

Guidance to Support Teachers in Implementing High Quality Instructional Materials (HQIM)

Shared HQIM will lead to mathematics learning experiences across NYC that are rigorous and equitable, but not identical. Each classroom community is unique and there is no script for teachers to follow. Rather, implementation relies on teachers leveraging their knowledge and HQIM supports to make instructional decisions that **help students access math content through the curriculum**. This document aims to support teachers in that decision making, guided by one overarching question:

Will this decision help students engage with the mathematical goals or will it just provide a shortcut around those goals?

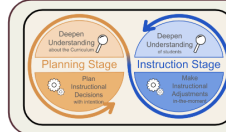
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Plan Instructional Decisions with intention

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Instruction Stage



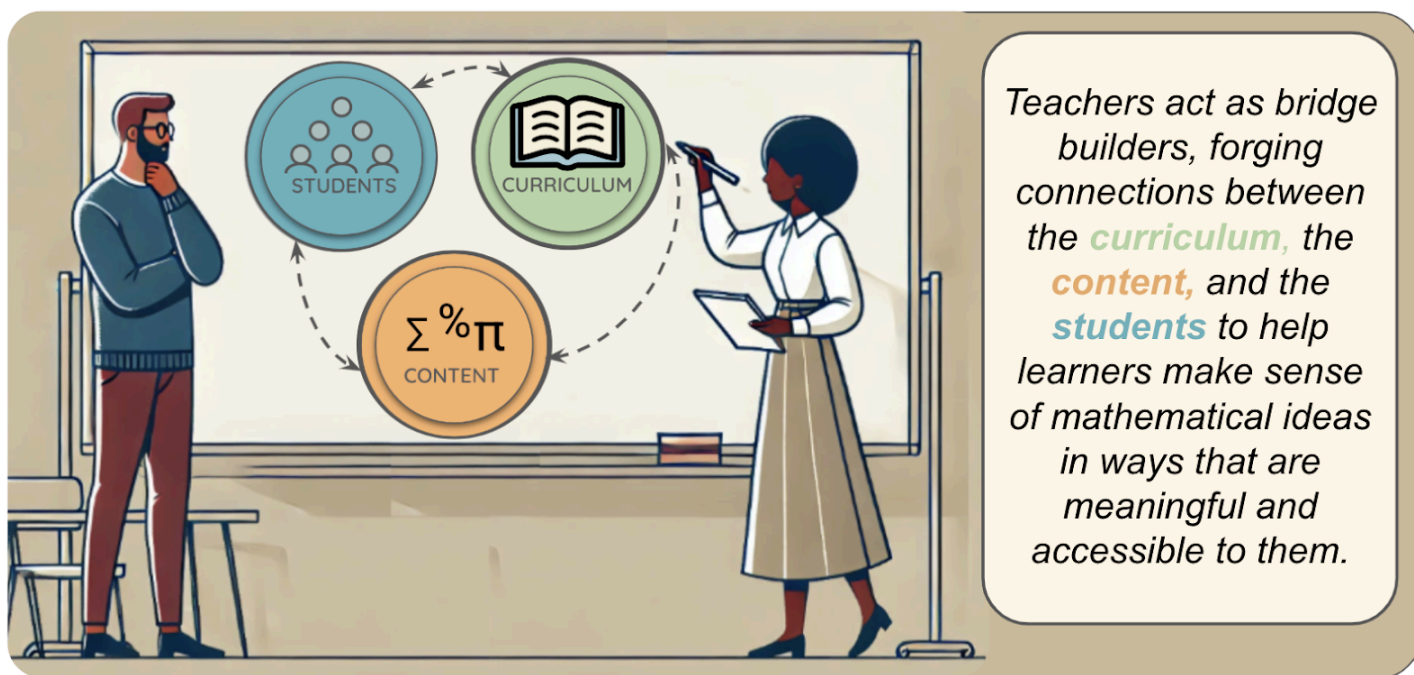
Make Instructional Adjustments in-the-moment

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Part I - Teachers' Role in HQIM Implementation

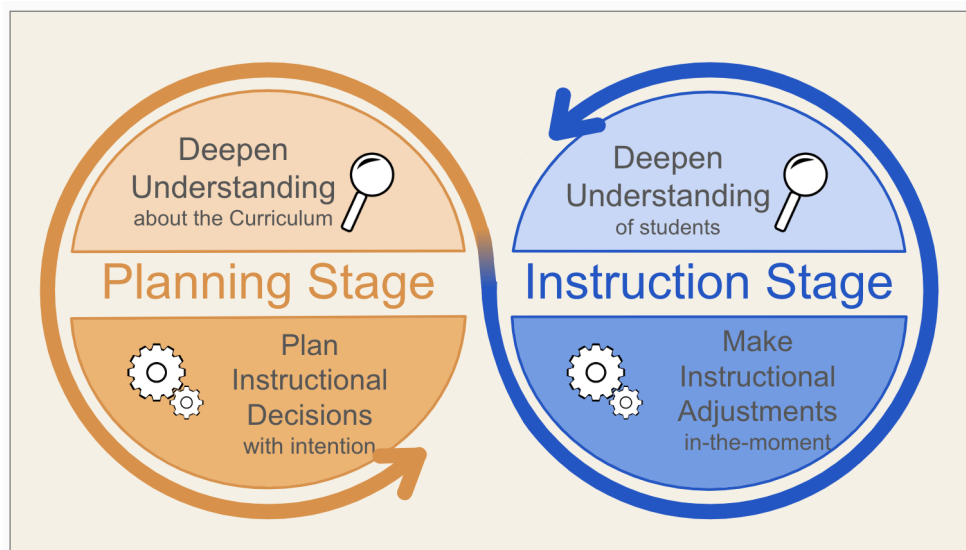
Student learning experiences are deeply influenced by both the **curriculum** they interact with and the **teachers** who bring it to life. HQIM provides a coherent progression of mathematical ideas, high-quality tasks, and meaningful learning opportunities. Teachers act as bridge builders, forging connections between the curriculum, the content, and the students to help learners make sense of mathematical ideas in ways that are meaningful and accessible to them. This means not only delivering the curriculum as intended but also making thoughtful decisions about how to engage students, respond to their thinking, and forge lasting connections. When **curriculum and teaching are aligned**, students experience lessons that are both **rigorous and relevant**, leading to deeper understanding, stronger connections, and greater confidence in mathematics.



Grounded in the understanding that we are **smarter together than alone**, NYC Solves leverages the value of implementing **shared** HQIM. It is this shared experience that allows educators to collaborate with one another both within and across schools. Whenever possible, teachers are encouraged to make implementation decisions in collaboration with one another, school leaders, and instructional coaches.

Part II - The Planning and Instruction Cycle

Implementing a High Quality Curriculum calls upon teachers to deepen their understanding of the curriculum and of their students and to leverage this understanding to make informed decisions about instruction. This occurs as an ongoing process within and across school years.



Deepening Understanding

- **Deepen Understanding about the Curriculum (Planning Stage)**
Teachers collaborate to do the math and engage deeply with the content in the curriculum. This process involves analyzing the lesson goals, sequencing of activities, and the structure of units. Beyond just mathematical knowledge, teachers also examine how the curriculum fosters mathematical habits, student identity, and a sense of community.
- **Deepen Understanding of Students (Instruction Stage)**
Teachers actively observe, listen to, and engage with students to gain insight into their mathematical understanding, habits, and approaches. Through formative and curriculum-based assessments, they identify patterns in student understanding, uncover misconceptions, and recognize emerging strengths. These assessments, combined with in-the-moment interactions, allow teachers to make responsive instructional decisions that support all learners. Additionally, by analyzing how students engage with math and each other, teachers gain a deeper understanding of each student's mathematical identity, confidence, attitude, and sense of belonging in math. This awareness enables teachers to foster a classroom environment where every student feels valued and supported as a capable mathematical thinker.

Making Instructional Decisions

- **Plan Instructional Decisions with Intention (Planning Stage)**
By integrating their knowledge of both the curriculum and their students, teachers make strategic instructional choices. They design lessons that enhance engagement, accessibility, and relevance while maintaining the integrity of mathematical concepts. By anticipating students' strengths, strategies, and potential misconceptions, teachers create learning experiences that support diverse learners and foster meaningful mathematical discussions.
- **Make Instructional Adjustments in-the-moment (Instruction Stage)**
Teachers remain responsive to student thinking by making real-time adjustments to their instruction. They adapt to unexpected student approaches, misconceptions, and variations in pacing, ensuring that learning remains productive and inclusive. These in-the-moment decisions help sustain engagement, support student reasoning, and guide the lesson toward its intended learning goals.

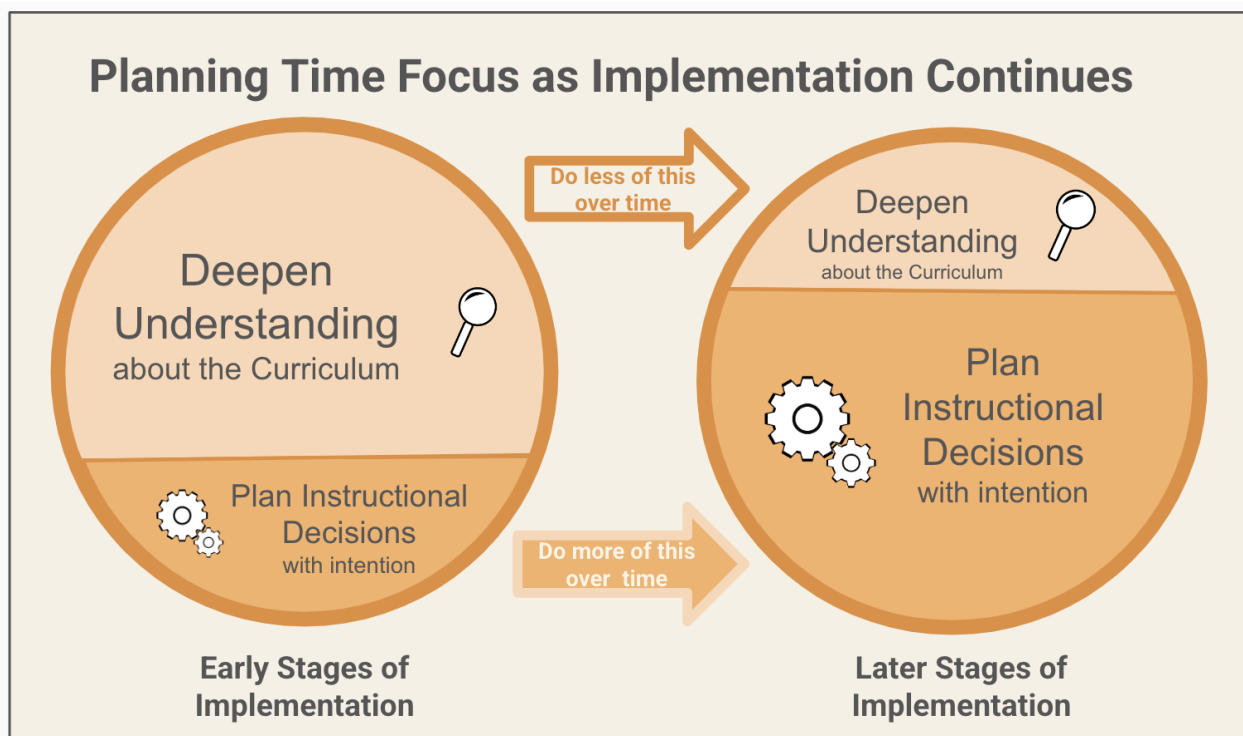
One common challenge when implementing a new curriculum is trying to do too much, too soon. In the early stages of implementation it is recommended that teachers dedicate the bulk of their planning time to deepening their curricular understanding.

Focus during the **Early Stages of Implementation:**

- doing the math in the curriculum (ideally in collaboration with other teachers)
- making sense of how each math activity contributes to the goals of both the lesson and the unit
- understanding what students are expected to know by the end of the lesson
- thinking about how to facilitate each lesson so that students will make connections to the content
- using both curricular suggestions and school-based best practices to promote the development of agency, perseverance and belonging within the class community

As teachers become more familiar with curricular goals, routines, structures and supports, they can leverage understanding of all of the above to take on additional planning.

In these **Later Stages of Implementation**, once teachers really know and understand the curriculum, more time can be spent on planning strategic adaptations to lessons that both make meaningful connections to math content, habits and identity and preserve the coherence of the full learning experience that the curriculum provides.



Part III - Practical Guidance for each Phase of the Planning and Instruction Cycle

 Planning Stage Deepen Understanding about the Curriculum Making sense of the curriculum is an active process that involves teachers doing the mathematics and thoughtfully examining the goals, sequence, content and structure of lessons and units. Teachers can utilize these Guiding Questions to deepen understanding of the curriculum.	 Instruction Stage Deepen Understanding of Students Information flow in the classroom is a two-way street. As teachers share information, they collect it as well, learning about their students, how they think and how they relate to mathematics. Teachers can utilize these Guiding Questions to deepen understanding of students.
 Planning Stage Plan Instructional Decisions with intention HQIM offers resources and guidance to support teachers in planning and instruction. These supports provide a strong foundation, but no two classrooms are the same. Effective teachers make thoughtful customizations to ensure access and engagement for students while maintaining the integrity of the curriculum. As this process unfolds, some common challenges arise. What do I do if: • <i>I'm concerned my students are missing important prior knowledge</i> • <i>I don't have time to get to every activity within a lesson</i> • <i>I am falling behind in my yearly pacing</i>	 Instruction Stage Make Instructional Adjustments in-the-moment Even the most well-planned lessons don't always unfold as expected. Students may struggle to begin, become sidetracked, or reveal misunderstandings that require immediate attention. These moments are not failures but natural opportunities for responsive teaching. When this occurs, teachers make adjustments that support student thinking, foster an inclusive learning environment, and keep the lesson moving toward its intended goals. What do I do if: • <i>Students aren't engaged or responding</i> • <i>Students are engaged but off-track</i> • <i>Students are on the wrong path</i> • <i>My students are moving through the activity at very different paces</i>



Guiding Questions to: Deepen Understanding of Curriculum

Making sense of the curriculum is an active process that involves teachers doing the mathematics and thoughtfully examining the goals, sequence, content and structure of lessons and units. The guiding questions provided may help teachers as they gain understanding of curricular goals for developing students' math knowledge, habits and identity.



Math Knowledge Considerations

- What is the specific math content students are expected to learn?
- How is this topic introduced similarly or differently than how I have done it in the past?
- What level of mastery is expected at this time? Are there upcoming additional opportunities to develop this mathematical content?
- What might understanding at this level look or sound like?
- What past or future learning does this connect to?



Math Habits and Practices Considerations

- What math practices are students expected to use and develop through a specific activity?
- What are all the different mathematical representations associated with this content? Which are highlighted in the curriculum at this point?
- What methods of communication are being showcased and strengthened?
- Which structures or routines for learning are being introduced? Which are being revisited?



Math Identity and Math Community Considerations

- How is the activity designed to promote student agency?
- How is the activity designed to promote a math community?



Guiding Questions to: Deepen Understanding of Students

Information flow in the classroom is a two-way street. As teachers share knowledge, they collect it as well, learning about their students, how they think and how they relate to mathematics. The guiding questions provided may help teachers as they gain understanding about student knowledge, habits and identity.



Math Knowledge Considerations

- What prior knowledge and experiences with this math content do students bring?
- What strengths are students demonstrating?
- What misconceptions or struggles do students have with this content?
- What connections are students making to other math ideas?



Math Habits and Practices Considerations

- What strategies do students use when solving problems? How do they explain their reasoning?
- What mathematical representations (e.g., diagrams, equations, tables) do students prefer or find challenging?
- How do students demonstrate their mathematical thinking (verbally, visually, in writing, etc.)?
- What classroom structures (individual work, small groups, whole-class discussions) or routines best support each student's engagement?



Math Identity and Math Community Considerations

- How do students see themselves as math learners?
 - Do they express confidence, anxiety, or neutrality about math?
 - What mathematical strengths do they recognize in themselves?
- How is student engagement with this math influenced by their:
 - Cultural or linguistic experiences
 - Prior learning experiences
 - Personal interests and experiences
- How do students interact with peers in mathematical discussions? Do they explain their reasoning, ask questions, or listen actively?

Planning Stage



Addressing Common Challenges: I'm concerned my students are missing important prior knowledge, what do I do?

As students grapple with grade level math, there will undoubtedly be those in the classroom who do not have the expected skills and knowledge from prior units or school years.

Listed below are some considerations for teachers (and teacher teams) as they leverage their professional judgement, understanding of the content, familiarity with the curriculum, and assessment data and other knowledge of their students, to preserve the integrity of the mathematics while prioritizing accessibility for all students.



Suggestions to use at any time

Provide greater access by:

- Making a visual adaptation to how a task is presented
 - Visually chunk a long word problem
 - Provide an image of an unfamiliar term
 - Provide a visual, anecdote, or question that helps connect to the context
- Changing the context of the problem so it relates to the experience and interests of your students while preserving the mathematics
- Starting with a less complex problem that will help provide access to the original problem.

Leverage resources by:

- Preparing the scaffolds suggested in the curriculum (manipulatives, sentence frames, etc.) so they are available as needed.
- Providing and referencing anchor charts that reinforce classroom and instructional routines or highlight student thinking from prior lessons and units.
- Using activities from prior grades during supplemental periods **before** lessons



Suggestions to use when you know the curriculum well

Make Adjustments such as:

- Employing a different instructional routine to engage with the same task that you feel better meets the needs of your students
- Drawing on your knowledge of prior experiences with the activity and the needs of your students to make adaptations that align with the learning goal of this lesson and prepare students for upcoming lessons.
- Using Universal Design for Learning (UDL) principles, such as providing multiple ways for students to: engage, represent ideas, and express understanding.



Try to Avoid

Try to Avoid:

- Relying solely on one method of engagement (e.g., verbal explanations without visual or hands-on supports).
- Skipping an introductory activity which provides access to the learning goal in the main activity.
- Changing the numbers in the problem, which can result in missed learning opportunities. (Numbers used in curriculum are often chosen to elicit relationships or strategies or to set up future activities).
- Breaking a multi-step math problem into shorter steps in a way that undermines understanding of the content.
- Providing a formula that leads students to an answer but circumvents their sense-making.

Planning Stage



Addressing Common Challenges:

I don't have time to get to every activity within a lesson, what do I do?

Most math lessons include several activities and ample opportunity for deep exploration. This means that the expectation is that not every activity will be used; instead, teachers should, as part of their planning, make informed decisions about what to use. [NYCPS Pacing guides](#) have curriculum-specific guidance that teachers may use as a resource in their decision making.

Listed below are some considerations for teachers (and teacher teams) as they leverage their professional judgement, understanding of the content, assessment data and other knowledge of their students, and familiarity with the curriculum to prioritize the activities that best support the learning goals of the lesson.

 Suggestions to use at any time	Prioritize activities that: - Most relate to the goals of the lesson and unit. Some ways to identify the goals include: - learning targets of the lesson and unit - what is asked on exit tickets and other checks for understanding - guidance on the level of understanding expected - doing the math in the lesson - Reinforce unfinished learning (while deprioritizing activities about concepts that are already well understood) - Will be most compelling, based on your own strengths and your students interests. Maximize learning time by: - Developing routines and structures that minimize time spent on non-curricular activities (attendance, collecting papers, handing out supplies, etc.)
 Suggestions to use when you know the curriculum well	Condense Activities by: - Combining elements of two activities so that students can still experience the key learnings from each. Make Adjustments such as: - Utilizing a math language or instructional routine not suggested in this lesson because it is engaging, allows greater access to the math, helps build communication skills, better prepares them for future learning, or other similar reasons. - Adjusting a lesson to connect with content from another discipline while preserving the key math content and practices.
 Try to Avoid	Try to Avoid: - Deprioritizing whole group discussion and synthesis by: - Engaging with every activity at the expense of end-of-lesson synthesis - Engaging with every activity at the expense of mid-lesson synthesis - Ensuring every student completes every activity at the expense of whole group conversation that supports collective sensemaking. - Omitting an activity because it seems too hard or too simple without considering its connections to the learning goal. - Pre-teaching content or providing tricks and shortcuts that result in correct answers while circumventing concept development.

Planning Stage



Addressing Common Challenges: I am falling behind in my yearly pacing, what do I do?

The [NYCPS Pacing guides](#) are aligned to the NYCPS calendar, with suggested lessons for every instructional day. This guidance is provided with the full understanding that lack of access to expected prerequisites, school-wide events, holidays, absences, participation in professional learning, and other similar occurrences reduce the amount of actual instructional time.

As these events and the needs of individual classrooms occur, teachers (and teacher teams) should leverage their professional judgement, understanding of the content, assessment data and other knowledge of their students, and familiarity with the curriculum to adjust pacing as needed. The below guidance is intended to support teachers as they make these pacing adjustments.



Suggestions to use at any time

Utilize structures for success such as:

- Preserving at least 5 instructional periods per week for core instruction using the HQIM
- Planning for the year by looking at the suggested pacing from NYCPS and your own school calendar. Consider how you'll account for non-instructional days within your school.
- Checking weekly on where you are with pacing to see if you're falling behind.
 - Consult with state test guidance (linked for your convenience within each pacing guide) for content to emphasize or deemphasize.
 - Consider omitting lessons indicated as optional by the curriculum

Prioritize:

- Exposure to all units over completion of every lesson.
- Lessons that:
 - Involve essential grade level content
 - Address the learning needs of your students



Suggestions to use when you know the curriculum well

Make Adjustments to units such as:

- Consolidating by combining elements of multiple lessons together.
- Strategically omitting a lesson or lessons because:
 - you know that material is sufficiently covered in upcoming units.
 - it is not key to the understanding of the unit.



Try to Avoid

Try to Avoid:

- Spending multiple core instructional days on the same lesson.
- Inserting lessons from outside of the curriculum within core instructional periods.
- Teaching every lesson starting at the beginning of the unit and then running out of time and skipping the final few lessons.
- Spending too much core instructional time on non-curricular activities (establishing classroom routines, reviewing grades, preparing for class or state tests, etc.).

 Instruction Stage	Addressing Common Challenges: Students aren't engaged or responding, what do I do?
Every teacher has had the experience of asking a question or introducing an activity and being met with silence or blank stares. Whether students are unsure of how to begin, lack confidence, or simply need more time to process, this lack of engagement can stall the lesson. The strategies below can support teachers to spark thinking, activate prior knowledge, and create low-pressure entry points to encourage all students to participate and take ownership of their learning.	
 Ask Yourself	Consider: • What's actually creating a barrier right now? The math? The context? The instructions? Do students just need more time to think? • Will the support I am about to offer help them understand the goal of the lesson, or will it get them to get the answer to a specific question while circumventing understanding and transferability? • How can I give my students more choices or agency in how they engage in or express mathematics?
 Discussion Prompts	Activate Prior Knowledge • What does this remind you of? • Have we seen a problem like this before? What was different? • Can you explain this in your own words? Lower the Entry Barrier • What is something you notice about the problem, even if you don't know how to solve it yet? • Can you reword the question in a way that makes sense to you? Use Think Time & Structured Talk • Turn to your partner and discuss what you think the first step might be. • Write down any ideas you have, even if they aren't complete, then share. • Why don't we find a different partner in the room to discuss with
 Try to Avoid	Try to Avoid: • Answering the question for them. Instead, ask the question in another way, provide an easier, helper question or remind them of relevant prior learning. • Calling on the same students who always participate. Use strategies like think-pair-share to give everyone a chance. • Assuming a non-response means students don't know the answer. Providing them wait time, time to stop and jot or turn and talk, or written access to a question asked orally can increase student responses.

Instruction Stage 	<i>Addressing Common Challenges:</i> Students are engaged but off-track, what do I do?
While enthusiasm in the classroom is a sign of active learning, it can sometimes lead students away from the core objective of the lesson. When students get caught up in an interesting but unrelated mathematical idea, it's important to channel that excitement while keeping the discussion focused. The strategies below can help teachers redirect student thinking while ensuring that engagement remains meaningful and aligned with the lesson's goals.	
 Ask Yourself	Consider: • <i>How do I help connect student thinking back to the goal of the lesson?</i> • <i>How do I validate student thinking, curiosity and participation while steering conversation back to the learning goal?</i>
 Discussion Prompts	Re-center on the Goal • <i>This is an interesting idea! How does it connect to our learning goal?</i> • <i>How can we use your thinking to help answer today's question?</i> • <i>What do you predict will happen if we extend this idea?</i> Encourage Self-Reflection • <i>What patterns are we noticing?</i> • <i>Do you think this will always work? How can you test it?</i> Leverage Excitement While Staying Focused • <i>That's a great question! Let's put it on our 'wonder wall' and see if we can answer it after we solve today's problem.</i> • <i>How do you think this relates to the math we've been working on?</i>
 Try to Avoid	Try to Avoid: • Shutting down student curiosity completely. Acknowledge their excitement and find a way to connect it to the lesson. • Letting the class veer too far off-topic. Use strategies to bring them back to the main objective. • Rushing ahead just because engagement is high. Ensure students are making sense of their learning, not just having fun.

Instruction Stage



Addressing Common Challenges: Students are on the wrong path, what do I do?

Misconceptions are a natural part of learning. Deciding when and how to address them is challenging because if they are left unaddressed too long, they can become barriers to deeper understanding. However, if they are addressed too soon, or without understanding the student thinking that led to that misconception, the act of rescuing students can foster dependence on the teacher.

The strategies below help students reflect on their reasoning, recognize errors, and adjust their thinking, promoting a growth mindset rather than simply providing the correct answers.



Ask Yourself

Consider:

- *What is the thinking that is leading to this misconception? Do I have enough information to address the misconception and not just the mistake?*
- *How can I redirect students while still acknowledging their thinking and efforts?*
- *How can I address this misconception without doing the thinking for the students?*
- *Is there some student thinking in the room that everyone can benefit from?*
- *Are multiple students experiencing the same misunderstanding? Is it an opportunity to pause the whole class to discuss?*
- *Does this need to be addressed immediately, or can it be resolved during the synthesis?*



Discussion Prompts

Encourage Self-Correction

- *Can someone explain this solution in a different way?*
- *Where do you think the mistake might have happened?*
- *Does this answer make sense in the context of the problem?*

Use Student Reasoning to Address Misconceptions

- *Let's compare these two different answers. What do we notice?*
- *What happens if we use a different method? Do we get the same result?*
- *Does anyone see a pattern where mistakes are happening?*

Facilitate Productive Struggle & Peer Teaching

- *I'm hearing two different ideas, who can help us figure out which is correct?*
- *Talk with your partner: What is something you agree on? What is something you disagree on?*



Try to Avoid

Try to Avoid:

- **Telling students they are wrong without discussion.** Instead, let them analyze their thinking.
- **Correcting the mistake without addressing the misconception** that led to the error. Have students articulate their thinking, and help them see where this thinking conflicts with something they know to be true.
- **Moving on without addressing key misconceptions.** Some misunderstandings can be revisited in future lessons, but misconceptions about fundamental concepts should be clarified to prevent gaps in learning.
- **Giving students the answer.** Encourage students to discover the mistake and correct it themselves.

 Instruction Stage	Addressing Common Challenges: My students are moving through the activity at very different paces, what do I do?
	In every lesson, students will progress at different rates, both in how quickly they begin and how quickly they finish. When students struggle to get started, teachers can: • ask questions to help discover the core issue • leverage the thinking of engaged students • guide peer collaboration to provide access while maintaining agency When some students have finished and others are still working, teachers can: • provide meaningful next steps for early finishers that push students to more clearly and completely connect and explain their thinking • initiate whole class summary discussions based on the understanding that synthesis conversations are most productive when some students still have unfinished thinking
 Ask Yourself	Consider: • <i>Why are students struggling to get started? Is the question unclear? Are they feeling disconnected? Is there prior knowledge that they need access to?</i> • <i>How can I highlight successful strategies some students are using?</i> • <i>Is there a talk routine that I can use to support students in sharing ideas?</i> • <i>How do I ensure that early finishers clarify their thinking while others catch up?</i> • <i>How much of the activity is necessary for students to complete before synthesizing?</i> • <i>How do I ensure all students can contribute to the conversation, even if they're at different points in the task?</i>
 Discussion Prompts	Support Struggling Students Without Taking Over • <i>Can you explain what the problem is asking in your own words?</i> • <i>What information do we already know?</i> • <i>Would it help to draw a picture or make a table?</i> Leverage Student Thinking to Support the Class • <i>Let's hear from someone who's already started, what approach are you using?</i> • <i>I'm noticing some different strategies, let's share a few?</i> • <i>Turn to your partner and ask, "How did you start?" See if that sparks an idea.</i> Keep Early Finishers Productively Engaged • <i>If you've solved it one way, can you find another approach?</i> • <i>How can you make your thinking more visible?</i> • <i>Can you make a generalization or a rule that would work for every situation like this?</i> • <i>Is there enough detail here to remember your thinking if you look at this in two weeks?</i> Structure a Summary Conversation That All Students Can Contribute To • <i>What was the most important mathematical idea we uncovered today?</i> • <i>What strategies did you see today that were helpful in solving this problem?</i> • <i>Did anyone's thinking shift? What changed?</i> • <i>What do you still wonder about this problem?</i>
 Try to Avoid	Try to Avoid: • Correcting an error without addressing the misconception that led to that error. • Pairing struggling and advanced students without a protocol. Ensure peer collaboration is structured so both students have a meaningful opportunity to contribute. • Jumping in too soon with a solution. Many students need space to process, and providing a pathway too soon may interfere with their thinking or mask a misconception. Ask questions to help them articulate their thinking instead. • Waiting too long to share initial thinking. Students benefit from hearing the initial thinking of their peers rather than full solutions. • Letting early finishers disengage. Challenge them to reflect on their strategy and support their peers in meaningful ways. • Waiting too long to have a summary conversation. Every student does not need to complete each activity in order to synthesize and formalize the learning.