



From Barriers to Strategies: Supporting Metacognition Through Classroom Conversation

Five lessons from research in de-streamed Grade 9 mathematics that educators can put into practice

A student is sitting with a task but has not started. Another begins working but quickly loses focus. A third student is trying, but something about the task is not making sense. As an educator, you may recognize that each student needs support, but identifying the barrier, helping the student select an appropriate strategy, and following up individually with every learner can be difficult within the realities of a busy classroom.

Support for self-regulated learning (SRL) involves helping students become more aware of their own learning. Students learn to recognize when something is getting in the way, identify strategies that might help, monitor whether those strategies are working, and adjust their approach when needed. These are important skills, but they do not necessarily develop on their own. Research suggests that students benefit when educators explicitly model and support this kind of strategic thinking.

SRL support is especially important given the natural developmental variation in executive functioning (EF) across school-aged learners. Executive functions, including working memory, cognitive flexibility, and response inhibition, allow learners to organize, plan, and solve problems when faced with a novel and challenging task. While all students benefit from support to self-regulate and manage the EF demands of a task, students with learning disabilities (LDs) and attention-deficit/hyperactivity disorder (ADHD) may benefit particularly from this kind of support (Faith et al., 2022; Perry et al., 2020). Educators often recognize the value of SRL support, but time and competing classroom demands can make it difficult to provide as often as students may need it.

Does all of this support need to happen one student at a time?

In a recent study, we explored whether SRL support for Grade 9 students could be delivered collectively through a group-level self-regulated learning approach (Faith & Reid, 2026). Over four months, two Grade 9 mathematics classes in rural Ontario used the **Barriers and Strategies Protocol** (BSP; Faith, 2018; Faith et al., 2022), a brief classroom routine designed to make challenges and possible responses visible.

Rather than asking students to manage difficulty privately, the teacher invited the class to consider two questions:

- **What barriers might get in the way of our success with this task?**
- **What strategies could we use to succeed?**

Student ideas were gathered in a simple Barriers and Strategies chart. The goal was not for every student to use the same strategy. Instead, the class generated a range of possibilities from which individual students could select approaches that matched their needs.

Barriers and Strategies: An Example	
Possible Barriers	Possible Strategies
• I'm not sure how to begin. • I forget the steps. • I get distracted while working. • The task feels overwhelming.	• Reread the instructions and identify one place to start. • Check my notes or look at an example. • Choose one thing to work on for a short period of time. • Break the task into smaller parts and start with one.

Across several months of implementation, the study suggested that this kind of shared metacognitive conversation could be incorporated efficiently into regular secondary classroom instruction without requiring extensive additional preparation or specialized teaching materials. Students and teachers also described benefits that extended beyond strategy use, including greater awareness of learning barriers, increased focus, stronger connections, and the normalization of struggle. At the same time, the study highlighted an important reality: meaningful shared reflection requires trust, persistence, and time.

Five Takeaways for Educators

1. Make learning barriers visible

Students do not always have language for what is interfering with their learning. They may know that they are stuck, distracted, confused, or overwhelmed without being able to identify exactly what is happening. When barriers remain unnamed, students can have difficulty choosing an effective response.

For students with LDs or ADHD, this may be particularly relevant when a learning difficulty is compounded by challenges with executive functioning, attention, working memory, or

self-monitoring. Making the barrier explicit can create an important first step toward choosing an appropriate strategy or support. The Barriers and Strategies routine begins by making those barriers visible.

For example, before students begin independent work, a teacher might ask:

What could make this task difficult today?

Students might identify barriers such as:

- not knowing how to begin
- forgetting a step
- becoming distracted
- feeling overwhelmed by the amount of work
- not understanding part of the lesson
- rushing
- worrying about making a mistake

In the study, students described the charts created through the Barriers and Strategies Protocol as useful because they made learning barriers and possible strategies visible. One student explained that once students knew exactly what they were struggling with, they could respond more effectively. Others valued having a concrete chart they could return to during independent work.

For educators, the shift is subtle but important. Instead of interpreting off-task behaviour only as a behaviour to correct, the conversation shifts toward curiosity:

What is getting in the way, and what could help?

2. Generate strategies with students, not only for students

When students are struggling, educators often suggest strategies that might help, such as:

- Check your notes.
- Ask for help.
- Break the task into smaller pieces.
- Use a timer.
- Start with the question you understand.

All of these may be helpful. However, when students participate in generating strategies themselves, they also practise the metacognitive thinking required to determine what kind of support they need and when they might use it.

After collaboratively identifying barriers, the teacher can step back and invite students to generate strategies:

How can we overcome these barriers?

If the barrier is *I do not know where to begin*, possible strategies might include:

- reread the instructions
- look at an example
- ask a partner what they noticed first
- identify one part of the task that is familiar
- ask the teacher a specific question

Students do not all need to use the same strategy. Group discussion creates a collection of possibilities, allowing students to retain agency in choosing an approach that fits their particular barrier.

In the study, students described learning strategies from one another and becoming more aware of approaches they had not previously considered. Teachers also described students becoming more proactive about seeking help and taking greater responsibility for their learning. These were participant-reported and teacher-observed changes rather than measured achievement effects, but they point toward the potential value of making strategic thinking a shared classroom activity.

3. Keep the routine brief and connect it to real learning

Supporting metacognition does not necessarily require a separate 30-minute lesson. Teachers in the study were able to use Barriers and Strategies conversations in approximately **5 to 10 minutes**. The routine appeared to work best when it was integrated flexibly into instruction rather than treated as a required activity that had to occur every day.

Teachers used the routine at different points depending on what was happening in the classroom. It could occur:

- before students begin independent work
- before a challenging new task
- when the class appears uncertain or disengaged
- before collaborative work
- when students are preparing for an assessment
- when a familiar learning barrier is beginning to emerge

The teachers initially used the approach to discuss relatively familiar learning challenges, such as homework completion and study habits. As students and teachers became more comfortable with the process, conversations could move closer to the academic work itself, including challenges involved in solving mathematics problems. This flexibility may be particularly valuable in busy classrooms, where educators are balancing curriculum expectations with a wide range of student learning needs.

The goal is not to stop teaching mathematics, literacy, science, or another subject in order to "do metacognition." The metacognitive conversation becomes **part of doing the learning**.

Teacher Tip: Begin With a Specific Task

Students may find a broad question such as *What makes learning hard for you?* difficult to answer.

Instead, connect the conversation to something students are actually about to do:

- **"We're about to begin these practice questions. What might make this difficult?"**
- **"You're going to have 20 minutes to work independently. What might get in the way of using that time well?"**
- **"We're starting a longer writing task today. Where might someone get stuck?"**

Specific tasks can make barriers easier to identify and strategies easier to generate.

4. Normalize struggle before expecting vulnerability

One of the clearest lessons from the study was that students did not immediately embrace talking publicly about difficulty. That hesitation is understandable. Students may be highly invested in appearing competent, making learning "look easy" rather than openly admitting challenges or collaborating on strategies that might help. In the study, teachers also noted that admitting difficulty with the mathematics itself could feel more vulnerable than acknowledging a missed homework task.

Early conversations therefore required careful norm-setting and culture building. Students needed to know that identifying a barrier would not result in embarrassment, criticism, or judgment. Teachers had to communicate through both words and actions that difficulty was expected and that identifying a barrier could help students determine what to try next.

Students became more willing to contribute as they saw their peers engage in this more open, curious, and adaptive approach to learning. The study suggests that a shared SRL routine may be simple, but shifting toward a classroom culture that can sustain it takes time. Teachers described needing to continue beyond the first few attempts, even when early conversations were not particularly rich.

Do not judge the usefulness of a metacognitive routine by the first conversation.

Students may first need to learn that it is genuinely safe to say:

- "I don't understand this yet."
- "I lose focus when I work on my own."
- "I feel overwhelmed when there are too many questions."

Once those statements can be made without shame, the class can begin working on what comes next.

Teacher Tip: Start Low-Risk

Early in the process, consider beginning with barriers students may find easier to discuss publicly, such as getting started, remembering materials, managing time, completing homework, or staying focused.

As trust develops, students may become more comfortable discussing barriers connected to academic understanding, confidence, frustration, or uncertainty.

5. Revisit strategies so students can begin using them independently

Creating a Barriers and Strategies chart is not the end of the process. Ultimately, the goal is for students to become increasingly able to recognize barriers and make strategic choices without waiting for the teacher to tell them what to do. That means returning to the conversation.

After students have worked, an educator might ask:

- **What helped today?**
- **Which strategy did you try?**
- **Did anything work differently than you expected?**
- **What might you try next time?**

This reflection completes an important part of the SRL cycle. Students are not simply given strategies. They begin considering whether a strategy was useful, under what conditions it worked, and whether another approach might be more effective in the future.

Some students in the study described using strategies outside the Barriers and Strategies conversations themselves. One student explained that when completing homework, they would return to the barriers and strategies that had been discussed in class and use them to make the task easier and remain focused. Over time, students should become increasingly able to draw on a repertoire of strategies for themselves rather than depending on the classroom routine.

Try It in Your Classroom

A Barriers and Strategies conversation can be quite simple.

Step 1: Choose a specific learning task

Select something students are about to do, such as reading a complex text, beginning independent mathematics work, preparing for a test, completing a writing assignment, or working collaboratively.

Step 2: Identify possible barriers

Ask: **What might get in the way of our success?**

Record student ideas where everyone can see them.

Do not rush immediately into fixing each barrier. First, make space for students to identify what might make the learning difficult.

Step 3: Normalize the barriers

Respond with curiosity and acceptance.

An educator might say:

- "That makes sense."
- "I imagine other people experience that too."
- "Let's think about what might help."

The message is that encountering difficulty is part of learning, not evidence that a student cannot learn.

Step 4: Generate possible strategies

For each barrier, ask: **What could someone try if this happens?**

Invite several possibilities. Educators can contribute strategies too, particularly when students are still learning how to participate in the process.

Step 5: Invite students to choose

Students do not need to use every strategy.

Encourage them to identify one that might be useful for them.

Step 6: Return to the conversation

After students have had an opportunity to work, ask what happened.

- What worked?
- What did not?
- What would you use again?
- What could be added to the strategy list?

Over time, the class develops a shared language for talking about learning, not simply a chart.

Metacognition Is Also Relational

One of the more unexpected findings from the study involved students' emotional and social experiences. Students described Barriers and Strategies conversations as moments when they could slow down, recognize how they were feeling, and enter academic work in a calmer state. Some students said that hearing classmates identify similar difficulties made them feel less alone. Others described feeling better understood by their teacher or more connected to classmates. Students also described the classroom becoming more relaxed, thoughtful, and open.

These findings should be interpreted cautiously. This was an exploratory study of two Grade 9 mathematics classrooms, and it was not designed to demonstrate mental health outcomes. However, the students' reflections point toward an important relationship between metacognition and classroom culture.

When an educator asks students what is making learning difficult and listens seriously to the answer, the conversation communicates something larger:

- **We expect barriers.**
- **You do not have to hide them.**
- **There are things we can do.**
- **We can work on them together.**

In a classroom where students differ substantially in prior knowledge, confidence, learning needs, executive functioning, and experiences of school, that message may be particularly important. For students with LDs and ADHD, whole-class routines such as this may also reduce the need to repeatedly self-identify or be singled out in order to access useful learning strategies, while making those strategies available to any student who may benefit from them.

Quick Summary: What Did the Study Find?

Faith and Reid (2026) followed two rural Grade 9 mathematics classes over four months and used classroom observations, teacher interviews and journals, student surveys, and student reflections.

Many students and teachers perceived value in using the Barriers and Strategies Protocol as a group-level SRL support. Students described greater awareness of learning barriers, improved focus, and increased use of strategies, while teachers described greater participation, strategy use, and engagement.

These findings are promising, but they should not be interpreted as evidence that the protocol directly increased mathematics achievement. The study included only two classrooms, did not have a comparison group, and did not measure changes in achievement through standardized assessments or grade comparisons.

Instead, the findings provide preliminary evidence that brief, socially shared metacognitive routines are feasible in secondary mathematics classrooms and may help educators make student barriers, strategies, and experiences more visible.

Next Steps in the Classroom

Supporting self-regulated learning does not always require an additional program, a lengthy lesson, or an individual conference with every student. Sometimes it can begin with two questions:

- **What might get in the way of our success?**
- **What could we do about it?**

When educators make space for those questions, barriers that were previously private can become visible. Strategies can become shared classroom resources. Struggle can become something expected rather than something students feel they need to conceal.

Over time, students may begin to move from waiting for someone else to solve a learning problem toward recognizing: **I know what is getting in my way, and I have something I can try.**

About the Authors



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Learn More

Read the research article that informed this resource:

[Socially Shared Metacognition in De-Streamed Secondary Mathematics: Making Barriers and Strategies Visible.](#)

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