ELAN Monograph

Metacognition

Gauging Thinking, Leveraging Learning

Curriculum connections

- Assessment as learning
- Self-monitoring
- Reflection
- Literacy
- Learning process

Contents

What it is

Metacognition is the process in which **students actively engage in considering their own thinking throughout the learning process.** It is not simply thinking, but rather thinking about thinking. A metacognitive student consistently asks themselves questions to hone their understanding as they work toward a learning goal, **regularly reflecting on their strengths and next steps as a learner.** It is an active process in which a student considers a given task, and contemplates strategies and applies them in various contexts, all the while furthering their understanding of themselves as a learner (Ontario Ministry of Education, 2016).

Gauging progress towards goals, reflecting on performance as well as revisiting and adjusting plans to improve learning are all examples of metacognitive thinking (Ferlazzo, 2019). Developing and applying metacognitive skills assists in further highlighting thinking skills that are essential in literacy and that allow students to consistently monitor their own learning. Self-advocacy is a key element in literacy learning as students identify what they need in order to achieve their goals and grow as learners.

> *"As students develop these thinking skills and are given opportunities to employ and evaluate a variety of strategies, they become empowered and independent learners."*

The self-monitoring, questioning and revising involved in metacognitive thinking, however, are not necessarily innate in students and can be further developed through an instructional approach that addresses and supports a variety of critical and

creative thinking processes (Fisher et al., 2016). As students develop these thinking skills and are given opportunities to employ and evaluate a variety of strategies, they become empowered and independent learners.

Embedded in a number of the expectations in the Ontario Curriculum, Language Grades 1 – 8, 2023 and English Grade 9, 2023, are a variety of opportunities for students to develop and hone their metacognitive skills as readers, writers, and critical and reflective thinkers. Students are metacognitive as readers when they explain and compare how various strategies, such as making predictions and visualizing, help them comprehend a text and then set goals to improve their comprehension. As well, students are metacognitive as writers when they analyze the effectiveness of a text they have created and identify areas for improvement as text creators. Analyzing and evaluating a variety of texts involves the use of critical thinking skills, and when students assess the effectiveness of the critical thinking skills, they rely on they are using metacognitive thinking.

Why it matters

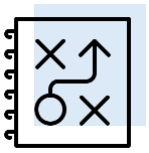
Being metacognitive allows students to take ownership of their learning and develop a sense of independence. As they monitor the progress of their learning, students recognize their ability to adapt and grow. When students learn to think about their thinking, they build the skills necessary to become lifelong learners (Willis, 2023).

Inquiry-based learning (IBL) strategies that highlight effective questioning help students be metacognitive by fostering a deeper level of understanding. Opportunities for reflection and sharing at the end of the inquiry process allow students to consolidate their learning, giving them space to identify successful strategies and identify their areas of growth as a learner (Watt et al., 2017).

> *Offering students various ways to demonstrate their learning can be linked to opportunities for questioning and self-reflection as they consider how they will best demonstrate their learning and the steps they will take to do so" (Ontario Ministry of Education, 2023).*

Metacognition strategies can be incorporated within a Universal Design for Learning (UDL) framework. Offering students various ways to demonstrate their learning can be linked to opportunities for questioning and self-reflection as they consider how they will best demonstrate their learning and the steps they will take to do so (Ontario Ministry of Education, 2023). Providing collaborative learning opportunities allows students to discuss their thinking and strategies with peers. Through these discussions, students can both communicate and deepen their understanding.

Within the framework of culturally responsive and relevant pedagogy (CRRP), educators can provide opportunities for students to feel engaged in their learning and take responsibility for their success, while providing learning experiences that make connections to their background and social or cultural identity (Ontario Ministry of Education, 2023). Fostering a learning environment within the CRRP framework that encourages metacognitive thinking provides students with agency and ownership over their learning, allowing them to reflect on their needs, identity and next steps as a learner.



How it works

7 Things to try in the classroom:

1. Use learning goals and co-created success criteria

⇒ Make goals and criteria clearly visible for students throughout the learning process. Co-constructing success criteria with students involves their input and deepens their understanding of the learning goal. Provide explicit instruction to students about how to effectively use the learning goals and success criteria as guides to monitor their progress.

2. Build a culture of self-reflection

⇒ Provide numerous opportunities for students to engage in metacognitive processes, encouraging them to think about their thinking at various stages of learning. This self-reflection along with descriptive feedback can be used by students to plan next steps.

3. Use reflective journals

⇒ Encourage students to keep track of successful strategies and troubleshooting ideas, making predictions about what strategies might be most effective as they approach future tasks.

4. Model self-questioning

⇒ When engaging with texts, break them into chunks in order for students to more closely monitor understanding.

5. Use think-alouds

⇒ Explicitly model metacognitive processes, such as during reading activities or writing tasks. Explicitly identify your own thinking and decision making, noting how you monitor your understanding and make necessary adjustments. Once modelled, ask students to do their own think aloud to reveal their thinking.

6. Use sentence frames

⇒ Prompt students to reflect on metacognition, such as:

- I used to think… Now I think…
- I realized…
- I am puzzled by…
- Next time, I will…

7. Teach students how to annotate texts

⇒ Encourage learners to highlight key points, make connections to other texts or their own experiences, and record questions or comments as they read.

Proof cards

Proof cards are a means of self-assessment that require students to show evidence of their thoughts and ideas. By finding this proof, their own learning becomes visible to students and they can see their

progress over a period of time. The reflections students provide on proof cards can also be used as a basis for conversations to help move their learning forward. Two sample proof cards are outlined below.

Sample 1: A First — Fossil Fuel inquiry

The hardest part was…making sure my sources were reliable and identifying any bias in them.

The easiest part was…choosing a graphic organizer (K-W-H-L chart) to record my research for the use of fossil fuels in Canada.

Sample 2: Improvement — Reading Response

This work shows I've improved…by making stronger and clearer connections to other books that I've read. I've also included more supporting details in my responses.

(Gregory et al., 2011)

Text codes

Text codes provide an annotation framework for students, supporting their comprehension and questioning of the text. (Tip: when using word processing software use a comment function for margin notes or consider tools such as Hypothesis for annotation.)

Symbol	When to Use It
underline	when you discover an important point or main idea.
!	when you encounter key words or phrases
*	when you reach an important statement or discovery
?	when you are confused or wondering something

margin note	when something you are reading can be rewritten or paraphrased to help you understand

(Jump & Kopp, 2023, p. 161)

Text codes example

(using an excerpt from Nish: North and South)

It was my kukum who put me on the trail earlier today, when I went to bring her two hares that my brother and I had caught by snare. For a while now, my grandma has been telling us the history of our people, their good deeds as well as the injustices they have suffered. It seems that this story of Lac Orange had made a lot of noise in the province, even in Quebec City.*****

From the pictures I found, the lake in question was literally orange.**?** "If they don't know how to deal with nature, they shouldn't come here!"**!** Kukum's words still resonate with me. Kukum told me that it was someone from the community who had brought attention to the situation and sent the photos to the journalists in Quebec City. But nobody really knew who it was.

See, Think, Wonder

This thinking routine encourages students to observe and then use these to make interpretations. Students can use the questions they generate as wonderings to help guide their next steps as learners, such as for an inquiry.

See, Think, Wonder example

(using a news image as a prompt)

What do you **see?**

⇒ A very hazy sky. It is yellow and smoky.

- ⇒ A firefighter and his two children are on a boat evacuating.
- ⇒ There is a suitcase with them on the boat.
- ⇒ One child has a bandana covering their mouth and nose.

What do you **think** about that?

- ⇒ They probably can't breathe or see very well because of the smoke.
- ⇒ They must be scared with the fires causing so much smoke and damage.
- ⇒ They also must be scared about leaving their home.

What does it make you **wonder?**

- ⇒ Exactly where and how did the fires start?
- ⇒ Was everyone able to evacuate safely?
- ⇒ Were the fires eventually put out?
- ⇒ Did people lose their homes?
- ⇒ Where did people go when they evacuated?
- ⇒ What is being done to help people who have to evacuate due to wildfires?

(Harvard Graduate School of Education, 2022)

> *"Deep consolidation approaches foster metacognition, self-talk, and the ability to examine texts outside the direct guidance of the teacher." (Fisher, et al., 2016, p. 91)*

Resources

In an ELAN Ontario blog post *Assessment Like Water* Valerie Carnaghan shares insights about assessment practice, including her own learning about the shifts in practice she made to use assessment to improve student learning. https://elanontario.com/assessment-like-water/

Knowing what counts: self-assessment and goal setting (2nd ed.) (2011) by Kathleen Gregory, Caren Cameron, and Anne Davies explores aspects of self-assessment and strategies that help students set goals, self-monitor and be metacognitive. https://connect2learning.com/self-assessment-and-goal-setting-2nd-edition/

PZ's Thinking Routines Toolbox from Harvard Graduate School of Education *Project Zero* (2002) identifies types of thinking and the strategies that can be used to support them. https://pz.harvard.edu/thinking-routines

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Updates

When updates are made to this document, they are tracked below with date and description of update.

- February 2025: initial release