

Analogy-Enhanced Pedagogy: Class Activities to Engage Students in Learning

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Author Biography

Joseph A. Mayo, Ed.D., is a Professor of Psychology at Gordon State College in Barnesville, Georgia, who has been teaching and conducting classroom-centered research in higher education for over three decades. His primary research interest is effective undergraduate teaching strategies with an emphasis on constructivist classroom applications. He is the recipient of both statewide and national awards for his teaching innovations and ongoing contributions to the scholarship of teaching and learning.

Theoretical and Empirical Background

Analogies provide an interpretive bridge in comparing features of familiar and unfamiliar concepts. As such, they serve a conduit function in allowing us to arrive at hybrid conceptualizations that invoke shared similarities between old and new understandings.

Classroom research on successes of analogical reasoning has focused heavily on analogies created by teachers and textbook authors for introducing new concepts. To counterbalance that, I have spent the past two decades systematically investigating the impact that *student-generated* analogies have on learning within my own undergraduate psychology classes (Mayo, 2001, 2006, 2010, 2019). Overall, I have found students' learning gains most striking when they create their own analogies through classroom activities affording opportunities for facilitating student-to-student and instructor-to-student interactions.

Analogy-Enhanced Learning Activities

My findings in favor of what I call *analogy co-construction* form the basis for the following whole-class activities that I have arranged in ascending order of task complexity. Accompanying a brief description of each activity, I have either included an example from my own teaching or an illustration of how that activity might be used to aid learning in other academic disciplines. As springboards for student engagement, the first activity uses a simple physical prop, whereas the remaining activities proceed in absence of tangible objects.

Object association

Hold up an object in class and ask students to think of ways that the object is both similar and dissimilar to a given concept.

Example. The undergirding role of analogies is to structurally align similar components of familiar and unfamiliar conceptions. However, allowing students to actively explore dissimilarities makes them aware that even well-conceived analogies break down somewhere. To demonstrate, in teaching the concept of *tabula rasa* ("blank slate") to my life-span development students, I manipulate an etch-a-sketch screen in front of the class in anticipation that students will come to view my actions as symbolic of the way that life experiences "compose" a person's developmental history. Unlike the etch-a-sketch that can be shaken clean at will, however, students typically reason that both affirming and detrimental effects of life experiences are cumulative in determining the course of development.

Fill in the blank

Offer a partial analogy to the class. Afterward, permit students the chance to complete the blank.

Example. Identifying when one concept is like another epitomizes analogical reasoning. For example, in teaching a cell's organizational boundaries in an introductory science class, a teacher might tender the partial analogy: A cell membrane is like _____. If a student responds "an Oreo cookie," the instructor might then ask, "Why?" A viable answer might be that a cell membrane is like the phospholipid bilayer of an Oreo cookie with cholesterol as the cream filling (Glynn, 1991). Again, be sure to encourage students to uncover where the *analog* (Oreo cookie) evidences dissimilarities from the *target* (cell membrane).

Word association

Present the class with a term. Next, ask students to generate and justify other words that they associate with this term.

Example. In this approach, students rely on concepts that they already understand (familiar) to clarify those that they do not yet comprehend (unfamiliar). To exemplify, *stream of consciousness* is a term with teaching implications across disciplines, including psychology, speech communication, and journalism. As originally conceived (James, 1890/1950), this metaphorical expression highlights that human consciousness occurs around the clock, even in altered states such as daydreaming, sleeping, and dreaming. In the framework of a word-association task, students might submit stream-related words (e.g., flow, unending, unbroken) in capturing the essence of this conception.

Contextualizing learning

Using the name of a well-known person relevant to course content, ask students to imagine that they actually *are* that person in the conduct of his or her work. Probe students on how they might feel being that person relative to this work.

Example. Consistent with bridging capabilities of analogical thinking, contextualizing learning occurs when students process new information by making personalized sense of it in a particular context (e.g., from another's perspective or experiences). One way to accomplish this goal is for teachers in any academic discipline to ask students to "put themselves in the shoes" of famous contributors whose work they plan to cover. Before discussing a groundbreaking theory in a physics class, for instance, a teacher might pose the following question to the class: "If you were Albert Einstein, how would you feel about working on the theory of relativity?" Careful consideration in answering might help students to contextualize their understanding of Einstein's work, based on personal and sociohistorical overtones occurring during the time that he proposed this theory. I have found that preceding this activity with a mini-biographical sketch of the contributor's life and times increases likelihood of success.

Student Feedback

At the conclusion of class in which I have used one of these activities, I assess students' perceptions of completing that activity with an anonymous 5-item questionnaire with rating anchors at 1 (*not effective*) and 5 (*highly effective*): (1) stimulating engagement in learning; (2) facilitating understanding of course content; (3) increasing motivation to learn; (4) promoting intellectual challenge; and (5) fostering interest in the subject matter. Students' numerical ratings have been routinely positive in the 4-5 range on all surveyed items.

The questionnaire also includes an open-ended section marked *Comments* where students are invited to respond narratively, as in this actual student excerpt: "Even though I already had a basic idea of what *tabula rasa* was before today's class, using the etch-a-sketch to discuss it was a great way to bring it to life."

Despite the global success of these activities, one criticism voiced periodically by students is that even though analogies can be helpful, they can also be confusing and misleading if pushed to an unsubstantiated extreme. As a proactive measure to address this legitimate concern, it is important that teachers urge students to discover where analogies fall short in terms of dissimilarities between familiar and unfamiliar conceptions (Glynn, Law, & Doster, 1998).

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