk

- Ministry of Education of Ontario. (2006). Chapter 3: Principles of effective literacy instruction. In *A guide to effective literacy instruction, Grades 4–6: Volume 1* (pp. 76–94). Available at http://www.eworkshop.on.ca/edu/resources/guides/Guide_Lit_456_Vol_1_Pt2_Junior_Learner.pdf

Anchor charts

- Education Quality and Accountability Office. (2008, Spring). Celebrating the success of an Ontario school. *EQAO Connects.* Available at http://www.eqao.com/eMagazine/2008/05/eMagArticle.aspx?Lang=E&ArticleID=05&ItemID=21

Assessment for learning

- Ministry of Education of Ontario. (n.d.). *Differentiated instruction educator's package: Facilitator's guide—assessment for learning: Getting to the core of teaching and learning.* Available at http://www.edugains.ca/resourcesDI/D.I.%20Enhancement%20Package/Assessment%20for%20Learning/DI_Assessment_Gde_2009.pdf
- Ministry of Education of Ontario. (2010). *Growing success: Assessment, evaluation and reporting in Ontario Schools, First edition, covering Grades 1 to 12.* Available at http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf

Assistive technologies

- Ministry of Education of Ontario. (2005). Chapter 10: Computer-based assistive technology. In *Education for all: The report of the expert panel on literacy and numeracy instruction for students with special education needs, kindergarten to Grade 6* (pp. 127–138). Available at http://www.edu.gov.on.ca/eng/document/reports/speced/panel/speced.pdf

Boys' underachievement

- Literacy and Numeracy Secretariat. (2008, April). *Boys' underachievement: Which boys are we talking about?* (What Works? Research into Practice: Research Monograph 12). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/Martino.pdf

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Challenge practices

- Katz, S. (2008, Winter). Improving schools in a data-rich world. *EQAO Connects.* Available at http://www.eqao.com/emagazine/2008/01/eMagArticle.aspx?Lang=E&ArticleID=10

Collaborative teacher inquiry

- Literacy and Numeracy Secretariat. (2010, September). *Collaborative teacher inquiry* (Capacity Building Series: Secretariat Special Edition 16). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Collaborative_Teacher_Inquiry.pdf

Conference

- Ministry of Education of Ontario. (2005). Appendix 6-3: Sample writing conference record. *A guide to effective instruction in writing, kindergarten to Grade 3.* Available at http://www.eworkshop.on.ca/edu/pdf/Appendices_writing.pdf

Content literacy/content area knowledge

- Literacy and Numeracy Secretariat. (2008, May). *Content literacy* (What Works? Research into Practice: Research Monograph 13). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/contentLiteracy.pdf
- Literacy and Numeracy Secretariat. (2010, February). *Science and literacy in the elementary classroom* (What Works? Research into Practice: Research Monograph 13). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/WW_science_literacy.pdf

Context clues

- Literacy and Numeracy Secretariat. (2009, October). *A world of words: Enhancing vocabulary development for English language learners* (Capacity Building Series: Secretariat Special Edition 11). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/world_of_words.pdf

Close reading

- Literacy and Numeracy Secretariat. (2011, April). *Grand conversations in primary classrooms* (Capacity Building Series: Secretariat Special Edition 18). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Grand_Conversations.pdf

Critical literacy

- Literacy and Numeracy Secretariat. (2007, November 29). *Critical literacy* (Webcasts for Educators). Available at http://resources.curriculum.org/secretariat/november29.shtml
- Literacy and Numeracy Secretariat. (2007, November 29). *Critical literacy plan* (Webcasts for Educators: Additional materials). Available at http://www.curriculum.org/secretariat/files/Nov29LessonPlans.pdf
- Literacy and Numeracy Secretariat. (2010, December). *Developing critical literacy skills: Exploring masculine and feminine stereotypes in children's literature* (What Works? Research into Practice: Research Monograph 32). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/WW_Critical_Literacy.pdf

Deep thinking

- Literacy and Numeracy Secretariat. (2007, November 29). *Critical literacy* (Webcasts for Educators). Available at http://resources.curriculum.org/secretariat/november29.shtml
- Martin, C. & Leclerc, J. (2009, Winter). Robust thinking: A must for all students. *Principal Connections 13*(2). Available at http://www.cpco.on.ca/News/PrincipalConnections/PastIssues/Vol13/Issue2/RobustThinking.pdf

Descriptive feedback

- Binns, J. and J. Herman. (2009). Descriptive feedback fosters improved student learning. *Principal Connections 12*(4), 12–13. Available at http://www.cpco.on.ca/MembershipServices/documents/News/PrincipalConnections/PastIssues/Vol12/Issue4/DescriptiveFeedback.pdf
- Literacy and Numeracy Secretariat. (2010, September). *Primary assessment* (Capacity Building Series: Secretariat Special Edition 15). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_primaryassessment.pdf
- Literacy and Numeracy Secretariat. (2010, October 15). *Developing inquiring minds: Teachers demonstrate effective descriptive feedback* [Webcast]. Available at http://resources.curriculum.org/secretariat/inquiring/feedback.shtml
- Ministry of Education of Ontario (EduGAINS). (2010). *Descriptive feedback* (AER GAINS) [Webcast and supporting publications]. Available at http://www.edugains.ca/newsite/aer2/aervideo/descriptivefeedback.html

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Differentiate instruction

- Literacy and Numeracy Secretariat. (2006, March 29). *Differentiated instruction: Continuing the conversation* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/march29.shtml
- Literacy and Numeracy Secretariat. (2008, May 2). *High-yield strategies to improve student learning: Differentiated writing instruction* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/may2.shtml
- Ministry of Education of Ontario. (2005). Differentiated instruction. In *Education for all: The report of the expert panel on literacy and numeracy instruction for students with special education needs* (pp. 14–15). Available at http://www.edu.gov.on.ca/eng/document/reports/speced/panel/speced.pdf
- Ministry of Education of Ontario. (2011, June). Instructional approaches (Chapter 2). In *Learning for all: A Guide to effective assessment and instruction for all students, Kindergarten to Grade 12* [Draft version]. Available at http://www.edu.gov.on.ca/eng/general/elemsec/speced/LearningforAll2011.pdf

Elements of effective practice

- Literacy and Numeracy Secretariat. (2009, April 21). *Quality teaching: It's intentional—Marzano's elements of effective practice* (Webcasts for Educators). Available at http://resources.curriculum.org/secretariat/april21.shtml

English language learners/literacy in multilingual contexts

- Coelho, E. (2007, July). How long does it take? Lessons from EQAO data on English language learners in Ontario schools. *Inspire: The Journal of Literacy and Numeracy for Ontario.* Available at www.edu.gov.on.ca/eng/literacynumeracy/inspire/equity/ELL_July30.html
- Literacy and Numeracy Secretariat. (2009, March). *ELL voices in the classroom* (Capacity Building Series: Special Edition 8). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ELL_Voices09.pdf
- Literacy and Numeracy Secretariat. (2009, October). *A world of words: Enhancing vocabulary development for English language learners* (Capacity Building Series: Secretariat Special Edition 11). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/world_of_words.pdf
- Ministry of Education of Ontario. (2005). Teaching language everywhere: A cross-curricular approach. In *Many roots, many voices: Supporting English language learners in every classroom.* Available at http://www.edu.gov.on.ca/eng/document/manyroots/manyroots.pdf
- Ministry of Education of Ontario. (2006). Introduction ("Diversity and effective instruction"). In *A guide to effective literacy instruction, Grades 4 to 6: Volume 3. Planning and classroom management* (pp. 1–8). Available at http://www.eworkshop.on.ca/edu/resources/guides/Guide_Lit_456_Vol_3_Planning.pdf

EQAO reporting applications

- Education Quality and Accountability Office. (n.d.) School and school board profiles and reports. Available at http://www.eqao.com/results/?Lang=E

Four resource model

- Ministry of Education of Ontario. (2004). Evolving view: Four roles of the literate learner (based on Freebody and Luke's "Four resources model" [1990]). Available at http://resources.curriculum.org/LNS/thinking/files/EvolvingRoles.pdf
- Ministry of Education of Ontario. (2004). *Literacy for learning: The report of the expert panel on literacy in Grades 4 to 6 in Ontario* (pp. 8–9). Available at http://www.edu.gov.on.ca/eng/document/reports/literacy/panel/literacy.pdf

Gender and literacy/male students

- Literacy and Numeracy Secretariat. (2008, April). *Boys' underachievement: Which boys are we talking about?* (What Works? Research into Practice: Research Monograph 12). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/Martino.pdf
- Literacy and Numeracy Secretariat. (2009, October). *Engaging boys: Powerful possibilities for all learners* [Webcasts]. Available at http://www.curriculum.org/secretariat/engaging/index.shtml
- Ministry of Education of Ontario (EduGAINS). (n.d.). "Supports for boys' literacy" resources. Available at http://www.edugains.ca/newsite/literacy2/supportsboyliteracy.html
- Ministry of Education of Ontario. (n.d.). Various resources on boys' literacy. Available at http://www.edu.gov.on.ca/eng/curriculum/boysliteracy.html
- Ministry of Education of Ontario. (2004). Teach with purpose and keep it real. In *Me read? No way! A practical guide to improving boys' literacy skills* (pp. 15–21 and 37–39). Available at http://www.edu.gov.on.ca/eng/document/brochure/meread/meread.pdf
- Ministry of Education of Ontario. (2009). *The road ahead: Boys' literacy teacher inquiry report, 2005 to 2008.* Available at http://www.edu.gov.on.ca/eng/curriculum/RoadAhead2009_Supplement.pdf

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Gradual release of responsibility

- Literacy and Numeracy Secretariat. (2007, Summer). *The LNS communiqué.* Available at http://www.edu.gov.on.ca/eng/literacynumeracy/LNSsummer.pdf

Grand conversations

- Literacy and Numeracy Secretariat. (2011, April). *Grand conversations in primary classrooms* (Capacity Building Series: Secretariat Special Edition 18). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Grand_Conversations.pdf

Growing success

- Ministry of Education of Ontario (EduGAINS). (n.d.). AER GAINS resources to support *Growing success.* Available at http://www.edugains.ca/newsite/aer2/index.html
- Ministry of Education of Ontario. (2010). *Growing success: Assessment, evaluation and reporting in Ontario schools.* Available at http://www.edu.gov.on.ca/eng/policyfunding/growSuccess.pdf

High-yield strategies

- Literacy and Numeracy Secretariat. (2008, May 2). *High-yield strategies to improve student learning* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/may2.shtml

If/then

- Literacy and Numeracy Secretariat. (2010, September). *Collaborative teacher inquiry* (Capacity Building Series: Secretariat Special Edition 16). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Collaborative_Teacher_Inquiry.pdf

Learning in the field

- Literacy and Numeracy Secretariat. (2011, May). *Learning in the field: The student work study teachers initiative, 2009–2010.* Available at http://www.edu.gov.on.ca/eng/literacynumeracy/research/swst.pdf

Listening skills

- Ministry of Education of Ontario (EduGAINS). (2008). *Connecting practice and research: Listening guide.* Available at http://www.edugains.ca/resourcesLIT/CoreResources/Listening_Guide_June4%202009.pdf

Literacy in multilingual contexts

- Literacy and Numeracy Secretariat. (2005, December 7). *Teaching and learning in multilingual Ontario* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/december7.shtml
- Literacy and Numeracy Secretariat. (2007, June). *Promoting literacy in multilingual contexts* (What Works? Research into Practice: Research Monograph 5). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/Cummins.pdf

Literature circles

- Literacy and Numeracy Secretariat. (2009, December). *Literature circles* [Webcasts]. Available at http://www.curriculum.org/secretariat/circles/index.shtml
- Ministry of Education of Ontario. (2003). Sample independent reading lesson: Literature circle for independent readers. In *A guide to effective instruction in reading, kindergarten to Grade 3 (*pp. 7.19–7.23). Available at http://www.eworkshop.on.ca/edu/resources/guides/Reading_K_3_English.pdf

Make connections

- Ricker-Wilson, C. (2013). Making connections makes sense: Helping students use what they know to understand what they read. *EQAO Connects* (Issue 1). Available at http://www.eqao.com/eMagazine/index.aspx?Lang=E

Make inferences

- Literacy and Numeracy Secretariat. (n.d.). Writing explicit/implicit dialogue checklist. In *Teacher resources: Comprehending in action: Inferring: Module 1, Sessions 1–5* (p. 46). Available at http://resources.curriculum.org/LNS/coaching/files/pdf/Comprehending_Resources.pdf
- Literacy and Numeracy Secretariat. (2004). *Comprehending in action: Inferring* (Literacy Series: Module 1) [Slide presentation]. Available at http://www.curriculum.org/LNS/coaching/profresources.shtml and http://resources.curriculum.org/LNS/coaching/files/ppt/Comprehending_Module1.ppt
- Literacy and Numeracy Secretariat. (2007). *Coaching for deeper understanding through inferring* (Professional Learning Series: Learning and Teaching Together) [PowerPoint presentation]. Available at http://www.curriculum.org/LNS/coaching/files/ppt/july4/GilesCoachingUnderstanding.ppt

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Make inferences (continued)

• Literacy and Numeracy Secretariat. (2010, October 29). *Precision teaching in the primary classroom: Word sort, inference game, learning centres, writing, guided reading, student self-assessment* [Webcast]. Available at http://www.curriculum.org/secretariat/ precision/index.shtml

Make thinking visible

• Literacy and Numeracy Secretariat. (n.d.). Thinking about thinking: Becoming an independent reader—Making thinking visible (Session 2) [PowerPoint presentation]. Available at resources.curriculum.org/LNS/thinking/becoming.html

Mentor texts

• Literacy and Numeracy Secretariat. (2009, October). *Engaging boys: Powerful possibilities for all learners* [Webcasts]. Available at http://www.curriculum.org/secretariat/engaging/multimodal.shtml

• Ministry of Education of Ontario. (n.d.). Online teaching resources. Available at http://www.eworkshop.on.ca/edu/core.cfm

Moderated marking

• Literacy and Numeracy Secretariat. (2007, September 10). *Teacher moderation: Collaborative assessment of student work* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/september10.shtml

• Literacy and Numeracy Secretariat. (2010, October 15). *Developing inquiring minds: Moderation of student work* [Webcast]. Available at http://www.curriculum.org/secretariat/inquiring/moderation.shtml

Morphology

• Literacy and Numeracy Secretariat. (2012, June). *Morphology works.* (What Works? Research into Practice: Research Monograph 41). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ww_morphology.pdf

Networks/networked learning communities

• Dack, L., Earl, L., & Katz, S. (2009, Spring). Networked learning communities: Fostering learning for teachers and the students. *Principal Connections 12*(3). Available at http://resources.curriculum.org/secretariat/criticalpathways/files/ TLCPKatzEarl.pdf

• Ministry of Education of Ontario. (2010, Spring). *Exploring five core leadership capacities: Promoting collaborative learning cultures: Putting the promise into practice* (Ontario Leadership Strategy Bulletin 3). Available at http://csc.immix.ca/ storage/251/1353619855/Ideas_Into_Action_Setting_Goals_Promoting_Collaborative_Learning_Cultures_Putting_the_ Promise_into_Practice_%5BPDF%5D.pdf

Non-fiction reading and writing

• Literacy and Numeracy Secretariat. (2008, March). *Non-fiction writing for the junior student* (Capacity Building Series: Secretariat Special Edition 5). Available at http://www.curriculum.org/secretariat/files/Apr18JuniorStudent.pdf

• Literacy and Numeracy Secretariat. (2008, April 18). *Non-fiction writing* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/april18.shtml

• Literacy and Numeracy Secretariat. (2009, April 21). Dr. Douglas Reeves: Non-fiction writing. In *Quality teaching: It's intentional* [Webcast]. Available at http://www.curriculum.org/secretariat/april21.shtml

Organizational patterns

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PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Questioning the author

- Literacy and Numeracy Secretariat. (2004). *Comprehending in action: Inferring* (Professional Learning Series: Literacy Series Module 1) [PowerPoint presentation]. Available at http://www.curriculum.org/LNS/coaching/profresources.shtml
- Literacy and Numeracy Secretariat. (2008, May). *Content literacy* (What Works? Research into Practice: Research Monograph 13). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/contentLiteracy.pdf

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- Literacy and Numeracy Secretariat. (2010, March). *Reading fluency* (Capacity Building Series: Secretariat Special Edition 12). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/reading_fluency.pdf

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- Literacy and Numeracy Secretariat. (2006, October 25). *Effective instruction in reading comprehension* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/october25.shtml
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Shared, guided and independent reading

- Education Quality and Accountability Office. (2013, June). *Starting early: Teaching, learning and assessment: Linking early-childhood development with academic outcomes—A detailed look* (EQAO Research). Available at www.eqao.com/Research/Pdf/E/EDI_StartingEarly_EQAO.pdf
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- Ministry of Education of Ontario (EduGAINS). (n.d.). Strategy implementation continuum (based on Pearson and Gallagher's "Gradual release of responsibility model" [1983]). Available at http://www.edugains.ca/resourcesLIT/CoreResources/Strategy%20Implementation%20Continuum.pdf

Students with special education needs

- Bennett, S. (2009, January). *Including students with exceptionalities* (What Works? Research into Practice: Research Monograph 16). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/Bennett.pdf

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Students with special education needs (continued)

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- Literacy and Numeracy Secretariat. (2007, September 10). *Teacher moderation: Collaborative assessment of student work* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/september10.shtml

Teacher professional learning

- Council of Ontario Directors of Education. (2012, January 31). *Professional development that makes a difference.* Code Advisory, 13. Available at http://www.ontariodirectors.ca/CODE_Advisories/Downloads/CODE%20Advisory%20No%2013%20Web.pdf
- Literacy and Numeracy Secretariat. (2007, October). *Professional learning communities: A model for Ontario schools* (Capacity Building Series: Secretariat Special Edition 3). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/plc.pdf
- Literacy and Numeracy Secretariat. (2010, September). *Collaborative teacher inquiry* (Capacity Building Series: Secretariat Special Edition 16). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Collaborative_Teacher_Inquiry.pdf

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- Literacy and Numeracy Secretariat. (2012, Fall). *Leaders in educational thought: A theory of action* [Webcast]. Available at http://resources.curriculum.org/secretariat/leaders/ken.html
- Ministry of Education of Ontario. (2010, Winter). *Exploring five core leadership capacities: Engaging in courageous conversations* (Ontario Leadership Strategy Bulletin 2). Available at http://www.edu.gov.on.ca/eng/policyfunding/leadership/IdeasIntoAction10.pdf

PRIMARY AND JUNIOR DIVISIONS: READING AND WRITING (continued)

Tiered approach

- Ministry of Education of Ontario. (2011, June). "Universal design for learning" and "The tiered approach." In *Learning for all: A guide to effective assessment and instruction for all students, Kindergarten to Grade 12* [Draft version] (pp. 12–15, 22–24). Available at http://www.edu.gov.on.ca/eng/general/elemsec/speced/LearningforAll2011.pdf

Towards an understanding of gender differences in literacy achievement

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Understanding levels of achievement

- Education Quality and Accountability Office. (2012). *Understanding levels of achievement: Using EQAO information to improve student learning, Junior division.* Available at http://www.eqao.com/pdf_e/12/UnderstandingLevelsAchievemet_JuniorDivision_en.pdf
- Education Quality and Accountability Office. (2012). *Understanding levels of achievement: Using EQAO information to improve student learning, Primary division.* Available at http://www.eqao.com/pdf_e/12/UnderstandingLevelsAchievemet_PrimaryDivision_en.pdf

Vocabulary/word study

- Literacy and Numeracy Secretariat. (2009, October). *A world of words: Enhancing vocabulary development for English language learners* (Capacity Building Series: Secretariat Special Edition 11). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/world_of_words.pdf
- Literacy and Numeracy Secretariat. (2010). *Word study in action* (Webcasts for Educators). Available at http://resources.curriculum.org/secretariat/wordstudy/files/WordStudyGuide.pdf
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Word consciousness

- Literacy and Numeracy Secretariat. (2010, October 29). *Precision teaching in the primary classroom: Viewer's guide.* Available at http://resources.curriculum.org/secretariat/precision/files/PrecisionTeachingGuide.pdf
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Word detective

- Literacy and Numeracy Secretariat. (2012, June). *Morphology works* (What Works? Research into Practice: Research Monograph 41). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ww_morphology.pdf

Writer's workshop/writing conventions

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- Ministry of Education of Ontario. (n.d.). Learning module on writer's workshop. Available at http://www.eworkshop.on.ca/edu/core.cfm?p=main&modColour=1&modID=24&m=111&L=1

Writing form, purpose and audience

- Ministry of Education of Ontario. (n.d.). The four roles of the junior writer (adapted from p. 81 in *Literacy for learning: The report of the expert panel on literacy in Grades 4–6 in Ontario* [2004]). Available at http://www.eworkshop.on.ca/edu/pdf/Mod24_roles_writer.pdf

Writing to learn

- Literacy and Numeracy Secretariat. (2012, March). *Writing to learn* (Capacity Building Series: Secretariat Special Edition 25). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_WritingtoLearn.pdf

LIST OF RESOURCES: MATHEMATICS

If you are reading the version of this document found on the EQAO Web site, www.eqao.com, please use the hyperlinks to the listed resources. Alternatively, except as noted, please

• go to www.eworkshop.on.ca;

• click "Numeracy Resources" under "Resources" and

• click "Expert Panel Reports/Guides to Effective Instruction" in the left-hand column.

The listed titles will appear on the right-hand side.

PRIMARY AND JUNIOR DIVISIONS: MATHEMATICS

Main resources

Literacy and Numeracy Secretariat. (2012, July). *The third teacher* (Capacity Building Series: Secretariat Special Edition 27). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_ThirdTeacher.pdf
  • Math talk dialogue
  • Physical and social environments
  • Real-world problem solving

Ministry of Education of Ontario. (2012, November 8). *Creating the conditions for learning mathematics* (Webcasts for Educators—Student Achievement Division). Available at http://www.curriculum.org/content/30/creating-the-conditions-for-learning-mathematics
  • Landscape of learning
  • Math talk dialogue
  • Rich tasks

Other resources

Assessment for learning

• Literacy and Numeracy Secretariat. (n.d.). *Assessment for learning mathematics: Developing eyes to see and ears to hear student thinking* [PowerPoint presentation]. Available at http://resources.curriculum.org/LNS/coaching/files/ppt/Assessment_Mathematics.ppt

• Ministry of Education of Ontario. (2010). *Growing success: Assessment, evaluation and reporting in Ontario schools, First edition, covering Grades 1 to 12.* Available at http://www.edu.gov.on.ca/eng/policyfunding/growsuccess.pdf

Collaborative teacher inquiry

• Literacy and Numeracy Secretariat. (2010, September). *Collaborative teacher inquiry* (Capacity Building Series: Secretariat Special Edition 16). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Collaborative_Teacher_Inquiry.pdf

Conceptual understanding

• Ministry of Education of Ontario. (2005). The link between procedural knowledge and conceptual understanding. In *Education for all: The report of the expert panel on literacy and numeracy instruction for students with special education needs, kindergarten to Grade 6* (p. 74). Available at http://www.edu.gov.on.ca/eng/document/reports/speced/panel/speced.pdf

Eight Tips for Asking Effective Questions

• Literacy and Numeracy Secretariat. (2011, July). *Asking effective questions* (Capacity Building Series: Secretariat Special Edition 21). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

EQAO sample assessment questions and scoring guides

• Education Quality and Accountability Office. (n.d.). Student assessment booklets and scoring guides (in the "Educator Resources" section of the Education Quality and Accountability Office Web site). Available at http://www.eqao.com/Educators/Elementary/036/036.aspx?Lang=E&gr=036

PRIMARY AND JUNIOR DIVISIONS: MATHEMATICS (continued)

Four-Step Problem-Solving Model

- Ministry of Education of Ontario. (2006). The four-step problem-solving model. In *A guide to effective instruction in mathematics, kindergarten to Grade 6: Volume 2: Problem solving and communication* (pp. 36–38). Available at http://eworkshop. on.ca/edu/resources/guides/Guide_Math_K_6_Volume_2.pdf

Fraction

- Ministry of Education of Ontario. (2013).The section on fractions. In *Critical learning instructional paths supports (CLIPS) in Mathematics, Grades K to 12, [version 4.13]*. Available at http://oame.on.ca/CLIPS/
- Small, M. (2010). *Gap closing: comparing fractions: Junior/intermediate facilitator's guide.* Available at http://www.edugains.ca/ newsite/math2/gapclosing.html
- Small, M. (2010). *Gap closing: number sense: Junior/intermediate facilitator's guide.* Available at http://www.edugains.ca/newsite/ math2/gapclosing.html

Graphic organizers

- Ministry of Education of Ontario. (2004). In *Think literacy: Cross-curricular approaches, Grades 7–12: Mathematics, subject-specific examples, Grades 7–9*. Examples of graphic organizers. Available at http://www.edu.gov.on.ca/eng/studentsuccess/ thinkliteracy/files/ThinkLitMath.pdf

Interactive white boards

- Literacy and Numeracy Secretariat. (2012, March). *Technology in the mathematics classroom* (What Works? Research into Practice: Research Monograph 38). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ww_ technology.pdf

Manipulatives (concrete materials)

- Ministry of Education of Ontario. (2006). Manipulatives. In *A guide to effective instruction in mathematics, kindergarten to Grade 6: Volume 3. Classroom resources and management* (pp. 18–28). Available at http://eworkshop.on.ca/edu/resources/ guides/Guide_Math_K_6_Volume_3.pdf

Math scales

- Education Quality and Accountability Office (2012). Junior mathematics scale. In *Understanding levels of achievement: using information to improve student learning: Junior division* (pp. 16–17). Available at http://www.eqao.com/pdf_e/12/ UnderstandingLevelsAchievemet_JuniorDivision_en.pdf
- Education Quality and Accountability Office (2012). Primary mathematics scale. In *Understanding levels of achievement: using EQAO information to improve student learning: Primary division* (pp. 16–17). Available at http://www.eqao.com/pdf_e/12/ UnderstandingLevelsAchievemet_PrimaryDivision_en.pdf

Math strategy walls

- Ministry of Education of Ontario. (n.d.). Strategy walls. In *A guide to effective instruction in mathematics, kindergarten to Grade 6: Volume 3. Classroom resources and management* (p. 15). Available at http://eworkshop.on.ca/edu/resources/guides/ Guide_Math_K_6_Volume_3.pdf

Math talk

- Literacy and Numeracy Secretariat. (2007, January). *Student interaction in the math classroom: Stealing ideas or building understanding* (What Works? Research into Practice: Research Monograph 1). Available at http://www.edu.gov.on.ca/eng/ literacynumeracy/inspire/research/bruce.pdf

Mathematical process

- Ministry of Education of Ontario. (n.d.). *Targeted implementation and planning supports for revised mathematics (TIPS4RM): Mathematical processes.* Available at http://www.edugains.ca/resources/LearningMaterials/MathProcesses/ MathProcessessPackage.pdf

Moderated marking

- Literacy and Numeracy Secretariat. (2006). *Teacher moderation: Moving towards consistency*. In *Facilitator's handbook: A guide to effective literacy instruction, Grades 4 to 6: Volume 2. Assessment* (pp. 14–19). Available at http://www.curriculum.org/LNS/ coaching/files/pdf/LiteracyHandbook_vol2.pdf
- Literacy and Numeracy Secretariat. (2007, September). *Teacher moderation: Collaborative assessment of student work* (Capacity Building Series: Secretariat Special Edition 2). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/ Teacher_Moderation.pdf
- Literacy and Numeracy Secretariat. (2007, September 10). *Teacher moderation: Collaborative assessment of student work* (Webcasts for Educators). Available at http://www.curriculum.org/secretariat/september10.shtml

PRIMARY AND JUNIOR DIVISIONS: MATHEMATICS (continued)

Proportional reasoning

• Ministry of Education of Ontario. (2012). *Paying attention to proportional reasoning, K–12.* Available at http://www.edu.gov.on.ca/eng/teachers/studentsuccess/ProportionReason.pdf

• Ministry of Education of Ontario (EduGAINS). (2010). *Big ideas and questioning, K–12: Proportional reasoning.* Available at http://www.edugains.ca/resources/LearningMaterials/ContinuumConnection/BigIdeasQuestioning_ProportionalReasoning.pdf

Responsive mathematics learning environment

• Ministry of Education of Ontario. (2011). Design a responsive mathematics learning environment. In *Paying attention to mathematics education, K–12.* Available at http://www.edu.gov.on.ca/eng/teachers/studentsuccess/FoundationPrincipals.pdf

Teacher learning needs

• Council of Ontario Directors of Education. (2012, January 1). Professional development that makes a difference. *Code Advisory, 13.* Available at http://www.ontariodirectors.ca/CODE_Advisories/Downloads/CODE%20Advisory%20No%2013%20Web.pdf

• Literacy and Numeracy Secretariat. (2007, October). *Professional learning communities: A model for Ontario schools* (Capacity Building Series: Secretariat Special Edition 3). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/plc.pdf

Thinking visible

• Literacy and Numeracy Secretariat. (2010, September). *Communication in the mathematics classroom* (Capacity Building Series: Secretariat Special Edition 13). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Communication_Mathematics.pdf

• Literacy and Numeracy Secretariat. (2010, September). *Primary assessment* (Capacity Building Series: Secretariat Special Edition 15). Available at http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/cbs_primaryassessment.pdf

Written communication

• Ministry of Education of Ontario. (2006). Written communication. In *A guide to effective instruction in mathematics, kindergarten to Grade 6: Volume 2. Problem solving and communication* (pp. 70–79). Available at http://eworkshop.on.ca/edu/resources/guides/Guide_Math_K_6_Volume_2.pdf