

DIRECT INSTRUCTION LESSONS

Processing Content

THE **MARZANO COMPENDIUM** OF
INSTRUCTIONAL STRATEGIES



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CONTENTS

INTRODUCTION	1
PROCESSING CONTENT	2
STRATEGIES.....	5
Perspective Analysis.....	6
Thinking Hats	8
Collaborative Processing.....	10
Jigsaw Cooperative Learning	12
Reciprocal Teaching	14
Concept Attainment	16
Think-Pair-Share	18
Scripted Cooperative Dyads.....	20
REPRODUCIBLES	22

INTRODUCTION

In 2007, Dr. Robert J. Marzano published *The Art and Science of Teaching: A Comprehensive Framework for Effective Instruction*. The framework, composed of three lesson segments, ten design questions, and forty-one elements, was based on research showing that teacher quality is one of the strongest influences on student achievement—that is, an effective teacher can positively and significantly impact student learning. As such, *The Art and Science of Teaching* sought to identify specific action steps teachers could take to improve their effectiveness.

In 2015, Dr. Marzano updated *The Art and Science of Teaching* framework to reflect new insights and feedback. The Marzano Compendium of Instructional Strategies is based on this updated model, presenting forty-three elements of effective teaching in ten categories. Each folio in the series addresses one element and includes strategies, examples, and reproducible resources. The Compendium and its folios are designed to help teachers increase their effectiveness by focusing on professional growth. To that end, each folio includes a scoring scale teachers can use to determine their proficiency with the element, as well as numerous strategies that teachers can use to enact the element in their classrooms. Indeed, the bulk of each folio consists of these strategies and reproducibles for implementing and monitoring them, making the Compendium a practical, actionable resource for teachers, instructional coaches, teacher mentors, and administrators.

PROCESSING CONTENT

During breaks in the presentation of new content, the teacher engages students in actively processing new information. Processing macrostrategies combine several individual research-based strategies (such as summarizing, questioning, or predicting) to help students actively process information. Research has shown that some processing macrostrategies (such as reciprocal teaching) help students learn and retain more information.

Monitoring This Element

There are specific student responses that indicate this element is being effectively implemented. Before trying strategies for the element in the classroom, it is important that the teacher knows how to identify the types of student behaviors that indicate the strategy is producing the desired effects. General behaviors a teacher might look for include the following.

- Students volunteer predictions.
- When asked, students can explain what they have just learned.
- Students voluntarily ask clarification questions.
- Groups are actively discussing the content:
 - » Group members ask each other and answer questions about the information.
 - » Group members make predictions about what they expect next.

Desired behaviors such as these are listed for each strategy in this element.

Teachers often wonder how their mastery of specific strategies relates to their mastery of the element as a whole. Successful execution of an element does not depend on the use of every strategy within that element. Rather, multiple strategies are presented within each element to provide teachers with diverse options. Each strategy can be an effective means of implementing the goals of the element. If teachers attain success using a particular strategy, it is not always necessary to master the rest of the strategies within the same element. If a particular strategy proves difficult or ineffective, however, teachers are encouraged to experiment with various strategies to find the method that works best for them.

Scoring Scale

The following scoring scale can help teachers assess and monitor their progress with this element. The scale has five levels, from Not Using (0) to Innovating (4). A teacher at the Not Using (0) level is unaware of the strategies and behaviors associated with the element or is simply not using any of the strategies. At the Beginning (1) level, a teacher attempts to address the element by trying specific strategies, but does so in an incomplete or incorrect way. When a teacher reaches the Developing (2) level, he or she implements strategies for the element correctly and completely, but does not monitor their effects. At the Applying (3) level, a teacher implements strategies for the element and monitors their effectiveness with his or her students. Finally, a teacher at the Innovating (4) level is fluent with strategies for the element and can adapt them to unique student needs and situations, creating new strategies for the element as necessary.

Scale for Processing Content

4	3	2	1	0
Innovating	Applying	Developing	Beginning	Not Using
I adapt behaviors and create new strategies for unique student needs and situations.	I engage students in processing content, and I monitor the extent to which my actions affect students.	I engage students in processing content, but I do not monitor the effect on students.	I use the strategies and behaviors associated with this element incorrectly or with parts missing.	I am unaware of strategies and behaviors associated with this element.

The following examples describe what each level of the scale might look like in the classroom.

Not Using (0): A teacher does not provide opportunities for students to make predictions, summarize, or ask clarification questions about new content. After introducing new content, instead of providing time for the students to process what they have just experienced, the teacher uses direct instruction to introduce another piece of new information.

Beginning (1): A teacher asks her students to use the Thinking Hats strategy to examine a new concept discussed in class. She encourages the students to use the Thinking Hats to deepen their responses and understanding but does not walk them through the process of using one hat at a time. Students fill out a worksheet using the hat descriptors but are not given the opportunity to discuss their conclusions or summarize how using the hats helped them better understand the new concept.

Developing (2): A teacher uses the strategy of reciprocal teaching to help his students engage with new ideas in a unit on energy and motion. Within each reciprocal teaching group, he designates one student the discussion leader and asks that the other students answer the discussion leader's questions, clarify difficult information, and summarize the new content. After the first round of reciprocal teaching, he asks for the groups' summaries and predictions and moves on to the next chunk of new information. He does not monitor how well students executed the strategy or if it helped them increase their understanding.

Applying (3): A teacher uses collaborative processing to introduce his students to a unit on triangles. He separates the students into groups and explains the overall process and their individual roles. The teacher models how the process works with several volunteers. After presenting each chunk of new content, he observes and assists the students as they implement

Processing Content

the collaborative processing strategy. At the end of class, the teacher takes an informal survey to find out if the students found the strategy helpful and if they would use that strategy again.

Innovating (4): A teacher uses the jigsaw cooperative learning strategy with her class during a unit on the French Revolution. She separates the class into groups of three and assigns each person in the group an effect of the Revolution to investigate. As the students meet in their expert groups, she checks in, answers the groups' questions, and asks each student to record their research. When students reconvene with their original groups, they compile their research into a chart that they can share with the class and teacher. Because the class was extremely successful with this strategy, she extends the activity and their learning by adding a class discussion about which effects of the French Revolution have most shaped modern-day beliefs and society.

STRATEGIES

Each of the following strategies describes specific actions that teachers can take to enact this element in their classrooms. Strategies can be used individually or in combination with each other. Each strategy includes a description, a list of teacher actions, a list of desired student responses, and suggestions for adapting the strategy to provide extra support or extensions. Extra support and extensions relate directly to the Innovating (4) level of the scale. Extra support involves steps teachers can take to ensure they are implementing the strategy effectively for all students, including English learners, special education students, students from low socioeconomic backgrounds, and reluctant learners. Extensions are ways that teachers can adapt the strategy for advanced students. In addition, some strategies include technology tips that detail ways teachers can use classroom technology to implement or enhance the strategy. Finally, each strategy includes further information, practical examples, or a reproducible designed to aid teachers' implementation of the strategy.

Perspective Analysis

This strategy was originally developed by Robert J. Marzano in the book *A Different Kind of Classroom: Teaching With Dimensions of Learning* (1992).

The teacher asks students to consider multiple perspectives on new knowledge using perspective analysis. This strategy involves five steps, each with a corresponding question:

1. Identify your own position on a controversial topic—What do I believe about this?
2. Determine the reasoning behind your position—Why do I believe that?
3. Identify an opposing position—What is another way of looking at this?
4. Describe the reasoning behind the opposing position—Why might someone else hold a different opinion?
5. When you are finished, summarize what you have learned—What have I learned?

Teacher Actions

- Asking students questions that prompt them to consider multiple perspectives on new information
- Asking students to state their position, the reasoning behind their position, an opposing position, the reasoning behind the opposing position, and a summary of what they learned about a topic

Desired Student Responses

- Answering questions in ways that show they are considering new information from multiple perspectives
- Stating their position, the reasoning behind their position, an opposing position, and the reasoning behind the opposing position for a topic
- Summarizing what they learned through perspective analysis

Extra Support

- Reviewing various prominent positions on a topic and the reasoning behind each one before asking students to engage in perspective analysis

Extension

- Asking students to identify multiple opposing positions to their own on a topic

Sample Topics for Perspective Analysis

- **Controversial political topics:** Have students evaluate their opinions on a topic widely debated and discussed by politicians. Because these issues can often be polarizing, use the perspective analysis strategy to help students consider the reasons why another person might hold a different opinion. If students tend to identify with one political party, ask them to consider what a member of the opposing party might say about the topic. Assign the same topic to multiple students or give students a choice between two or three topics to exam-

Processing Content

ine. If students are comfortable, have them share their summaries with the class or a small group.

- **School- and community-related issues:** Ask students to consider their perspective on an issue that has been discussed within the community or school. Topics could include possible changes to school curriculum, rules, or management (such as times that the school day begins and ends, required uniforms, standardized testing, independent learning opportunities, or loss of certain after-school activities). If students are not familiar with the subject, give them two to three objective or factual articles to read that can help them take a side on the issue. After students have recorded their own opinion, have a group or classwide discussion about some of the different opinions on the topic. Ask students to consider how teachers, staff members, or principals might view the issue. After the discussion, ask students to complete their perspective analysis.
- **Historical perspectives:** At the beginning of a unit about an important historical event or time period, ask students to write down their opinions about the causes of the event or its long-term impacts (for example, students could write about why they think the Civil War began). Have students save their perspective analysis drafts and fill in information about opposing positions as the unit progresses. At the end of the unit, students should review their original perspectives and the new opposing perspectives they found and summarize what they have learned and now believe about the topic. Alternatively, have students write down their perspectives on a social issue that used to be perceived quite differently. Then, have students read about past perspectives of this issue and summarize what they have learned. Students can also ask older relatives, such as parents or grandparents, how an issue was perceived when they were younger. For example, ask students to state how they believe people with mental illnesses should be treated and then ask them to contrast their opinion with past treatment of and beliefs about people with mental illnesses from a different time period. When investigating historical perspectives, students can also consider how scientific advancements or other cultural changes affect popular views on a topic.

Thinking Hats

This strategy was originally developed by Edward de Bono in the book *Six Thinking Hats* (1999).

The teacher asks students to process new information by imagining themselves wearing any one of six different-colored thinking hats. Students should use multiple hats when examining one chunk of new content as a way of developing a more thorough understanding of the information. Depending on the hat they wear, students look at new knowledge in a slightly different way, as follows:

- **White hat** (neutral and objective perspectives)—When wearing the white hat, students examine facts and figures related to the new information without drawing conclusions or interpreting them.
- **Red hat** (emotional perspectives)—When wearing the red hat, students express how they feel about the new information, but should still refrain from judging either the topic or their feelings.
- **Black hat** (cautious or careful perspectives)—When wearing the black hat, students look for weaknesses or risks that stem from new information.
- **Yellow hat** (optimistic perspectives)—When wearing the yellow hat, students look for positive and valuable aspects of new information.
- **Green hat** (creative perspectives)—When wearing the green hat, students use the new knowledge to generate new ideas or create novel solutions to problems using the new information.
- **Blue hat** (organizational perspectives)—When wearing the blue hat, students reflect on their thinking processes and decide what perspectives they would like to take (in other words, what hats they would like to put on) as they interact with new information.

Teacher Actions

- Asking students to consider new information from six different perspectives: neutral, emotional, cautious, optimistic, creative, and organizational
- Discussing students' conclusions about new information from each perspective

Desired Student Responses

- Explaining the six “thinking hat” perspectives: neutral, emotional, cautious, optimistic, creative, and organizational
- Discussing new information from each of the thinking hat perspectives

Extra Support

- Creating graphics for each thinking hat that remind students of the perspective they represent, and displaying the graphic for the thinking hat that students are currently using

Extension

- Asking students to wear the blue hat first in a discussion about a topic, which requires students to determine the order in which they would like to wear the other five hats

Thinking Hats

White Hat	Red Hat	Black Hat
<p>Examine:</p> <p>Factual information</p> <p>Figures, tables, charts, and graphs</p> <p>Evidence for information given</p> <p>Important details</p> <p>Ask:</p> <p>What information is provided?</p> <p>What information is missing?</p> <p>What does this tell me?</p>	<p>Examine:</p> <p>Emotional reactions to information</p> <p>Initial responses to information</p> <p>Hunches about information</p> <p>Ask:</p> <p>What are my initial reactions to this information?</p> <p>How do I feel about this?</p> <p>What are my hunches about this?</p>	<p>Examine:</p> <p>Possible risks associated with information</p> <p>Weaknesses in the information</p> <p>Downsides or negative implications</p> <p>Ask:</p> <p>Are there any errors or weaknesses in this information?</p> <p>What are the negative implications?</p> <p>What problems do I see?</p>
Yellow Hat	Green Hat	Blue Hat
<p>Examine:</p> <p>Positive aspects of new information</p> <p>The strengths or value of information</p> <p>Benefits and advantages</p> <p>Ask:</p> <p>What are the positive aspects of this information?</p> <p>How is this beneficial?</p> <p>Why is one aspect preferable over the other?</p>	<p>Generate:</p> <p>New ideas</p> <p>Possible solutions for problems associated with information</p> <p>Recommendations or alternative suggestions</p> <p>Ask:</p> <p>What is my recommended solution?</p> <p>Are there alternative solutions?</p> <p>What are my new ideas?</p>	<p>Reflect on:</p> <p>Thoughts about the information</p> <p>Perspectives on the content</p> <p>Which hat would help strengthen understanding</p> <p>Ask:</p> <p>What kind of thinking would help me understand this?</p> <p>What is the next step?</p> <p>How can I summarize what I understand?</p>

Collaborative Processing

The teacher asks students to meet in small groups to summarize the information just presented, ask clarifying questions about the information just presented, and make predictions about upcoming information. After allowing the students to interact in small groups, the teacher can lead the whole class in a discussion of their summaries, questions, and predictions.

Teacher Actions

- Asking students to summarize, ask clarifying questions, and make predictions about new information in small groups
- Discussing students' summaries, questions, and predictions

Desired Student Responses

- Accurately summarizing new information
- Asking questions that clarify their understanding of new information
- Evaluating their predictions about new information

Extra Support

- Creating a protocol for students to use during group discussions that ensures each student summarizes, asks questions about, and makes predictions about new information

Extension

- Asking students to make generalizations about new information in their academic notebooks after collaborative processing

Technology Tips

- Have students work in groups to respond to questions prior to the lesson and submit their answers using clickers with text input or mobile devices with polling software. Students can then use the polling data to summarize each chunk; add to, amend, or modify their understanding of each chunk; and generate predictions about the next chunk in the learning sequence.
- Have students summarize their understanding of each chunk by capturing and narrating screen-casts using screencasting software such as Jing on computers or ScreenChomp, Educreations, or TouchCast on tablets. These multimedia files can then be tagged, archived, and shared to enrich the active processing of other students.

Recognizing Appropriate Student Actions During Collaborative Processing

Since collaborative processing requires students to interact with peers, accurately summarize content, predict content, and clarify challenging information, students' ability to comfortably use all elements of the collaborative processing strategy may need to develop over time. Use the following chart to track students' use of the collaborative processing strategy. If students seem stuck at the Beginning or Developing stages, evaluate which behaviors need to be strengthened through modeling, coaching, or instruction.

Beginning	Developing	Desired Student Responses
<p>The student listens to peers, but does not frequently add to discussions or take notes.</p> <p>The student seems confused about which information is pertinent to include in a summary.</p> <p>The student relies on other members in the group to provide predictions, summaries, and questions.</p> <p>The student resists answering questions and will only answer if directly asked.</p>	<p>The student appears to be engaged in the conversation and takes notes on what peers say and new content.</p> <p>The student is able to generate a summary that includes pertinent information.</p> <p>The student takes on different roles in the discussions but may make mistakes in implementation.</p> <p>The student volunteers answers to questions but may not answer in a way that reveals a strong perspective on the new content.</p>	<p>The student is engaged in the conversation and builds on other students' thoughts. The student is comfortable leading the group in organizing and recording new content.</p> <p>The student generates summaries and recognizes what information may be missing in a summary.</p> <p>The student actively predicts, summarizes, clarifies, and creates questions.</p> <p>The student willingly shares opinions, answers, and ideas when responding to another student's questions or comments.</p>

Jigsaw Cooperative Learning

After identifying a number of specific important aspects of the content—for example, five important causes of World War I—the teacher asks students to create groups with the same number of members (“Please organize yourselves into groups of five”). Once students are in their groups, the teacher assigns each student a topic about which he or she will become an “expert.” In this example, each student would be assigned one of the five causes of World War I to study.

Once students each have their expert topic, groups disband and students with the same expert topic meet together in expert groups to investigate the topic, share their findings, ask questions of each other and the teacher, and discuss their ideas. In this example, all students studying the web of European alliances would meet together, all students studying the situation in the Balkans would meet together, and so on.

After each student has become an expert on their topic, the original groups re-form and students each present their expert knowledge to the other members of the group. Other group members can ask questions of the expert or the teacher as they learn the new information.

Teacher Actions

- Identifying specific important aspects of the content
- Grouping students with the same number of members as there are important aspects of the content
- Assigning each student in a group one important aspect of the content and asking students with the same aspects to meet together to study them
- Asking students to reconvene in their original groups to share what they learned about their topic

Desired Student Responses

- Following the process for jigsaw cooperative learning
- Collecting important information about their expert topics
- Teaching their original group members what they learned about the expert topic
- Explaining how the jigsaw process helped their understanding

Extra Support

- Before asking students to investigate their expert topics, giving a brief overview of each one, and asking students to generate questions they think will be important to answer about that topic

Extension

- After hearing about each expert topic, asking students to identify similarities and differences between each of the expert topics

Tips for Implementing Jigsaw Cooperative Learning Activities

- Plan in advance which topics each group will be responsible for and which students will be grouped together.
- Before students begin researching their topics, ask them to consider what they already know about their topic. As they gather information, they should make connections between what they are learning and what they already know.
- Provide students with sources where they can get more information on their topic. These resources could be a chapter in a class textbook, a website, or a short article.
- Ask students to take notes or use a graphic organizer to record the important details they learn about their topic. Students should consider which information is important to share with their groups as they are researching.
- Provide multiple opportunities for students to discuss what they have learned with their classmates. Students can discuss new information with their expert groups, their primary groups, and the class as a whole at the end of the jigsaw cooperative learning activity.
- When students begin sharing information with their groups, ask them to consider if what they are saying is contributing to the group's knowledge. Are they framing what they have learned in a way that other students can understand? Remind students that their classmates may not have the same background knowledge on the topic, so it is important that they provide sufficient details.
- As each group discusses new information, encourage students to make linkages between the different areas they explored. Students can describe how each topic relates to the other topics and how their new knowledge about each aspect contributes to their understanding of the unit as a whole.

Reciprocal Teaching

Small groups of students, with one student designated as the discussion leader, use this strategy to interact with new information. Before the teacher presents a chunk of new information, members of the group generate predictions about the content. After the teacher presents the chunk of content, the discussion leader asks the group questions about the information presented, and the members of the group discuss each question. After the questions have been discussed, someone from the group (not the discussion leader) summarizes the content presented so far, and the members of the group make predictions about the upcoming chunk of content, beginning the cycle again. The role of discussion leader should rotate from student to student so each student has the opportunity to generate questions about the content and practice facilitating the group's discussion.

Teacher Actions

- Organizing students in small groups and designating one student the discussion leader
- Asking students to predict (in their groups) what the upcoming chunk of information will be about
- Presenting new information and asking students to discuss questions about the content (asked by the discussion leader), summarize the content, and make predictions about the next chunk of content

Desired Student Responses

- Following the process for reciprocal teaching
- Making reasonable predictions about new content
- Asking clarifying questions about new content (when discussion leader)
- Accurately summarizing new content

Extra Support

- If students are going to be discussion leaders, allowing them to preview the content and generate questions ahead of time

Extension

- Asking students to respectfully identify and correct errors in thinking and reasoning that arise during their discussions

Discussing in Groups

During reciprocal teaching and other group discussions, it can be helpful to predict, question, clarify, and summarize information. This chart can help your group complete each of these processes successfully.

Predict	Question	Clarify	Summarize
<p>Key words: Guess, hypothesize, estimate, assume, infer, speculate, project</p> <p>Describe what you have already learned about the topic.</p> <p>Take note of the purpose of the text or lesson. What is it trying to teach or show you, and how can that help you guess what information will come next?</p> <p>Use headings, pictures, and titles to help you predict what the text or teacher will discuss.</p> <p>Explain your reasons for your predictions.</p> <p>Adjust your prediction if new information seems to have proven it wrong.</p>	<p>Key words: Ask, examine, explore, inquire, evaluate, challenge, investigate</p> <p>Ask questions using who, what, where, why, when, and how.</p> <p>Challenge yourself and your classmates to find the main ideas in the content or text.</p> <p>Examine what the main idea, subject, or theme is an example of.</p> <p>Ask questions about something that is unclear or confusing.</p> <p>Evaluate why you might be learning this. How does it relate to the class, the subject area, and your life?</p>	<p>Key words: Explain, define, reread, monitor, refine, simplify, sharpen</p> <p>Use a dictionary or glossary to define a term that is new or challenging.</p> <p>Reread the text to gather more information.</p> <p>Break down a complex idea into parts and examine each part individually.</p> <p>Listen to your classmates and teacher's ideas to refine your own understanding. Ask questions about their thinking if it seems unclear.</p> <p>Draw a picture or diagram to help you understand a complex process or idea.</p>	<p>Key words: Sum up, decide, conclude, judge, determine, review, surmise, organize</p> <p>Look for the who, what, where, when, why, and how.</p> <p>Omit unnecessary information, and determine which information is most important to understanding the main ideas.</p> <p>Describe what you think the author or teacher wants you to know.</p> <p>Link what you have learned to what you already know.</p> <p>Explain your conclusions about the topic.</p>

Concept Attainment

The teacher asks students to identify, compare, and contrast examples and nonexamples of a concept. Examples of a concept should clearly display the attributes of the concept, and nonexamples should clearly not have attributes of the concept. The teacher can also present a group of items to students, designating each item as an example or nonexample of a “mystery concept.” Students guess the mystery concept by studying the presented examples and nonexamples.

Concept attainment is ideal to use when examining a complex topic that may be difficult to explain or define. It also works well when examining categories of objects or concepts. For example, this strategy could be used to examine different animal classes, a group of shapes, a part of speech, an artistic movement, or a genre of music. Additionally, this strategy can help students visualize correct and incorrect behaviors or uses of a procedure in the classroom. Once students seem comfortable with the patterns presented, ask them to generate their own examples and nonexamples to add to a class list.

Teacher Actions

- Asking students to identify examples and nonexamples of a concept
- Asking students to compare and contrast examples and nonexamples of a concept
- Asking students to guess a mystery concept by examining examples and nonexamples of it

Desired Student Responses

- Identifying examples and nonexamples of a concept
- Comparing and contrasting examples and nonexamples of a concept
- Identifying and describing a mystery concept by examining examples and nonexamples of it

Extra Support

- Collecting and displaying pictures of examples and nonexamples for the concept under investigation

Extension

- Asking students to explain why specific items are examples or nonexamples of a concept

Tips for Using Concept Attainment

- Organize examples and nonexamples into a simple chart to help students visualize patterns. If students are creating their own examples and nonexamples, ask them to record their choices in a graphic organizer.
- When asking students to define a mystery concept, begin first with examples and nonexamples that are simple and seem to parallel one another. These should give the students an idea of what is being contrasted. Instead of providing all of the examples at once, give two or three at once and provide students with time to reflect on possible patterns.
- As you provide more examples, the students’ understanding of what is being defined should sharpen. Elements might become more abstract as students’ knowledge deepens.

Processing Content

- Avoid choosing examples and nonexamples with trivial differences that might confuse students.
- Instead of having students guess what the mystery concept is out loud, ask them to create their own examples and nonexamples that fit the pattern. Students can write their examples on the class chart to aid students who have not yet guessed the concept.

The following example chart could be used to help students attain the concept of appropriate behaviors in the science lab.

Example	Nonexample
Wearing goggles and gloves when working in the lab.	Using chemicals or equipment not authorized by the teacher.
Returning equipment and chemicals to their proper place after finishing an experiment.	Eating or drinking in the lab.
Recording observations and procedures in a lab notebook	Leaving heat sources turned on when they are not being used.
Mixing chemicals in the order described by the lab procedure.	Throwing broken glass into the trashcan.

The following example of a mystery concept attainment chart contains an unstated pattern for a mathematics unit on linear equations.

Example	Nonexample
$y = -5x$	$x = 2$
$y = x + 8$	$y = x^4 - 5$
$-3x + 2y = 12$	$6 = 5x^2 - y - 2$
$y - 10 = 3x$	$\sqrt{x} + y = 7$
What pattern is illustrated by the examples in this chart? What helped you recognize the pattern?	

Think-Pair-Share

This strategy was originally developed by Frank Lyman in the article “The Responsive Classroom Discussion: The Inclusion of All Students,” which was published in *Mainstreaming Digest* in 1981.

When using the Think-Pair-Share strategy, the teacher asks students to think critically about a question, pair up with another classmate to come to a consensus on their answer to the question, and then share their responses with other groups or the whole class. Limiting the amount of time for the thinking and pairing steps of the strategy can motivate students to make quick decisions and explain their thinking succinctly (for example, a teacher might give students thirty seconds to think of an answer and then three minutes to discuss with their partner). Since the procedure for this strategy is relatively simple, a teacher can implement it in a lesson either at planned points or informally as the need arises. The teacher can monitor the use of this strategy by observing students as they discuss topics, asking students to write written summaries of their responses, or having pairs of students present their thinking to the whole class.

Teacher Actions

- Prompting students to think about a question or problem
- Assigning students partners or groups to share with
- Timing different stages of the strategy
- Asking students to explain their conclusions and how they worked with their partner to find their conclusions

Desired Student Responses

- Expressing a personal response to the question asked
- Working in cooperation with their partners
- Clearly explaining the reasoning behind their partnership’s conclusion and how they worked together to find that conclusion

Extra Support

- Displaying a poster or diagram of the Think-Pair-Share process and the desired outcomes for each step

Extension

- Having a group of four students come to a consensus about a question or issue and asking them to creatively present their response to the class

Think-Pair-Share

Name: _____

Class: _____

- Think about what you already know about the subject.
- Examine why you think this way.
- Try to make connections to other ideas or experiences.
- Write out or draw your thoughts.

Think!

Pair!

- Share your ideas with your partner.
- Listen to your partner's ideas.
- Find similarities and differences between what you believe.
- Decide what you will want to share with the class.

- Describe your answers or ideas to the class.
- Create a diagram or presentation that shows your classmates what you think.
- Write down what you learned and how the activity helped you understand the new information.

Share!

Scripted Cooperative Dyads

This strategy was originally developed by Donald Dansereau in the book *Learning and Study Strategies: Issues in Assessment, Instruction, and Evaluation* (1988, edited by Claire Weinstein, Ernest Goetz, and Patricia Alexander).

The teacher presents a new chunk of information or asks students to read a short excerpt of a text. As they read or listen, students take notes about the main idea and key details of the content. Then, the teacher breaks students up into groups of two and assigns each student to act either as the “recaller” or the “listener.” In their groups, the recaller summarizes the content, without looking at his or her notes, while the listener adds missing information and corrects any errors in the recaller’s summary. Students should switch between the roles of recaller and listener after each chunk of information.

Teacher Actions

- Dividing text or new content into chunks that students can process discretely
- Explaining the roles of recaller and listener
- Pairing up students in the class

Desired Student Responses

- Comfortably switching between roles of recaller and listener
- Taking notes, annotating texts, or creating a graphic organizer to record content
- Accurately summarizing new content
- Recognizing errors or missing information in summaries

Extra Support

- Creating a poster or handout that reminds students about the responsibilities of recaller and listener

Extension

- Creating analogies, comparisons, and visual representations of the new content after completing the scripted cooperative dyad cycle

Introducing Scripted Cooperative Dyads to Students

While this strategy may seem simple to implement, students’ attention can easily become centered on getting the procedure right rather than on the processing of new content. To prepare students for using this strategy, teachers can review the following skills in class.

- **Note-taking and annotating:** Comprehensive notes are essential to the implementation of scripted cooperative dyads. Model different strategies for note-taking that will help students efficiently record the key ideas from texts and presentations. One simple technique teachers can share with students at all grade levels is two-column notes. In this strategy, students draw a line to separate the right and left sides of their notepaper. In the right column, students write the main ideas or concepts discussed in the content, and in the left column stu-

Processing Content

dents write important details that refine their understanding of those main ideas. In addition to asking students to take notes, teachers can also encourage the annotation of texts through the use of symbols, sticky notes, or different colored highlighters.

- **Summarizing:** Students' summaries should build on and relate to the information they recorded in their notes. Ask students to try to describe the who, what, where, when, why, and how of information. Students looking for errors in their partners' summaries should also focus on these details. Teachers can have students practice their verbal summarization skills by giving them only a limited amount of time to summarize new content. If students are new to providing verbal summaries, teachers can also allow them to freewrite their ideas and the points they would like to make before asking them to present their summaries. Students should not refer to notes during their freewrite but try to come up with points from memory.
- **Acting as the listener:** When students take on the listener role, they will need to critically engage with what their partner is saying and look through their notes for refining or additional information. While students might think the listener role is easier because they will have their notes in front of them, in fact, the listener role requires students to enact multiple processes at once and is equally as challenging as the recaller role. The listener must actively cross-check facts, procedures, and key ideas the recaller brings up and politely correct their partners when appropriate. Additionally, listeners should listen for information that they might have missed or didn't quite understand when they were taking notes. In this way, scripted cooperative dyads are an exchange of information and ideas that should challenge students to examine what they know and understand about the topic.

REPRODUCIBLES

Teachers can use the following reproducibles to monitor their implementation of this element. The reproducible titled Tracking Progress Over Time helps teachers set goals related to their proficiency with this element and track their progress toward these goals over the course of a unit, semester, or year. Tracking Teacher Actions and Tracking Student Responses allow observers in classrooms to monitor specific teacher and student behavior related to this element. Teachers themselves can also use the Tracking Student Responses reproducible to document instances of student behaviors during class. The Strategy Reflection Log provides teachers a space to write down their thoughts and reflect on the implementation process for specific strategies related to this element. Finally, this section provides both a student survey and a teacher survey, the results of which provide feedback about teachers' proficiency with this element.

Tracking Progress Over Time

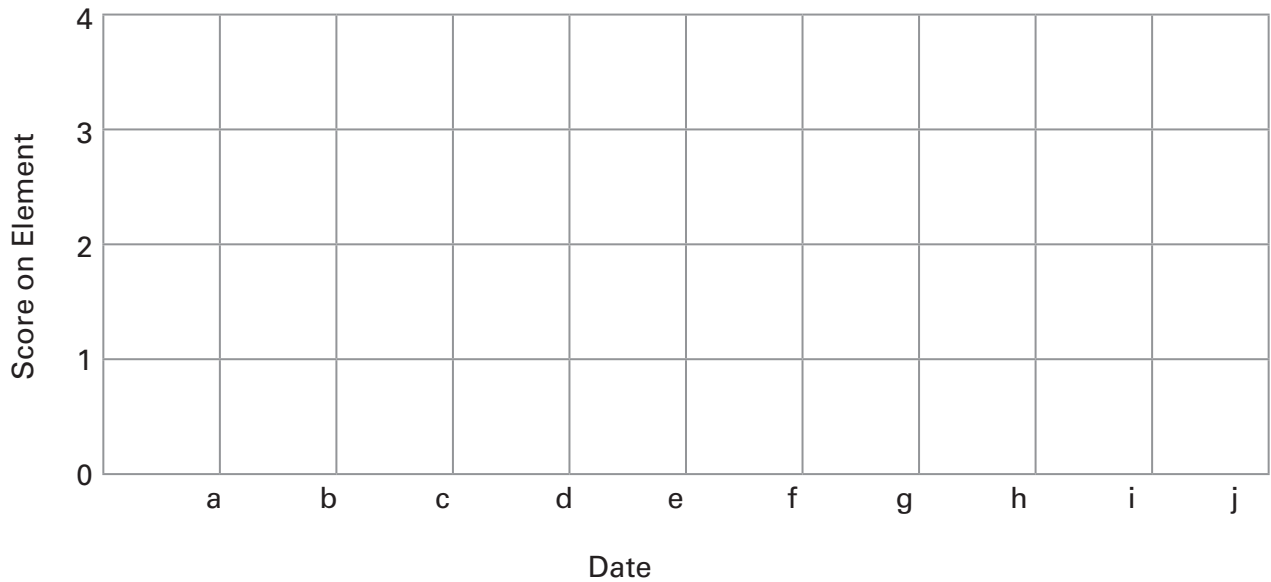
Use this worksheet to set a goal for your use of this element, make a plan for increasing your mastery, and chart your progress toward your goal.

Element: _____

Initial Score: _____

Goal Score: _____ by _____ (date)

Specific things I am going to do to improve: _____



a. _____

f. _____

b. _____

g. _____

c. _____

h. _____

d. _____

i. _____

e. _____

j. _____

Tracking Teacher Actions

During an observation, the observer can use this form to record the teacher's usage of strategies related to the element of processing content.

Observation Date and Time: _____ Length of Observation: _____

Check Strategies You Intend to Use	Strategies	Description of What Was Observed
	Perspective Analysis	
	Thinking Hats	
	Collaborative Processing	
	Jigsaw Cooperative Learning	
	Reciprocal Teaching	
	Concept Attainment	
	Think-Pair-Share	
	Scripted Cooperative Dyads	
	Other:	
	Other:	

Tracking Student Responses

A teacher or observer can use this worksheet to record instances of student behavior to inform planning and implementation of strategies associated with processing content. Any item followed by an asterisk is an example of undesirable behavior related to the element; the teacher should look for a decrease in the number of instances of these items.

Observation Date and Time: _____ Length of Observation: _____

Behavior	Number of Instances
Volunteering predictions	
Summarizing new knowledge	
Explaining new knowledge to other students	
Asking questions about new information	
Discussing new knowledge in a group	
Providing examples and nonexamples of a concept	
Describing alternative perceptions of an idea or issue	
Other:	
Other:	

Strategy Reflection Log

Use this worksheet to select a strategy, set a goal, and reflect on your use of that strategy.

Element: _____

Strategy: _____

Goal: _____

Date	How did it go?

Student Survey for Processing Content

1. My teacher gives me time to think about what I have learned.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

2. My teacher asks me to summarize what I have learned.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

3. My teacher asks me to explain things I've learned to other students.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

4. My teacher often asks me to think of examples or nonexamples of concepts that we are learning.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

5. I am comfortable making and sharing predictions about what I am learning.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

6. I am comfortable asking questions if I don't understand something.

Strongly Disagree Disagree Neither Agree
Nor Disagree Agree Strongly Agree

Teacher Survey for Processing Content

1. I ask students to make and share predictions.

Often Sometimes Rarely Never I don't know

2. I ask students to summarize what they have learned.

Often Sometimes Rarely Never I don't know

3. I encourage students to ask clarifying questions.

Often Sometimes Rarely Never I don't know

4. I have students interact in groups to help them process new information.

Often Sometimes Rarely Never I don't know

5. I ask students to explain what they have learned to other students.

Often Sometimes Rarely Never I don't know

6. I ask students to identify examples and nonexamples of concepts.

Often Sometimes Rarely Never I don't know

7. I encourage students to examine information from multiple perspectives.

Often Sometimes Rarely Never I don't know