

## **Identifying Similarities & Differences via Comparing**

### **Purpose:**

The purpose of having students identify similarities and differences is to help them understand an idea or concept more deeply and to be able to apply the knowledge in appropriate situations. The instructor might guide the students through the process using a teacher-directed activity or encourage more divergent thinking through a student-directed activity.

### **Learning theory:**

Learning is the work of the mind. Learning only happens as it happens in the minds of individuals. There are a number of habits of mind that can help students more deeply understand any content. A habit of mind is an automatic mental process used when new information is encountered. Professors can deliberately employ instructional strategies that help students uncover and develop habits of mind that will make them more successful learners. This strategy focuses on a critical habit of mind that the best professionals use daily: How is this the same? How is this different?

The identification of similarities and differences among one or more phenomena is a category of instructional strategies that research has identified as having the highest achievement effect on student mastery of content (Marzano, et al., 2001). There are a number of strategies within that category, that with practice, can become effective tools for educators at any level to use in the classroom. Among these are: Venn diagrams, comparison matrices, classifying activities, concept maps, graphic organizers, T-charts, pro & con grids, metaphors and analogies.

The basic thought processes involved in identifying similarities and differences have been found basic to human thought (Gentner & Markman, 1994; Markman & Gentner, 1993a, 1993b; Medin, Goldston, & Markman, 1995). Since learning is dependent on prior learning and understanding (National Research Council, 2000) it seems natural that a basic human tendency would be to ask “How is this the same as what I already know?” or “How is this different?” If students develop a habit of mind for identifying similarities and differences, they will become more efficient learners.

Research indicates that comparing is highly effective in helping students identify similarities and differences (Chen, 1996; Chen et al., 1996; Flick, 1992; Ross, 1987; Solomon, 1995). There are a number of ways to help students practice the skill of comparing. First, they must learn the mental processes (see below) involved when comparing (Marzano, et al., 1997).

### **Time required:**

The amount of time required for a comparing activity will vary greatly depending on the structure of the activity. An instructor-directed activity might require 15 minutes or a bit less. Most student-directed activities will require at least 30 minutes.

## Information and decisions for facilitator:

Comparing is a habit of mind that involves several steps or processes (Marzano, et. al., 1997):

1. Select the items to compare.
2. Select the characteristics of the items on which to base comparison(s) and provide reasoning for the selection of those characteristics.
3. Explain how the items are similar and different with respect to the characteristics.

### *Instructor-directed activity:*

If the instructor's purpose is to have students focus their thinking on specific similarities and differences, instructor will want to provide students with

1. the **items** to compare and/ or
2. a list of **characteristics** of the items to be compared.

(It may be necessary to give students more of the information they need to complete the comparing task when they are first learning how to compare. As they develop a habit of mind for comparing, the instructor can give them less structure and less guidance.)

### *Student-directed activity:*

If the instructor's purpose is to encourage divergent thinking from students regarding similarities and differences, instructor will want to

1. allow students to create a list of the **items** to be compared, or
2. allow students to select both
  - the **items** to be compared and
  - the list of **characteristics**.

***How can the instructor help students learn to use these general mental processes involved with comparing? If the instructor-directed activities are used, how will the instructor reveal to students his/her own thinking related to these mental processes?***

Consider all the possibilities below, and identify those that will most likely help students learn. The instructor should use his/her own example to organize in more detail. Attach any handouts necessary for students, or sketch organizer or example that will be put on overhead or screen (students don't need everything in handouts; they may remember more if they sketch their own graphic organizer from the example).

\_\_\_ Instructor-directed comparison task

\_\_\_ Student-directed comparison task

- Students select characteristics
- Students select **both** the items to compare and the characteristics

\_\_\_ Graphic Organizers

- Venn diagram [Click here for example](#)
- comparison matrix [Click here for example](#)

\_\_\_ Students work individually

- \_\_\_ Students work in teams
- partners selected via \_\_\_\_\_
  - team size of \_\_\_\_\_ grouped via \_\_\_\_\_

[Click here for a lesson planner](#)

**Instructions for learners will depend on the decisions made above. Answer the following questions while preparing to guide the students.**

The instructor's responses to the following questions (Marzano, et. al., p. 19) should help guide the students through the process of comparing.

- What knowledge will students be learning?
- If this is the first time the students have been asked to engage their brains in comparing, how should the instructor help them understand the process?
- Will students use a graphic organizer?
- How much guidance will the instructor provide?
- How will students explain their thinking and communicate their ideas?
- How will the instructor monitor student progress?
- What will the instructor do to help students who are not skilled at comparing?

**Appropriate uses:**

- Identify and organize prior knowledge of concepts.
- Help students understand concepts more deeply.
- Allow students to apply knowledge in new ways.
- Assess understanding.

**Tips to consider:** These tips are based on nearly ten years of work with numerous faculty at community colleges, colleges, and universities in Iowa, Kansas, and Ohio (Licklider & Wiersema, 2002).

- Don't assume students know how to engage their brains in the process of comparing. Take the time to help them learn the steps.
- Students do engage in some level of comparing every day. Help them recognize the process in their own lives – comparing two classes, comparing movies, comparing cars, etc.
- Provide students with the appropriate amount of structure and guidance to be successful.
- Allow enough time for students to engage their brains in the process of comparing.

**References:**

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