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## **A Teaching Model for Concept Learning and Changes in Critical Thinking**

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### **Introduction**

Some students struggle with leadership theory and its underpinnings connected to practice. Some new leadership educators struggle with developing effective instructional design approaches to teaching theory and augmenting conceptual learning. As leadership educators, we did too. Through experimentation with different instructional strategies over the years, we developed a practical method to teaching theory that expedites a deeper understanding of complex theoretical constructs in the social sciences. Our students have become increasingly adept at applying and synthesizing theory in relationship to real-world settings with this approach.

Students in our leadership courses are required to read a rigorous series of materials that primarily consist of theorists' original writings introducing the constructs for consideration. The readings, at times, are challenging for students because they must not only comprehend but also master these complex concepts. To facilitate students' mastery of the readings and to deepen their understanding of the concepts presented, we developed a teaching model that achieves our three goals of a) students' mastery of the readings; b) students' demonstration of appropriate applications of the concepts to real-world critical incidents; and, c) students' active engagement in the discussion of the concepts and the applications.

### **Background**

#### **Concept Learning**

Concepts are the fundamental building blocks for thought. We experience our world through a conceptual or categorical filter (Ausubel, 1968). Shumway, White, Wilson, and Brombacher (1983) concluded that all learning can be reduced to skill learning, problem solving, or concept learning. Concept learning is dependent upon the ability to abstract, generalize, categorize, and establish relationships between symbols and referents (Lovitt, 1989). When one of these abilities is underdeveloped, students struggle with applying new concepts to real-world settings.

Concept learning has been characterized as a mental construct that provides organized information concerning an element or class of elements and helps discriminate between that element or class of elements and others (Klausmeier, 1976). Types of concepts differ across a continuum of concreteness to abstractness. A concept has a unique set of attributes that distinguish it from other concepts. In addition, its number of attributes adds to its complexity (Tennyson & Cocchiarella, 1986).

## **Adult Learning**

Andragogy is the techniques used to teach adults. Knowles (1968) first used this term to define adult learning. Later, Knowles, Holton, and Swanson (1998) described six assumptions about adult learning that have influenced the field of adult learning theory. Adults need to know why they should learn something. They prefer self-directed learning and learn best on a need to know basis. They are more task or problem-centered in their approaches to learning, and internal motivators drive their learning more than external motivators.

Adult education practitioner-based research literature consistently purports that adult learners have unique learning styles, and instructors should be mindful of these differences when designing instruction. However, we believe the majority of research studies do not convincingly support this assumption. Because of the number of variables that influence adult learning preferences, focusing on cognitive processing may be more appropriate when addressing adult learning. Placing more emphasis on how adults internally process information as opposed to the ways they prefer to learn when designing instruction seems to provide more stability to learning outcomes.

## **Cognitive Processing**

In our leadership courses where we introduce leadership theories, we approach learning from a cognitive processing perspective rather than from adult learning theory. Four cognitive processing principles (Sternberg & Ben-Zeev, 2001) guide our instructional design. Our classrooms are learner focused; students construct meaning in learning; we provide mental frameworks to help students organize memory and guide thought; and social interaction is fundamental.

Our goal is to help students encode new learning in long-term memory by providing visual conceptual frameworks of leadership theories and by facilitating their discovery of interconnected relationships with new information. We make new learning meaningful through elaboration, visual imagery, and spatial visual imagery. Examples of these principles and steps we take to make learning meaningful are embedded in the model we offer for your consideration.

## **Description of the Teaching Model**

### **Conceptual Framework Introduction**

Before we begin to study leadership theories, we conduct extensive conversations around the idea of when a construct becomes a theory. In these discussions, we introduce Reichers and Schneider's (1990) model as our conceptual framework of theory development, which serves us well in these discussions. We provide a visual representation by mapping the model, which represents a structure to the information to be learned and their connections (spatial visual imagery). We use analogies to further develop this framework for students, connecting this new information to what they already know.

Based on Kuhn's (1970) ideas of scientific paradigm development, Reichers and Schneider (1990) suggested that construct development follows a pattern of idea evolution. In the first stage in a construct's development, concept introduction and elaboration, a theorist attempts to legitimize a new or "newly borrowed" idea within their field of study. Articles are written to explain the new construct, to describe its relevance in the field of study, to provide operational definitions, and to prove the

construct accurately describes a phenomenon. If a construct is initially accepted by other theorists and survives, it moves onto the next stage.

In the second stage, concept evaluation and augmentation, reactions to the new construct begin to appear in the literature. Critics question or find fault in the construct's conceptualization. Some may offer alternative ways of thinking about the construct. In response to the initial reactions, the theorist may posit additional explanations through new publications, leading to re-conceptualizing the innovative construct. A give and take of ideas around the construct appears in the literature, as theorists mesh out the new construct.

Acceptance of the construct materializes in the third stage, concept consolidation and accommodation. The construct appears in literature reviews and is treated as a valid concept. An increase in studies occurs in an attempt to support or reject its effect in the field.

### **Initial Checking for Understanding**

Students' first encounter with a new leadership theory is through assigned readings. We initiate a discussion by probing to determine if students grasped the readings on theory and what, if any, aspect of the new theory is unclear. We ask students to write on index cards their understanding of the theory; what ideas were most dominant about the theory; and what ideas were confusing or unclear. Checking for understanding in this way provides us a "map of emphasis" in our instructional plan. It also gives students an opportunity to think about their thinking (metacognition) and identify their personal gaps in understanding.

### **Theory Deconstructed**

Next, we review the theory through a mini-lecture, deconstructing the theory to its simplest form and identifying its most critical attributes. Deconstructing and reconstructing the connections within the construct provides students with a "big picture" of the theory and all the inter-related components that make the theory what it is. In this way, we help students visualize a pictorial representation of the theory in their minds by providing critical attributes of the theory, along with multiple and varied examples and non-examples (visual imagery). All of these strategies give students structure to their learning.

We then encourage students to share professional and personal experiences that exemplify the theory in practice. This discussion helps solidify the idea that theory informs practice, and practice emulates and informs theory. At this point in the lesson, students begin to see the meaningful application of theory to the real world, where they make the connections or transfer old knowledge to new.

If students experience a deeper processing in learning, they create more intricate and sustaining memory traces and establish networks of associations. When students personally relate to new information, this processing makes the learning a more memorable experience.

### **Guided Practice**

Students receive a brief critical incident that incorporates the new theory and its attributes. Through small group discussions, students identify how the theory plays out and influences the outcome. They get time to “play” with new information, verbalize their thinking, and take risks in their understanding.

Craik and Lockhart’s (1972) research supports this approach. In their seminal findings on memory research, the researchers proposed that learning memory was enhanced not by how long information was rehearsed, but by the depth the information was processed. They also contended if the rehearsal was done in a deep and meaningful way, the rehearsal’s effectiveness was also improved.

During this activity, students are encouraged to offer competing interpretations and defend their conclusions in small groups. They then re-convene for a class discussion and share their small group conclusions. At this point in the process, we dedicate class time to further develop student inferential thinking skills.

Through elaborative interrogation (Ozgunor & Guthrie, 2004), we ask students how they arrived at their collective conclusions with posing questions such as, “Why would that be true?” From those conversations around their responses, students come to recognize that they made inferences and filled in information not directly presented in the critical incident. We identify and categorize their inferences as either default inferences (automatic assumptions) or reasoned inferences (conclusions based on existing information) (Marzano, 2010). From here, rich discussions materialize, addressing the validity of their thinking and concluding that inferring information sometimes may be based on a faulty premise. During this segment of the learning process, students augment their understanding of the theory and hone inferential thinking skills, a foundation for higher-order thinking.

We go on to introduce additional theories, through readings and guided practice in developing student understanding of these theories. Our approach to new theories may vary but the structure of an introduction to the new construct, its deconstruction and re-construction, guided practice, and application remains the core of our instructional design in concept learning.

Applying theory to practice is imperative in any discipline if students are to succeed as successful professionals in their fields of study. In our field of developing leaders, we value the importance of providing students meaningful dress rehearsals (Craik & Lockhart, 1972) for real world decision making and leading. We do this with the cumulative activity of a case study.

### **Case Study as Synthesis**

Students receive a case study with new learned theories embedded in the study. The case is typically multifaceted and focuses on an ill-defined problem or problems that need to be solved. Their task is to articulate and delineate the real problem even though it may be ill-defined; identify perceived root causes of the problem; and present a solution that addresses the identified issues, supporting all with theories learned.

Throughout their analysis of the case study, students are asked to synthesize theories previously learned and apply them appropriately to the context of the case study. What we look for in their responses is

the identification and application of the most suitable theories manifested within the critical incident and offer a solution or a number of solutions also grounded in learned theory. The key to their success is that they exhibit and defend connections between aspects of the critical incident and these theories.

### **Formative and Summative Assessments**

We measure the success of the teaching model by a) reviewing the students' index cards as a check for student understanding of the concepts; b) monitoring small group discussions of scenarios and the applications of the theories to real-world critical incidents; and c) reviewing the students' analyses of the final case study. These artifacts provide evidence of student mastery of readings, their demonstration of applications to real-world critical incidents, and students' active engagement in the discussions.

### **References**

- Ausubel, D. P. (1968). *Education psychology: A cognitive view*. New York: Holt, Rinehart, & Winston.
- Craik, F. I. M., & Lockhart, R. S. (1972). Levels of processing: A framework for memory research. *Journal of Verbal Learning and Verbal Behavior*, 11, 671-684. Maryland Heights, MO: Academic Press, Inc.
- Klausmeier, H.J. (1976). Instructional design and the teaching of concepts. In J.R. Levin & V.L. Allen (Eds.), *Cognitive learning in children: Theories and strategies* (pp. 191-217). New York: Academic Press.
- Knowles, M. S. (1968). Andragogy, not pedagogy! *Adult Leadership*, 16, 350-352, 386.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (1998) *The adult learner*. Houston: Gulf Publishing.
- Kuhn, T. S. (1970). *The structure of scientific revolutions* (2nd ed.). Chicago: University of Chicago Press.
- Lovitt, T.C. (1989) *Introduction to learning disabilities*. Boston: Allyn & Bacon.
- Marzano, R. J. (2010). Teaching inference. *Educational Leadership*, April, 80-81.
- Ozgunor, S., & Guthrie, J. T. (2004). Interactions among elaborative interrogation, knowledge, and interest in the process of constructing knowledge from text. *Journal of Educational Psychology*, 96(3), 437-443.
- Reichers, A. E., & Schneider, B. (1990). Climate and culture: An evolution of constructs. In B. Schneider (Ed.), *Organizational climate and culture* (pp. 5-39). San Francisco, CA: Jossey-Bass.
- Shumway, R.J., White, A.L., Wilson, R., & Brombacher, B. (1983). Feature frequency and negative instances in concept learning. *American Educational Research Journal*, 20, 451-459.
- Sternberg, R. J., & Ben-Zeev, T. (2001). *Complex cognition – the psychology of human thought*. New York: Oxford University Press.
- Tennyson, R.D., & Cocchiarella, M.J. (1986). An empirically based instructional design theory for teaching concepts. *Review of Educational Research*, 56, 40-71.