CONCEPT LEARNING:
Examples & NonExamples
Compare & Contrast
Instructional Strategies

First Impressions

- How can I help students transfer information that they are familiar with to new, unfamiliar situations?
- How can I foster the use of generalizations while simultaneously correcting over-generalizations?
- How can I promote learning that is both autonomous and higher order?

Examples & NonExamples
Section 1

Definition and Purpose

Due to the rapidly changing nature of technology, modern students must learn to apply the skills they learn today in new ways tomorrow. The ability to generalize successfully, therefore, is more important than ever. In order to be able to transfer skills and knowledge from one situation to another, students must learn to see what those situations have in common.

According to Melinda Sota (2013), “Understanding a concept is not the same as recalling a definition.” Exposing students to both examples and nonexamples provides the opportunity to compare and contrast the two, which hones their understanding of what attributes do and do not apply to the concept they are learning.

This teaches students to apply what they learn from the teacher-provided examples to situations students may encounter on their own. Examples and nonexamples are a key piece of concept learning that encourage understanding, applying, analyzing, and evaluating.
What’s This?

An example...

- is an illustration of a concept that contains the key attributes associated with that concept.
- helps students learn about concepts through generalizations.
- refines students’ ability to make accurate generalizations.

A nonexample...

- is similar to the concept but varies in one or more attributes from the actual concept.
- helps prevent over-generalizations.

Read Malamed’s rules in greater detail here.
Take a Look

How do instructors use examples and nonexamples as an instructional strategy?

Connie Malamed (2011) has provided a list of rules to aid teachers as they build examples and nonexamples into their curriculum.

- Use examples whose unrelated qualities are varied.
- Move from simple to complex examples.
- Display examples and nonexamples in one sitting.
- Use paired examples and nonexamples that are related.
- Allow students to come up with their own examples and nonexamples.
- Give students access to a diverse array of examples and nonexamples.
How will the examples and nonexamples strategy look in my classroom?

There are a number of ways to use examples and nonexamples both in and out of the classroom. They can be formal or informal, teacher-generated or student-generated, and simple or complex.

• **Invisible Cats** is a humorous way to introduce generalizing through examples to students using the popular Invisible Cats memes.

• The **Frayer Model** is a vocabulary learning strategy that employs examples and nonexamples.

• Math: **Polynomials**

• Language Arts: **Paraphrasing vs. Plagiarizing**

• Social Studies: **Democracy**

• Science: **Scientific vs. Non-Scientific Questions**
Think About

This list of rules by Connie Malamed (2011) can be used to guide instructors in how to design examples and nonexamples as an instructional strategy.

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Using the Frayer Model on the right as a point of discussion, answer the following questions.

1. What benefits do you see in using the Frayer Model in teaching struggling readers?

2. Using your subject area standards, identify three conceptual terms that could be developed using the Frayer Model.
Classroom Example of Examples and NonExamples

Generalizing Lesson Using Examples and NonExamples: Invisible Cats

Instruct students to look at a series of pictures of “Invisible Cats,” a meme that can be found online. Once students have studied these images, have them create a definition of “Invisible Cats” based on the examples provided.

Afterwards, provide students with formal definition of the meme, which can be found [here](#) compare this definition with the student-generated definitions.

Discuss how students were able to define the term without explicit instructions, using only examples.

The implication of the activity is that there was learning occurring in terms of generalizing what counts as an invisible cat picture without any explicit instruction. This could be a humorous way to introduce learning by example to your students.
Section 3
Benefits

Learn More About Examples and NonExamples

SDSU - Academic Tutoring Center explanation of examples and nonexamples.


Why use examples and non-examples?

To support concept mastery (Keeley, 2013). Because categorization is a higher-order thinking skill, encouraging students to categorize concepts moves them beyond mere memorization.

To develop skills needed for problem solving (Sota, 2013). An important part of solving problems is transferring knowledge gained in one situation to another situation. This requires students to make inferences based on previous experiences and knowledge, a skill gained through the study of examples and nonexamples.

To “transfer their new knowledge to categorizing new objects” (Keeley, 2013). Students learn new concepts with greater ease as they develop their aptitude for perceiving similarities among unique instances and objects.

To promote autonomy in concept acquisition. Providing students with examples and nonexamples and giving them the opportunity to create their own aids in students’ ability to gain new knowledge independently.
Section 4

Resources


First Impressions

- How can I help students develop the ability to differentiate among the many choices they face?

- What strategies can I use to foster critical thinking in my classroom?

- How can I make abstract concepts more clear for students?
More than ever before in history, our students are bombarded with seemingly limitless choices to make, many of which have dire consequences for their futures. Learning to differentiate among these alternatives is imperative, and comparing and contrasting is a skill basic to this decision-making process.

Comparing and contrasting belongs to the category of instructional strategies that Marzano, Pickering, & Pollock (2001) found to have the greatest impact on student achievement across grade levels and content areas. The primary purpose of this instructional strategy is to aid students in developing critical thinking skills and provide a means to organize new information.

**Objectives:**

1. Define comparing and contrasting.
2. Identify the purpose of using the compare and contrast strategy.
3. Recognize effective examples of comparing and contrasting in content instruction.
4. Discuss the benefits of using the compare and contrast strategy in classroom instruction.
What’s This?

Comparing and contrasting...

- is a strategy used to analyze the similarities and differences among ideas, objects, people, and events.

- exposes the relationships between the items being examined.

- enables students to evaluate and synthesize information as they examine the relationships among concepts that they are exploring.

Take a Look

How do instructors use comparing and contrasting as an instructional strategy?

In their book, *Classroom Instruction that Works*, Marzano, Pickering, and Pollock (2001) draw four generalizations from the research in this area:

- Presenting students with explicit guidance in identifying similarities and differences enhances students' understanding of and ability to use knowledge.

- Asking students to identify similarities and differences independently enhances their understanding of and ability to use knowledge.

- Representing similarities and differences in graphic or symbolic form enhances students' understanding of and ability to use knowledge.

- Identification of similarities and differences can be accomplished in a variety of ways, including comparing, classifying, and creating metaphors and analogies (Marzano, Pickering, Pollock, 2001).
The following are some questions for students to consider when making comparisons:

How are two or more things or ideas the same?

How are they different?

Are the similarities of X and Y more important than their differences?

Do we learn something about X when we compare it to Y?

What is more difficult to understand about X when we compare it to Y?

Might a different comparison yield a different perspective?
How will the comparing and contrasting strategy look in my classroom?

Comparing and contrasting strategies exist in several forms and are often found embedded in other instructional strategies because they are the foundation for higher-order thinking skills.

- PMI charts, Decision Making Models, Venn Diagrams, and KWL charts (pages 89-92)
- T-Charts and Tables
- Comparison-Contrast Chart
- Cubing for deeper analysis
• Language Arts: Cinderella Folk Tales: A Comparison

• Math: Using math to compare vehicles

• Science: Assessing Lung Capacity and Heart Rate in Athletes and Ordinary People

• Social Studies: Hamilton and Burr
Classroom Example of Compare and Contrast

Science Lesson Using Compare and Contrast: Concept analysis of fungi

Show students photos of two species of fungi or bring two examples to class. Provide students time to study both species.

Instruct students to list all of the characteristics of both items.

When all characteristics have been noted, have students independently, in pairs, or as a class, organize characteristics shared by both items and group them in a separate list. Arrange the characteristics into categories where possible.

Use an organizer such as a Venn Diagram, Double-Bubble Map®, or other chart to create the final compare and contrast list.
Think About

View the video on Caesar Chavez found [here](#). View the video more than once, keeping in mind what you’ve learned about. Then answer the questions that follow.

1. What compare and contrast strategy would you use to compare Caesar Chavez to other social and political activists?

2. How does the compare and contrast strategy you chose expose relationships between the items (people) being examined?

3. How could you have students evaluate or synthesize the information from the compare and contrast analysis activity?
Why use compare and contrast?

To reinforce concepts (Silver, 2010). Two linked ideas endure longer in our memories than any two ideas alone. Analyzing pairs of ideas enhances students’ ability to remember key content, and the patterns and relationships established in the process make it easier to navigate large chunks of information in an organized manner.

To deepen understanding (Silver, 2010). Student comprehension is improved by highlighting important details and reducing the confusion between related concepts. Having students articulate the choices they make as they group similar items further clarifies concepts.

To sharpen analytical skills. Comparing and contrasting leads to higher-order questions and fosters critical thinking. Students use prior knowledge to help make sense of new ideas and make predictions about future outcomes relating to the information being analyzed.

To clarify abstract concepts. Comparing and contrasting can provide a concrete setting for examining abstract concepts, making abstract concepts more tangible. It provides a foundation for students to examine unfamiliar concepts in familiar terms.
Learn More About Comparing and Contrasting

Suggested Strategies for Teaching Compare and Contrast

Ten Ways to Compare and Contrast

Compare and Contrast: A Strategy for Avoiding Comparison Pitfalls

Why Compare and Contrast?
Section 4
Resources


Instructional Strategies

Subject Specific

Career & Technical Ed.
Examples and NonExamples

Some samples of examples and non-examples pertinent to Business and Marketing Ed include:

Marketing: Is bribery an example of an ethical sales practice? Is clearly explaining financing terms an example of an ethical sales practice? Defend your answer.

Accounting: Is cost of goods sold an example of an expense? Is gross revenue an example of an expense?

Comparison and Contrast

Some samples of comparison and contrast pertinent to Business and Marketing Ed include:

Accounting: An income statement is like a movie whereas a Balance Sheet is like a snapshot. Explain why this is so.
Marketing: A good print advertisement would contain some of the following: the headline, the copy, the tag line, and an illustration related to the items being advertised. Some ads are simply reminders of the product’s benefits, or are created to distance the product from the competitors in the mind of the consumer. A bad print ad may include a headline, copy, tag line, and illustration, but they may be unrelated to each other, thus confusing the reader.
Credits

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