PRACTICING AND DEEPENING LESSONS

Examining Similarities and Differences

THE **MARZANO COMPENDIUM** OF INSTRUCTIONAL STRATEGIES

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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.

EXAMINING SIMILARITIES AND DIFFERENCES

The teacher helps students deepen their knowledge by examining similarities and differences between items. This rather straight-forward analytic activity helps students discover important distinctions and connections between concepts and processes. Comparing, classifying, finding patterns, and identifying relationships are basic activities that require students to examine similarities and differences.

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.

- When asked about the activity, student responses indicate they have deepened their understanding.
- When asked, students can explain similarities and differences.
- Student artifacts indicate they can identify similarities and differences.

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 Examining Similarities and Differences

4 **Innovating**	3 **Applying**	2 **Developing**	1 **Beginning**	0 **Not Using**
I adapt behaviors and create new strategies for unique student needs and situations.	I engage students in examining similarities and differences, and I monitor the extent to which students deepen their knowledge.	I engage students in examining similarities and differences, 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 ask her students to classify or describe similarities and differences to deepen their understanding of concepts taught in class. The teacher does ask students to describe concepts in order to refine their understanding of topics, but does not provide opportunities for students to compare these descriptions to descriptions of other concepts.

Beginning (1): A teacher asks his students to use a Venn diagram to compare two events they have been discussing in class. However, the teacher fails to describe how a Venn diagram is used and assumes that his students will be able to complete the activity on their own and understand what it means.

Developing (2): A teacher instructs her students to use a comparison matrix to compare three characters from a novel they have been reading. After the students have completed their matrices, they discuss what they have found. However, the teacher does not take note if their discussions indicate that their knowledge has developed.

Applying (3): A teacher puts his students into groups of three to complete a classification chart. Once all of the students have completed their charts, he asks them to present their chart to the class and explain their reasoning. As the students present, he encourages the rest of the class to ask clarifying questions and listens to make sure the students' understanding is more complete as a result of the activity.

Innovating (4): A teacher asks the class to create a visual analogy illustrating a relationship between organisms. When some students appear to be struggling with the activity, she puts them into a small group and asks them to describe the relationships first and then choose a relationship together that they can illustrate. After they choose a relationship, the teacher asks the students if they can think of something they have observed in their lives which behaves similarly. Once the students have completed the assignment, the teacher asks all of the students to hang their visual analogies on the wall and then the class goes through and identifies which relationship is being depicted in each analogy.

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.

Sentence Stem Comparisons

Students complete sentence stems that ask them to compare and contrast various people, places, events, concepts, or processes. These comparisons can be general or specific, as shown by the following examples.

- **General:** House cats are similar to lions because _____. House cats are different from lions because _____.
- **Specific:** Sherlock Holmes and Miss Marple are both characters who enjoy solving mysteries, but they are different because _____.

Teacher Actions

- Creating sentence stems that require students to compare and contrast aspects of the content
- Asking students to complete sentence stem comparisons
- Discussing students' responses to sentence stem comparisons

Desired Student Responses

- Comparing and contrasting aspects of the content to complete sentence stems
- Explaining the thinking and reasoning behind their sentence stem comparisons

Extra Support

- Asking students to create a list of what they know about each element of a sentence stem comparison before completing it

Extension

- Asking students to create and complete sentence stems related to the content

Example Sentence Stem Formats

- _____ and _____ are similar because they both _____.
- _____ and _____ are different because _____ is _____, but _____ is _____.
- _____ and _____ are both _____, but different because _____.
- _____ is similar to _____ because _____. They are different from each other because _____.
- _____ is similar to _____ but different from _____ because _____.

Summarizers

A summarizer is a simple graphic organizer that students can use to examine the similarities and differences between two items. A summarizer generally has three columns: the left column explicates features that are only found in the first item; the far right column lists features that are only found in the second item; the middle column should list characteristics that are similar between the two items and include a sentence that summarizes the items' similarities. Teachers can use this graphic organizer to help students clearly articulate similarities and differences and practice summarizing.

Teacher Actions

- Explaining summarizers to students
- Asking students to use summarizers to compare or contrast two things
- Discussing students' summarizers in class

Desired Student Responses

- Using summarizers to compare or contrast two things
- Explaining the thinking and reasoning behind their summarizer
- Accurately summarizing content

Extra Support

- Filling in some of the similarities and differences for students and then asking them to fill in the remaining space in charts

Extension

- Asking students to create a visual presentation that illustrates the summary sentence

Example of a Completed Summarizer

Topic 1: Corn	Summary Box	Topic 2: Cotton
	Thousands of years ago, cotton and corn were grown as domesticated crops in distant regions of the world, but today both are staple crops of the United States because of their diverse uses. Corn, which grows on tall stalks, is largely seen throughout the Midwest, while cotton, which grows on bushy shrubs, is a prominent crop of the American Southwest.	
Differences	**Similarities**	**Differences**
Grows on vertical stalks	Used to produce a wide array of food, chemical, and household products	Grows on leafy shrubs
Primarily grown throughout the Corn Belt in the Midwest	Grown in the United States	Grown in the South and Southwest
Originated as a crop in Central America	Existed as domestic crops for thousands of years	Domesticated by multiple cultures; exact origin is unknown

Constructed Response Comparisons

A constructed response comparison is a student-generated written response that describes the similarities and differences between two items or ideas. This strategy begins with a simple request by the teacher: "How is _____ similar to and different from _____?" Students must decide which similarities and differences to include in their responses and how to best frame their analysis. More advanced constructed responses can ask students to draw conclusions and indicate why it is important to understand the similarities and differences between the two items.

Teacher Actions

- Providing examples of responses that compare two things
- Asking students to use constructed responses to compare two things
- Providing comparison questions students can use to generate constructed responses

Desired Student Responses

- Outlining details to compare in the constructed response
- Explaining the thinking and reasoning behind the information in the constructed response
- Writing a constructed response that clearly articulates important similarities and differences between two things

Extra Support

- Helping students generate an outline for their constructed response, including which similarities and differences will be discussed

Extension

- Asking students to draw a conclusion or create a generalization in their constructed response

Comparison Words and Phrases

Look for these words and phrases to identify when a text or speaker is referring to similarities and differences. Use these words and phrases yourself when talking or writing about similarities and differences.

Words and Phrases That Indicate Similarities	Words and Phrases That Indicate Differences
• Similarly • Both • In a similar manner • Just like • In the same way • Likewise • Just as • Also • Furthermore • As well as • Alike • Have in common • Share the same	• In comparison • In contrast • On the contrary • On the other hand • Conversely • Whereas • While • Unlike • However • Yet • Instead of • Although • Rather • The antithesis of

Venn Diagrams

Students use these visual tools to compare and contrast two or three people, places, events, concepts, or processes. Students write similarities where circles intersect, and they write characteristics unique to the comparison items where the circles do not intersect. Venn diagrams can be used for specific, general, abstract, or concrete comparisons.

Teacher Actions

- Explaining Venn diagrams to students
- Asking students to use Venn diagrams to compare or contrast two or three things
- Discussing students' Venn diagrams in class

Desired Student Responses

- Using Venn diagrams to compare or contrast two or three things
- Explaining the thinking and reasoning behind their Venn diagrams

Extra Support

- Asking students to create a list of what they know about each item or concept being compared before completing a Venn diagram

Extension

- Asking students to make generalizations about each item or concept being compared based on their Venn diagrams

Technology Tips

- Use IWB software to design interactive Venn diagrams. Students can use a Venn diagram to arrange blocks of text, images, or sounds into categories based on their attributes.

Venn Diagram

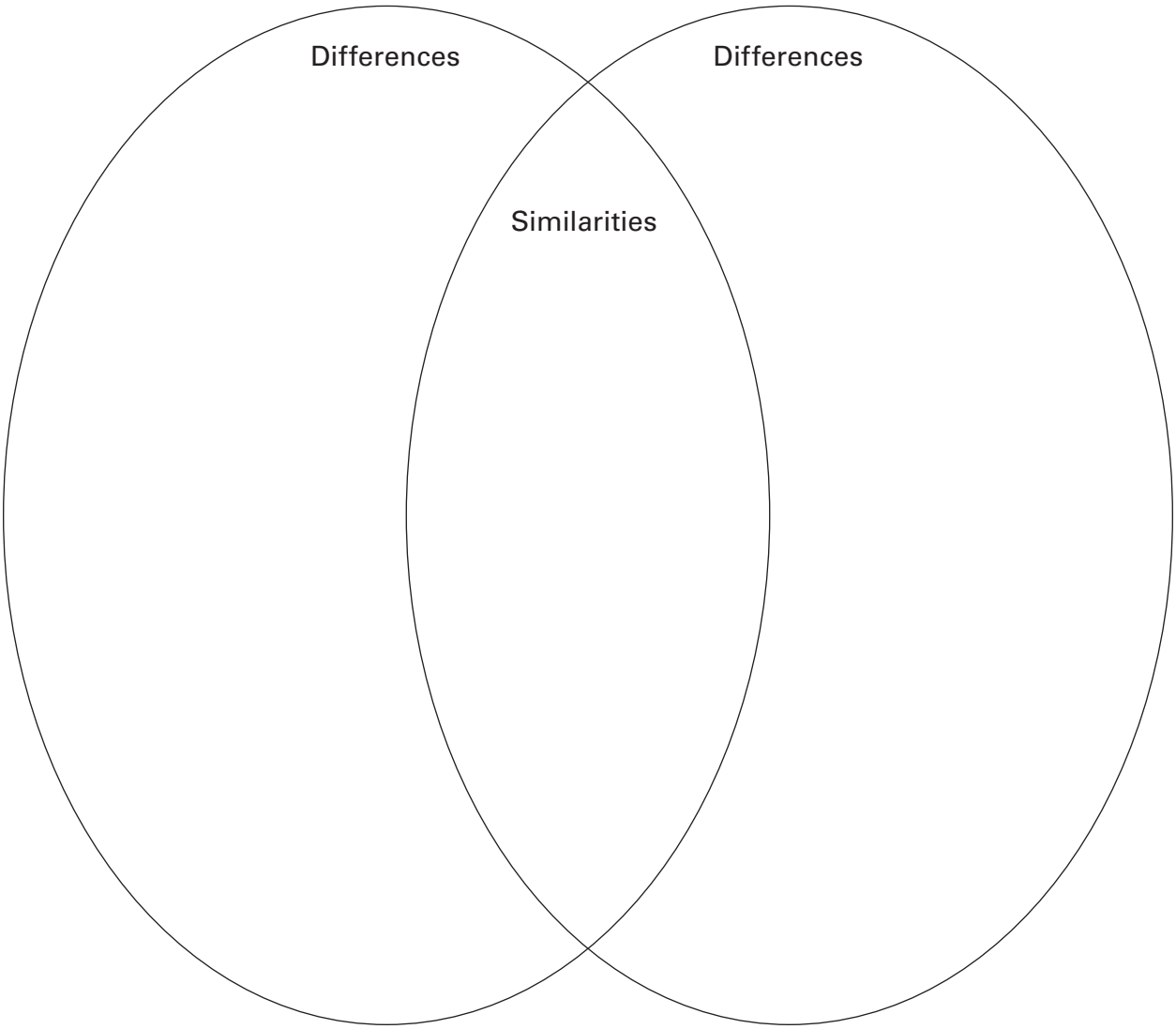
Name: _____ Date: _____

Class: _____

Venn Diagrams are an easy way to visualize the differences and similarities between objects, ideas, people, places, or events. First, choose two things to compare. Write the first comparison item in the Topic 1 space and the second in the Topic 2 space. Then, write words and short phrases that describe only Topic 1 on the left side and words and phrases that describe only Topic 2 on the right side. The intersection of the two circles illustrates what the two topics share or have in common. Fill in the middle section with words and short phrases that describe common traits or how the two things are similar.

_____ _____

Topic 1 Topic 2



T Charts

Students can use T charts to compare two objects, ideas, events, or people. Students fill in a T-shaped graphic organizer by writing two topics across the top and details that describe each on either side of a dividing line. Then, once students have gathered several characteristics for each item, they look for similarities and differences between the two items. In several short sentences, students should explain the similarities and differences they see in their T chart. Additionally, after completing their explanation, students can draw conclusions about the essential similarities and differences between the two things. The conclusion should not list all of the similarities and differences, but simply sum up what the student recognizes as the fundamental similarities and differences between the two items. It can be helpful if students write parallel characteristics on each side of the T chart. For example, when comparing Australia and the United States, students might write the continent each country is found on as the first characteristic. By writing the characteristics in parallel, students will easily be able to identify the similarities and differences between the two items after filling in the T chart.

Teacher Actions

- Explaining T charts to students
- Asking students to use T charts to compare and contrast two or three things
- Discussing students' T charts in class

Desired Student Responses

- Using T charts to compare or contrast two things
- Explaining the similarities and differences between the two contrasted things
- Drawing conclusions from the content in the T chart

Extra Support

- Assisting students with generating initial details for each topic being examined

Extension

- Asking students to make generalizations about each item or concept being compared based on their T chart

T Chart

Name: _____ Date: _____

Class: _____

Topic 1:	Topic 2:

How they're alike:

How they're different:

Conclusions:

Double-Bubble Diagrams

Students use this type of diagram to compare the attributes of two people, places, events, concepts, or processes. They write the two things being compared in large circles on the left and right sides of a page. They list common attributes in smaller circles in the center of the page that connect to both large circles. They write unique attributes in smaller circles at the left and right edges of the page that connect only to the larger circle to which they apply.

Teacher Actions

- Explaining double-bubble diagrams to students
- Asking students to use double-bubble diagrams to compare the attributes of different elements of the content
- Asking students to show relationships between different elements of the content by drawing lines between the bubbles on their diagrams

Desired Student Responses

- Using double-bubble diagrams to compare attributes of different elements of the content
- Showing relationships between different elements of the content by drawing lines between the bubbles on the diagrams
- Explaining the thinking and reasoning behind their double-bubble diagrams

Extra Support

- Asking students to create a list of the attributes of each item or concept being compared before completing a double-bubble diagram

Extension

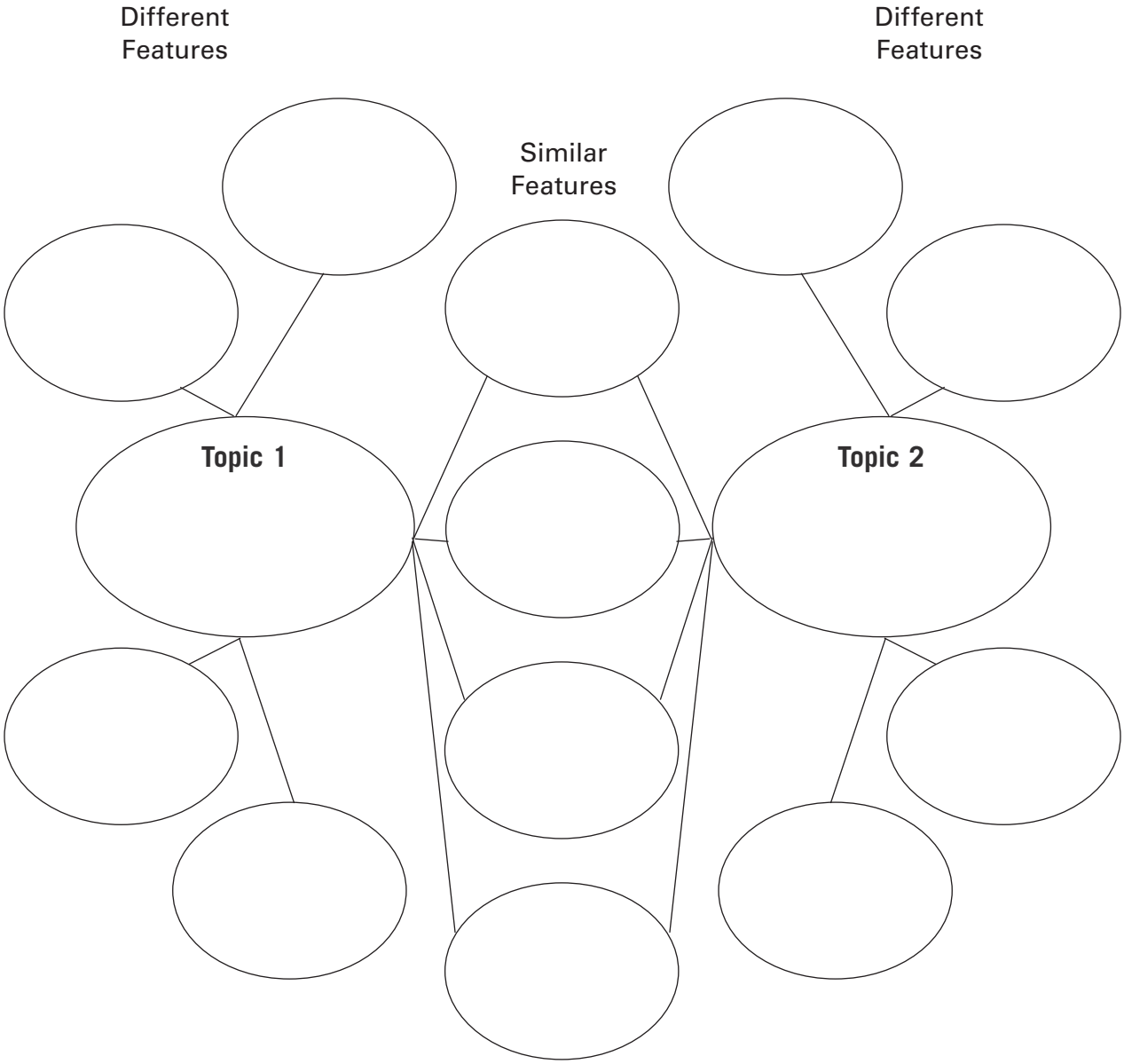
- Asking students to create double-bubble diagrams that compare three or four items or concepts

Double-Bubble Diagram

Name: _____ Date: _____

Class: _____

Choose two topics to compare. Write each topic's name in the Topic A and Topic B circles. In the surrounding circles, list the similar and different features of both topics. Write the features that the two topics share as words or short phrases in the four middle circles that are linked to both Topic A and Topic B. Write the features that are different for each topic in the circles that only connect to one topic.



Comparison Matrices

Students identify elements they wish to compare and write them at the top of each column in a grid. Next, using a matrix like the one following, students identify attributes they wish to compare and write them in the rows. Then, in each cell, students record information related to each attribute for each element. Finally, students summarize what they learned by comparing the elements.

In the following matrix, the similarities and differences between three literary movements are compared. As shown, the student synthesized the information from the matrix and described each movement's similarities and differences in the summary at the bottom of the matrix.

	Realism	Naturalism	Romanticism
How the literary movement came to be	• Reaction to Romanticism and Idealism • Societal changes due to the end of the Civil War and changes in scientific and philosophical thought, such as pragmatism, inspired a logical, scientific approach to literature	• Reaction to Romanticism • Developed out of Realism • Scientific advancements, especially theories of evolution, were highly influential	• Reaction against Formalism • Reaction against industrialism and urban growth resulted in looking back to "simpler times" such as the Medieval era • In the U.S., promise of the new frontier inspired optimism and individualism
How texts from this movement represent the setting and characters	• Very detailed, realistic descriptions • Society and societal conditions are central to novel • Characters were in control of their own destiny • Characters are often from the middle class	• Detailed descriptions of environment • Nature is depicted as powerful, uncontrollable force • Characters often have no or little free will • Characters may be from lower socioeconomic classes	• Nature is idealized • Individual is emphasized rather than society • Characters may demonstrate strong, sometimes irrational, emotion • Characters may question and challenge rules and conventions
Common themes in the texts of this movement	• Democracy and the devaluing of the author • Truth is linked to objectively describing and examining society, characters, and events • Importance of the ordinary • Issues of morality explored through the character's relationship to society	• Survival of the fittest • Nature or society is indifferent to the individual • Everyone has a dark side or an inherently violent nature • The individual cannot overcome natural or societal circumstances	• Importance of the individual and of the artist or author as creator • Nature as source of inspiration or spirituality • The supernatural, mysticism, and the occult • The individual overcomes the limitations of society and tradition
Summary: The literary movements of Realism, Naturalism, and Romanticism were all reactions to previous literary movements and changes in society. Naturalism and Realism seemed to embrace scientific advancements, while Romanticism tried to escape modern urbanization and technology by focusing on nature and the supernatural. Both Realism and Naturalism focused on characters from lower or middle classes and the problems these people faced in their day-to-day lives; however, the characters' ability to control their own destinies was quite different. Naturalist texts often contained characters who could not overcome their circumstances and were controlled by society, unlike Romanticist texts which praised the power of the individual and frequently contained characters who overcame societal circumstances.			

Teacher Actions

- Asking students to identify elements of the content to compare and writing them at the top of each matrix column
- Asking students to identify attributes of each content element that they want to compare and writing one in each matrix row
- Asking students to identify information related to each content element and attribute
- Asking students to summarize what they learned while completing the comparison matrix

Desired Student Responses

- Identifying elements of the content to compare and writing them in each matrix column
- Identifying attributes on which they wish to compare the elements and writing them in each matrix row
- Identifying information related to each content element and attribute
- Summarizing what they learned while completing a comparison matrix

Extra Support

- Providing the elements and attributes that students should use in their comparison matrices and providing a review of each element and attribute

Extension

- Asking students to identify the elements and attributes to use in their comparison matrices

Technology Tips

- Use interactive whiteboard software to create interactive comparison matrices. Work as a whole class to fill in each cell by using clickers with text input or mobile devices with polling software.
- Use a random group generator like Team Maker to organize students into groups before a comparison matrix activity. Then, ask each group to collaborate on a comparison matrix using online word processing software such as Google Drive.

Comparison Matrix

Name: _____ Date: _____

Class: _____

	Element:	**Element:**	**Element:**
Attribute:			
Attribute:			
Attribute:			
Summary:			

Classification Charts

The teacher creates a chart with several categories listed across the top and asks students to fill in examples that fit in each category. Students can pair up or form groups to share their charts with their peers, discuss and explain why they classified items as they did, and modify their charts after hearing others' perspectives. In the example chart below, scientific elements are organized into three categories: metals, nonmetals, and metalloids. During a classification activity, students should fill in examples for each category and then discuss with peers or describe in a short paragraph the characteristics that unite each column of elements.

Classification Chart of Scientific Elements

Nonmetals	Metals	Metalloids
Hydrogen	Manganese	Boron
Chlorine	Sodium	Silicon
Carbon	Potassium	Arsenic
Iodine	Mercury	Tellurium
Oxygen	Iron	Antimony

Teacher Actions

- Creating a chart with several categories across the top
- Asking students to fill in examples that fit in each category
- Asking students to discuss their charts in pairs or groups and revise them as necessary

Desired Student Responses

- Filling in examples for various teacher-generated categories
- Conferring with peers and revising their charts as necessary
- Explaining what they learned as a result of the activity

Extra Support

- Listing attributes associated with each category on a comparison chart and providing a review of each attribute

Extension

- Asking students to generate lists of attributes associated with each category on a comparison chart

Classification Chart

Name: _____ Date: _____

Class: _____

Category:	Category:	Category:

In a few sentences, explain why you classified your examples into each of the three categories.

Dichotomous Keys

A dichotomous key is a graphic organizer that refines students' understanding of two or more concepts or objects by delineating different characteristics of each. Generally, the dichotomous key moves from broad characteristics that apply to multiple objects to more detailed characteristics as a way to clearly define the item being examined. Students can create dichotomous keys as either flow charts or simple tables. This strategy is particularly useful when comparing multiple items that fit within the same category and might appear very similar on the surface. This strategy is frequently used to distinguish between similar organisms in science, but it can be adapted for any subject that requires students to distinguish among items in the same category. Students can practice using this strategy with familiar items before moving on to more complex concepts and topics.

Below is a dichotomous key that is designed to help students identify parallelograms. In this example, students read the description on the left, and if it matches, then the information on the right side applies to their shape. If the description does not match their shape, then students should move on to the next description on the list. Effective use of this dichotomous key should help students identify types of parallelograms: rectangles, squares, and rhombuses.

Step	Description	If Yes
1a	Has two sets of parallel sides	Is classified as a parallelogram, go to step 2a
1b	Does not have two sets of parallel sides	Is not classified a parallelogram, do not continue
2a	Has four congruent sides	Go to step 3a
2b	Does not have four congruent sides	Is classified as a rectangle
3a	Has four right angles	Is classified as a square
3b	Does not have four right angles	Is classified as a rhombus

Teacher Actions

- Providing example dichotomous keys to use in class
- Choosing a category or items for students to examine
- Asking students to list characteristics of each item
- Asking students to complete a dichotomous key that clearly shows specific characteristics of each item

Desired Student Responses

- Researching characteristics that could describe each item
- Classifying each item into different categories
- Creating a dichotomous key that logically shows how multiple items in the same category differ

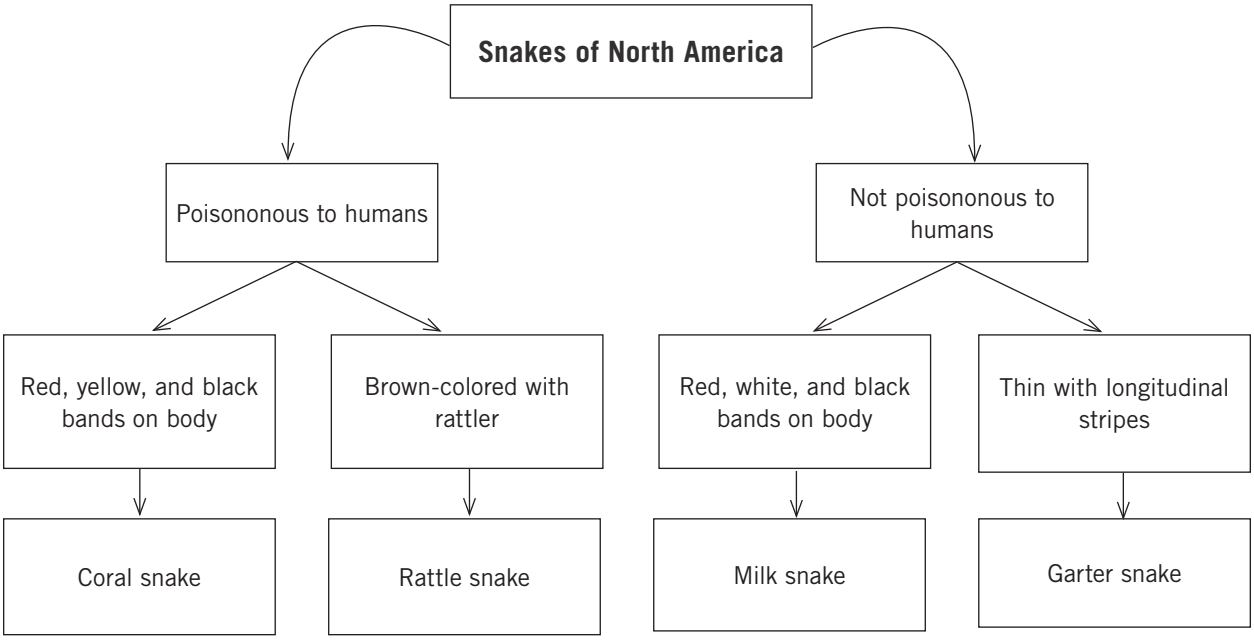
Extra Support

- Partially filling in a dichotomous key and asking students to provide possible details that would complete the organizer

Extension

- Asking students to independently research and create a dichotomous key that they could use as a study aid for that unit

Example Dichotomous Key Flow Chart



Sorting, Matching, and Categorizing

The teacher asks students to participate in activities that require them to sort, match, and categorize content. When sorting, students should place items into specific, predetermined categories. When matching, students should match two things that are equivalent to one another. For example, they might match a picture or symbol with a word, a definition with a term, two mathematical equations with the same solution, or a synonym with a word. When categorizing, students should group elements into two or more categories and explain the reasoning behind their categorization. Teachers can ask students to complete these kinds of activities individually, in groups, or as a class. Sorting, matching, and categorizing activities can also be structured through the use of graphic organizers, worksheets, or other visual representations.

Teacher Actions

- Explaining how to complete the sorting, matching, or categorizing activity
- Choosing categories for students to sort content into
- Selecting options that students should match
- Asking students to describe the reasoning behind their categorizations

Desired Student Responses

- Sorting items into several categories
- Matching two or more items that are the same or equivalent
- Creating categories based on items they are given
- Explaining the similarities between items in a category

Extra Support

- Presenting simple examples of sorting, matching, and categorizing with common objects

Extension

- Asking students to create subcategories within categories they already created

Example Sorting, Matching, and Categorizing Activities

- **Defining vocabulary or terms:** This strategy works well when instructing students on important vocabulary or terms for a unit. When students are beginning to learn the definition of the term, teachers can have them match the word to its written definition, to an illustration of the term, or to a synonym. As students' understanding deepens, they should be able to sort the terms into categories. For example, in an ELA class the teacher might ask students to sort words under the appropriate part of speech, and in a science class a teacher could have students sort terms under the type of animal or process they describe.
- **Understanding symbols:** A number of subject areas use symbols to represent ideas or processes. Students can use this strategy to familiarize themselves with the use, purpose, and definition of important symbols. For example, in a music class, students could match differ-

ent musical symbols to their use, or they could categorize different instruments by which clef music for the instrument uses.

- **Classifying objects that could belong to the same category:** Sorting and categorizing objects into more specific categories helps students understand which features define a particular set of objects. For example, for a unit on the Solar System, a teacher could ask students to sort planets as gas giants, dwarf planets, or ice giants and have them explain which features of each planet cause them to belong to that category. Through this kind of activity, students learn that even objects within the same category, such as "planets," can have a diverse range of features.

Student-Generated Classification Patterns

The teacher asks students to find representative examples of different concepts and sort them into categories based on what they have learned in class. Students then present their conclusions to the class and explain why they selected the examples they did and why they sorted them as they did. For example, students might read about the animals that live in the temperate rainforests of the American Pacific Northwest and sort them into categories such as mammals, fish, birds, reptiles, and so on.

Teacher Actions

- Asking students to find representative examples of various concepts
- Asking students to sort their examples into categories
- Asking students to present their examples and categories to the class

Desired Student Responses

- Finding representative examples of a concept
- Sorting examples of a concept into categories
- Explaining the thinking and reasoning behind their examples and categories

Extra Support

- Creating a concept wall with pictures of different concepts; allowing students to use examples from the concept wall when generating classification patterns

Extension

- Asking students to make generalizations about a concept based on their classification patterns

Organizing Student-Generated Classification Activities

- At the beginning of a classification activity, ask students to choose potential categories they will sort their concepts under. These categories should relate to the vocabulary and content discussed in class. Have students write down some of the characteristics of these categories to help them find matching concepts from their notes, texts, or other sources.
- Encourage students to notate which items might belong in their categories. For example, ask them to highlight words in a text that belong to different categories in different colors of ink.
- Instruct students to organize their classifications visually. Suggest that they use several shapes to separate one category from another or divide one shape into parts to organize information.
- After completing their classifications, ask students to generate a poster representing their categories that they can present to the class. Students may draw or use the computer to create their presentations.

Similes

Students state comparisons using *like* or *as*. Students can generate similes to help them understand how new knowledge relates to previous knowledge. They might include an explanation of why one object is like the other and can revise their similes after discussing them with their peers. Teachers can introduce similes by comparing new knowledge to something students are already familiar with. For example, when teaching a lesson on adding fractions, a teacher might state, "Adding fractions with different denominators is like trying to add apples and oranges," in order to show students that the denominators must be the same when adding fractions.

Teacher Actions

- Asking students to state comparisons using *like* or *as*
- Asking students to explain their similes

Desired Student Responses

- Stating comparisons using *like* or *as*
- Explaining the thinking and reasoning behind their similes

Extra Support

- Providing one element of a simile; asking students to provide the other and explain how the two are alike—for example, real numbers are like _____ because _____

Extension

- Asking students to create similes using abstract concepts or ideas

Similes

Name: _____ Date: _____

Class: _____

Simile Stems

Complete each simile with a word or phrase and explain your reasoning for each section.

He shuffled down the street like _____.

Explanation: _____

_____.

The ballerina was given the part because she danced like _____.

Explanation: _____

_____.

Everyone told Jim that he had a great attitude. You could say he was cheerful as

_____.

Explanation: _____

_____.

The sound of the wind in the trees was as loud as _____.

Explanation: _____

_____.

Write Your Own Similes

Remember, similes compare two objects using the words *like* or *as*. Write similes that give the reader a clear picture of the subject or show how the two objects being compared are related.

1. _____

_____

2. _____

_____

3. _____

_____

Metaphors

Students state comparisons using metaphors. In a metaphor, comparisons are stated as direct relationships—one thing is another—for example, life is a journey. Metaphors are sometimes abstract and can be extended to include more than one comparison. Students should explain why their metaphors are appropriate. When deepening students' knowledge of a subject, the teacher can instruct students to create metaphors that relate the new content to something they understand well. For example, when discussing the Silk Road and the Mongol Empire, students could state that "the Silk Road was a bridge between Eastern and Western cultures."

Teacher Actions

- Asking students to state comparisons as direct relationships
- Asking students to extend their metaphors to include multiple comparisons
- Asking students to explain their metaphors

Desired Student Responses

- Stating comparisons as direct relationships
- Creating metaphors that express multiple comparisons
- Explaining the thinking and reasoning behind their metaphors

Extra Support

- Providing one element of a metaphor; asking students to provide the other and explain the connection between the two—for example, the British Empire was a(n) _____ because _____

Extension

- Asking students to create metaphors using abstract concepts or ideas

Metaphors

Name: _____ Date: _____

Class: _____

Metaphor Stems

Complete each metaphor with a word or phrase and explain your reasoning for each section.

At sunrise, the streets are _____.

Explanation: _____

_____.

The coach's temper was a _____.

Explanation: _____

_____.

The _____ of time moves faster than we think.

Explanation: _____

_____.

The people who make us happy are _____.

Explanation: _____

_____.

Write Your Own Metaphors

Metaphors compare two unlike objects to give the reader a clearer picture of the author's meaning. Metaphors like "life is a journey" use "to be" verbs, such as "is," "was," and "were," to make a comparison." Write unique metaphors using these verbs.

1. _____

_____

2. _____

_____

3. _____

_____

Sentence Stem Analogies

Students use sentence stems to create comparisons that describe specific relationships between two items or concepts. Analogies always take this form: "Item 1 is to item 2 as item 3 is to item 4." For example, when presented with the stem: "Quarterback is to _____ as pitcher is to _____," a student might create the following analogy:

> Quarterback is to receiver as pitcher is to catcher, because the quarterback throws the ball to the receiver, and the pitcher throws the ball to the catcher.

The student might extend this analogy to further analyze the relationship between football and baseball:

> An interception is to football as a hit is to baseball, because in both cases, the ball's course is altered before it reaches its intended target.

The teacher might also present students with the first two terms of an analogy and ask them to fill in the second two terms, for example: "A coach is to an athlete as _____ is to _____."

Teacher Actions

- Asking students to complete sentence stems such as: Item 1 is to _____ as item 2 is to _____
- Asking students to complete sentence stems such as: Item 1 is to item 2 as _____ is to _____

Desired Student Responses

- Completing sentence stems that compare relationships
- Explaining the thinking and reasoning behind their sentence stem analogies

Extra Support

- Creating sentence stem analogies that only require students to fill in one term

Extension

- Asking students to create sentence stem analogies for abstract concepts or ideas

Technology Tips

- Create a sentence stem analogy, and display it in interactive whiteboard or presentation software. Then ask students to complete the sentence stem analogy using clickers with text input or mobile devices with polling software.

Sentence Stem Analogies

Name: _____ Date: _____

Class: _____

Sentence Stem Analogies

Fill in the missing blanks for each analogy and explain your reasoning for each selection.

Chapter is to book as scene is to _____.

Explanation: _____

_____.

Apples are to trees as grapes are to _____.

Explanation: _____

_____.

Candy is to sweet as _____ is to _____.

Explanation: _____

_____.

Soldiers are to army as _____ are to _____.

Explanation: _____

_____.

Write Your Own Analogies

1. _____

_____

2. _____

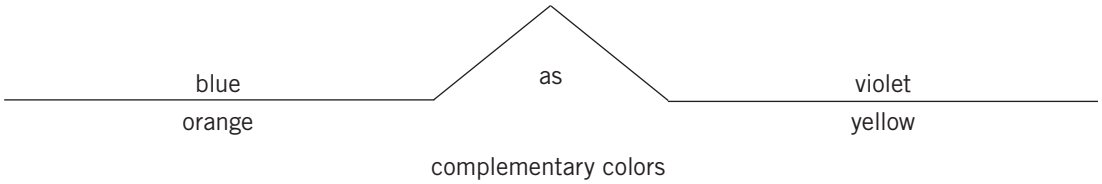
_____

3. _____

_____

Visual Analogies

Students use visual organizers to help them make analogies. The graphic organizer shown below helps students create an analogy and specify the type of relationship being expressed by the analogy.



Teacher Actions

- Helping students express their analogies using a visual organizer
- Helping students label the types of relationships expressed by their analogies

Desired Student Responses

- Expressing analogies visually
- Identifying and labeling the type of relationship expressed by an analogy
- Explaining the thinking and reasoning behind their visual analogies

Extra Support

- Using pictures and words to demonstrate visual analogies

Extension

- Asking students to create alternative ways to express analogies visually

Technology Tips

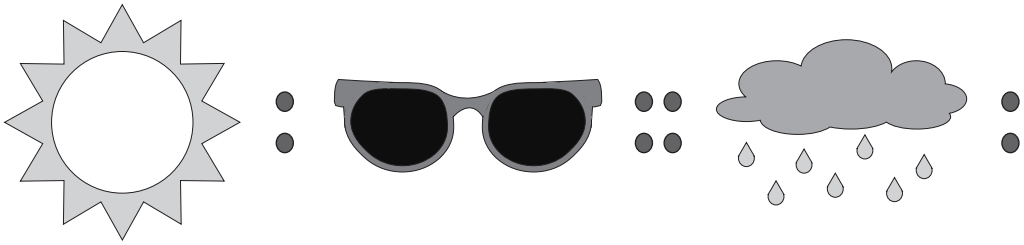
- Use multimedia software to enhance the application of visual analogies by adding images, sound, and interactivity to visual analogy activities.
- Create an interactive graphic organizer for visual analogies that includes images or sound, and display it in interactive whiteboard or presentation software. Students collaborate in small groups to complete the organizer and submit responses using clickers with text input or mobile devices with polling software.
- Use a random name generator to organize students into pairs to create their own visual analogies using photos taken via smartphone or tablet.

Visual Analogies

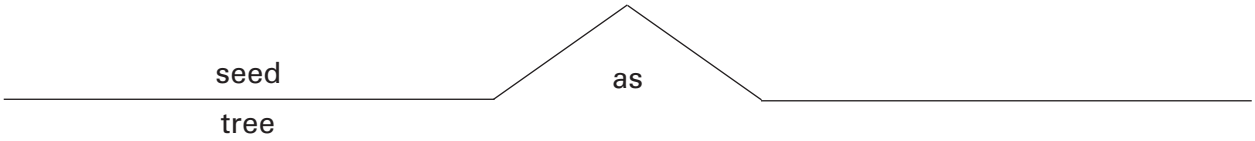
Name: _____ Date: _____

Class: _____

Complete the visual analogy by drawing an object in the empty space. Explain what kind of relationship is represented in this analogy and how your image completes the analogy.



Complete the analogy by filling in the empty spaces above and below the right line. Beneath the middle of the diagram, write a word or phrase that describes the relationship between the two objects on both sides of the analogy. Explain your reasoning for your choices in a few sentences.



_____

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: _____

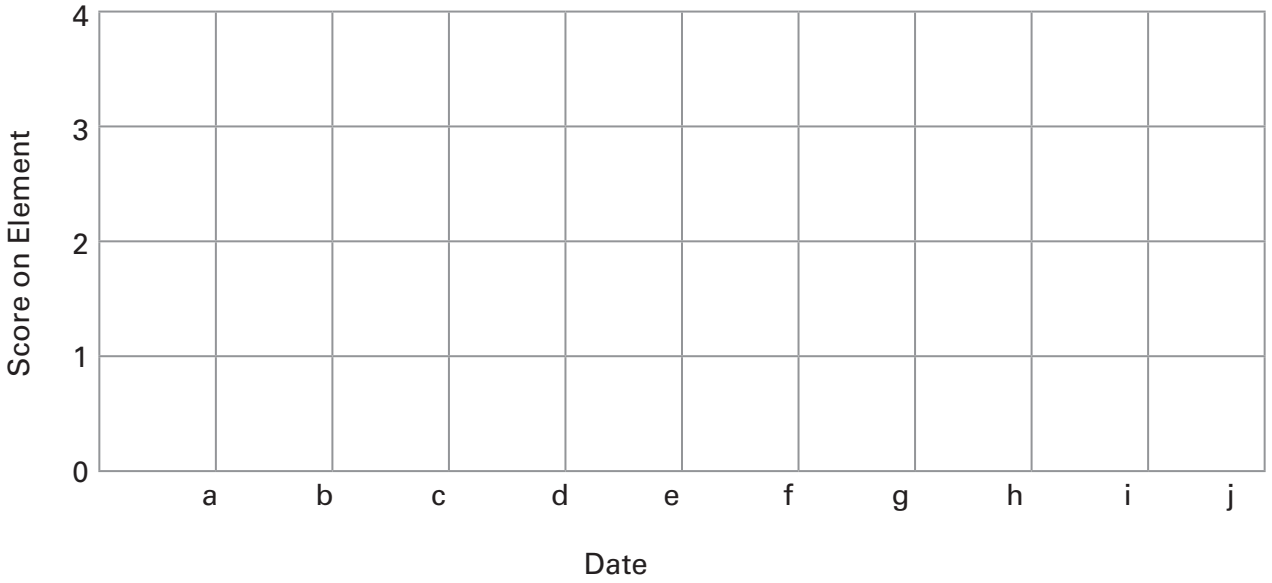
Goal Score: _____ by _____ (date)

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 examining similarities and differences.

Observation Date and Time: _____ Length of Observation: _____

Check Strategies You Intend to Use	Strategies	Description of What Was Observed
	Sentence Stem Comparisons	
	Summarizers	
	Constructed Response Comparisons	
	Venn Diagrams	
	T Charts	
	Double-Bubble Diagrams	
	Comparison Matrices	
	Classification Charts	

	Dichotomous Keys	
	Sorting, Matching, and Categorizing	
	Student-Generated Classification Patterns	
	Similes	
	Metaphors	
	Sentence Stem Analogies	
	Visual Analogies	
	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 examining similarities and differences. 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
Describing similarities and differences	
Using graphic organizers to make comparisons	
Classifying concepts	
Using graphic organizers to classify concepts	
Creating metaphors, similes, or analogies	
Explaining the relationship between two concepts	
Explaining their reasoning behind identified similarities and differences	
Explaining the reasoning behind their classification of objects	
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 Examining Similarities and Differences

1. **My teacher asks me to think about how things are like each other and different from one another.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

2. **My teacher often asks me to compare facts, details, objects, or events.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

3. **My teacher often asks me to put facts, details, objects, events, or vocabulary terms into groups.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

4. **My teacher often asks me to create analogies, metaphors, or similes.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

5. **After comparing or classifying, my teacher asks me to summarize what I learned by doing it.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

6. **After comparing or classifying, my teacher asks me to explain why I organized things the way I did.**

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree

Teacher Survey for Examining Similarities and Differences

1. **I engage students in comparison activities.**

Often Sometimes Rarely Never I don't know

2. **I ask students to create analogies.**

Often Sometimes Rarely Never I don't know

3. **I ask students to create similes and metaphors.**

Often Sometimes Rarely Never I don't know

4. **I engage students in classification activities.**

Often Sometimes Rarely Never I don't know

5. **I ask students to explain how things are similar and different.**

Often Sometimes Rarely Never I don't know

6. **After comparison or classification activities, I ask students to summarize what they have learned.**

Often Sometimes Rarely Never I don't know

7. **After comparison or classification activities, I ask students to explain what the activity has added to their understanding.**

Often Sometimes Rarely Never I don't know