

Helping Students Practice Skills, Strategies, and Processes

Focus Statement: When the content involves a skill, strategy, or process, the teacher engages students in practice activities that help them develop fluency and alternative ways of executing procedures.

Desired Effect: Evidence (formative data) demonstrates students develop automaticity with skills, strategies, or processes.

Example Teacher Instructional Techniques (Check all that apply)

- Model how to execute the skill, strategy, or process
- Model mathematical practices
- Model how to reason, problem solve, use tools, and generalize
- Engage students in massed and distributed practice activities that are appropriate to their current ability to execute a skill, strategy, or process
 - Guided practice if students cannot perform the skill, strategy, or process independently
 - Independent practice if students can perform the skill, strategy, or process independently
- Guide students to generate and manipulate mental models for skills, strategies, and processes
- Employ “worked examples” or exemplars
- Provide opportunity for practice immediately prior to assessing skills, strategies, and processes
- Provide opportunity for students to refine and shape knowledge by encountering a task or problem in a different context
- Provide opportunity for students to increase fluency and accuracy
- Provide opportunity for purposeful homework

Example Teacher Techniques for Monitoring for Learning (Check all that apply)

- Use a Group Activity** to monitor that students develop automaticity with skills, strategies, or processes
- Use Student Work** (Recording and Representing) to monitor that students develop automaticity with skills, strategies, or processes
- Use Response Methods** to monitor that students develop automaticity with skills, strategies, or processes
- Use Questioning Sequences** to monitor that students develop automaticity with skills, strategies, or processes

Example Student Evidence of Desired Effect (Percent of students who demonstrate achievement of the desired effect that students develop automaticity with skills, strategies, or processes. Student evidence is obtained as the teacher uses a monitoring technique. Check all that apply.)

- Execute or perform the skill, strategy, or process with increased confidence
- Execute or perform the skill, strategy, or process with increased competence
- Artifacts (i.e. worksheets, written responses, formative data) show fluency and accuracy are increasing
- Explanation of mental models reveals understanding of the strategy or process
- Use problem-solving strategies based on their purpose and unique characteristics
- Demonstrate deepening of knowledge and/or increasing accuracy through group interactions
- Explain how the use of a problem-solving strategy increased fluency and/or accuracy

Example Adaptations a teacher can make after monitoring student evidence and determining how many students demonstrate the desired learning (Check all that apply)

- Reteach or use a new teacher technique
- Reorganize groups
- Utilize peer resources
- Modify task
- Provide additional resources

Not Using (0)	Beginning (1)	Developing (2)	Applying (3)	Innovating (4)
Strategy was called for but not exhibited.	Uses strategy incorrectly or with parts missing.	When the content involves a skill, strategy, or process, the teacher engages students in practice activities that help them develop fluency and alternative ways of executing procedures, but less than the majority of students are displaying the desired effect in student evidence at the taxonomy level of the critical content.	When the content involves a skill, strategy, or process, the teacher engages students in practice activities that help them develop fluency and alternative ways of executing procedures. The desired effect is displayed in the majority of student evidence at the taxonomy level of the critical content.	Based on student evidence, implements adaptations to achieve the desired effect in more than 90% of the student evidence at the taxonomy level of the critical content.

Helping Students Examine Similarities and Differences

Focus Statement: When presenting content, the teacher helps students deepen their knowledge of the critical content by examining similarities and differences.

Desired Effect: Evidence (formative data) demonstrates student knowledge of critical content is deepened by examining similarities and differences.

Example Teacher Instructional Techniques (Check all that apply)

- Use comparison activities to examine similarities and differences
- Use classifying activities to examine similarities and differences
- Use analogy activities to examine similarities and differences
- Use metaphor activities to examine similarities and differences
- Use culturally relevant activities to help students examine similarities and differences
- Use activities to identify basic relationships between ideas that deepen knowledge to examine similarities and differences
- Use activities to generate and manipulate mental images that deepen knowledge to examine similarities and differences
- Ask students to summarize what they have learned from the activity
- Ask students to linguistically and nonlinguistically represent similarities and differences
- Ask students to explain how the activity has added to their understanding
- Ask students to make conclusions after the examination of similarities and differences
- Ask students to look for and make use of mathematical structure to recognize similarities and differences
- Facilitate the use of digital and traditional resources to find credible and relevant information to support examination of similarities and differences

Example Teacher Techniques for Monitoring for Learning (Check all that apply)

- Use a Group Activity** to monitor that student knowledge of content is deepened by examining similarities and differences
- Use Student Work** (Recording and Representing) to monitor that student knowledge of content is deepened by examining similarities and differences
- Use Response Methods** to monitor that student knowledge of content is deepened by examining similarities and differences
- Use Questioning Sequences** to monitor that student knowledge of content is deepened by examining similarities and differences

Example Student Evidence of Desired Effect (Percent of students who demonstrate achievement of the desired effect that student knowledge of content is deepened by examining similarities and differences. Student evidence is obtained as the teacher uses a monitoring technique. Check all that apply.)

- Comparison and classification artifacts indicate deeper understanding of content
- Analogy and/or metaphor artifacts indicate deeper understanding of content
- Response to questions indicate examining similarities and differences has deepened understanding of content
- Make conclusions after examining evidence about similarities and differences
- Present evidence to support their explanation of similarities and differences
- Artifacts/student work examining similarities and differences involve culturally relevant content, when appropriate
- Artifacts/student work indicate students have used digital and traditional resources to support examination of similarities and differences

Example Adaptations a teacher can make after monitoring student evidence and determining how many students demonstrate the desired learning (Check all that apply)

- Reteach or use a new teacher technique
- Reorganize groups
- Utilize peer resources
- Modify task
- Provide additional resources

Not Using (0)	Beginning (1)	Developing (2)	Applying (3)	Innovating (4)
Strategy was called for but not exhibited.	Uses strategy incorrectly or with parts missing.	When presenting content, the teacher helps students deepen their knowledge of critical content by examining similarities and differences, but less than the majority of students are displaying the desired effect in student evidence at the taxonomy level of the critical content.	When presenting content, the teacher helps students deepen their knowledge of critical content by examining similarities and differences. The desired effect is displayed in the majority of student evidence at the taxonomy level of the critical content.	Based on student evidence, implements adaptations to achieve the desired effect in more than 90% of the student evidence at the taxonomy level of the critical content.

Helping Students Examine Their Reasoning

Focus Statement: Teacher helps students produce and defend a claim (assertion of truth or factual statement) by examining their own reasoning or the logic of presented information, processes, and procedures.

Desired Effect: Evidence (formative data) demonstrates students identify and articulate errors in logic or reasoning and/or provide clear support for a claim (assertion of truth or factual statement).

Example Teacher Instructional Techniques (Check all that apply)

- Model the process of making and supporting a claim
- Model constructing viable arguments and critiquing the mathematical reasoning of others
- Ask students to examine logic of their errors in procedural knowledge when problem solving
- Ask students to provide evidence (i.e. textual evidence) to support their claim and examine the evidence for errors in logic or reasoning
- Use specific strategies (e.g. faulty logic, attacks, weak reference, misinformation) to help students examine and analyze information for errors in content or their own reasoning
- Guide students to understand how their culture impacts their thinking
- Ask students to summarize new insights resulting from analysis of multiple texts/resources
- Ask students to examine and analyze the strength of support presented for a claim in content or in their own reasoning
 - Statement of a clear claim
 - Evidence for the claim presented
 - Qualifiers presented showing exceptions to the claim
- Analyze errors to identify more efficient ways to execute processes or procedures
- Facilitate use of resources at the appropriate level of text complexity to find credible and relevant information to support analysis of logic or reasoning
- Involve students in taking various perspectives by identifying the reasoning behind multiple perspectives
- Ask students to examine logic of a response (e.g. group talk, peer revisions, debates, inferences, etc.)

Example Teacher Techniques for Monitoring for Learning (Check all that apply)

- Use a Group Activity** to monitor that students identify and articulate errors in logic or reasoning and/or provide clear support for a claim
- Use Student Work** (Recording and Representing) to monitor that students identify and articulate errors in logic or reasoning and/or provide clear support for a claim
- Use Questioning Sequences** to monitor that students identify and articulate errors in logic or reasoning and/or provide clear support for a claim

Example Student Evidence of Desired Effect (Percent of students who demonstrate achievement of the desired effect to identify and articulate errors in logic or reasoning and/or provide clear support for a claim. Student evidence is obtained as the teacher uses a monitoring technique. Check all that apply.)

- Analyze errors or informal fallacies (i.e. in individual thinking, text, processing, procedures)
- Explain the overall structure of an argument presented to support a claim
- Articulate support for a claim and/or errors in reasoning within group interactions
- Explanations involve cultural content
- Summarize new insights resulting from analysis
- Artifacts/student work indicate students can identify errors in reasoning or make and support a claim
- Artifacts/student work indicate students take various perspectives by identifying the reasoning behind multiple perspectives
- Artifacts/student work indicate students have used textual evidence to support their claim
- Mathematical arguments and critiques of reasoning are viable and valid
- Artifacts/student work indicate identification of common logical errors, how to support claims, use of resources, and/or how multiple ideas are related

Example Adaptations a teacher can make after monitoring student evidence and determining how many students demonstrate the desired learning (Check all that apply)

- Reorganize groups
- Utilize peer resources
- Modify task
- Provide additional resources

Not Using (0)	Beginning (1)	Developing (2)	Applying (3)	Innovating (4)
Strategy was called for but not exhibited.	Uses strategy incorrectly or with parts missing.	Helps students produce and defend a claim (assertion of truth or factual statement) by examining their own reasoning or the logic of presented information, processes, and procedures, but less than the majority of students are displaying the desired effect in student evidence at the taxonomy level of the critical content.	Helps students produce and defend a claim (assertion of truth or factual statement) by examining their own reasoning or the logic of presented information, processes, and procedures. The desired effect is displayed in the majority of student evidence at the taxonomy level of the critical content.	Based on student evidence, implements adaptations to achieve the desired effect in more than 90% of the student evidence at the taxonomy level of the critical content.

Helping Students Engage in Cognitively Complex Tasks

Focus Statement: Teacher coaches and supports students in complex tasks that require experimenting with the use of their knowledge by generating and testing a proposition, a theory, and/or a hypothesis.

Desired Effect: Evidence (formative data) demonstrates students prove or disprove the proposition, theory, or hypothesis.

Example Teacher Instructional Techniques (Check all that apply)

- Based on the prior content and learning, model, coach, and support the process of generating and testing
 - A proposition
 - A proposed theory
 - A hypothesis
- Provide prompt(s) for students to experiment with their own thinking
- Observe, coach, and support productive student struggle
- Ask students to design how they will examine and analyze the strength of support for testing their proposition, theory, or hypothesis
- Coach students to persevere with the complex task
- Engage students with an explicit decision-making, problem-solving, experimental inquiry, or investigation task that requires them to
 - Generate conclusions
 - Identify common logical errors
 - Present and support propositions, theories, or hypotheses
 - Navigate digital and traditional resources

Example Teacher Techniques for Monitoring for Learning (Check all that apply)

- Use a Group Activity** to monitor that students prove or disprove the proposition, theory or hypothesis
- Use Student Work** (Recording and Representing) to monitor that students prove or disprove the proposition, theory, or hypothesis
- Use Questioning Sequences** to monitor that students prove or disprove the proposition, theory, or hypothesis

Example Student Evidence of Desired Effect (Percent of students who demonstrate achievement of the desired effect that students prove or disprove the proposition, theory, or hypothesis. Student evidence is obtained as the teacher uses a monitoring technique. Check all that apply.)

- Explain the proposition, theory, or hypothesis they are testing
- Present evidence to explain whether their proposition, theory, or hypothesis was confirmed or disconfirmed and support their explanation
- Justify the process used to support the proposition, theory, or hypothesis
- Precisely explain perseverance with the task with reasoning and conclusions
- Artifacts/student work indicate that while engaged in generating and testing a proposition, proposed theory, or hypothesis, students can
 - Generate conclusions
 - Identify common logical errors
 - Present and support the proposition, theory, or hypothesis
 - Navigate digital and traditional resources
 - Identify how multiple ideas are related

Example Adaptations a teacher can make after monitoring student evidence and determining how many students demonstrate the desired learning (Check all that apply)

- Utilize different coaching/facilitation techniques
- Reorganize groups
- Utilize peer resources
- Modify task
- Provide additional resources

Not Using (0)	Beginning (1)	Developing (2)	Applying (3)	Innovating (4)
Strategy was called for but not exhibited.	Uses strategy incorrectly or with parts missing.	Coaches and supports students in complex tasks that require experimenting with the use of their knowledge by generating and testing a proposition, a theory and/or a hypothesis, but less than the majority of students are displaying the desired effect in student evidence at the taxonomy level of the critical content.	Coaches and supports students in complex tasks that require experimenting with the use of their knowledge by generating and testing a proposition, a theory, and/or a hypothesis. The desired effect is displayed in the majority of student evidence at the taxonomy level of the critical content.	Based on student evidence, implements adaptations to achieve the desired effect in more than 90% of the student evidence at the taxonomy level of the critical content.