The Utilization of Concept Maps in Evaluating Leadership Comprehension

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Introduction

The process of leadership is a complex phenomenon that is difficult for beginning collegiate leadership students to express and even harder for them to define. Concept maps are an advantageous pedogological activity for instructors to implore when they utilize a constructivist stance in the classroom. "A concept map is a pictorial representation of a domain that consists of concepts represented as nodes (circles) that are connected to each other by arcs (lines)… the connecting arcs represent the conceptual links – stating that the concepts are conceptually and logically related in some manner" (Freeman & Jessup, 2004, p. 151). Students describe the end product of this activity as a leadership spider web.

Originally utilized by bench science, concepts maps were designed "to represent how students linked hierarchical material together" (Nicoll, Francisco & Nakhelh, 2001, p. 863). With hundreds of leadership definitions recorded, it is often difficult for leadership students to understand the complexity of the discipline and concept maps allow students to see and represent the interconnectedness of leadership concepts (Lawless, Smee & O' Shea, 1998). Although some leadership educators use concept maps in the classroom, few use it to evaluate knowledge gained by students.

The theoretical origins of learning via concept mapping can be related back to constructivism, assimilation, and associationist theories. When utilized in small-groups, concept mapping can be classified as both cognitive and social constructivism. With cognitive constructivism, knowledge results from internalization and reconstruction of external reality. Social constructivism is when knowledge is the result of social interaction (Buriak, McNurlen, & Harper, 1996). Concept maps allow the student and the instructor to see the construction of knowledge. Assimilation theory states that new information is processed and then assimilated into already existing structures in the memory and mind (Freeman & Jessup, 2004). Initial concept maps take a new concept and then show how students construct their framework from past knowledge and experiences. Associationist theory states that as learning occurs, the "network of concepts and relationships becomes more and more elaborate and complex" (Freeman & Jessup, 2004). The nodes and arcs of a concept map, especially one with leadership as its central focus, are extremely complex. One node may connect to five or more other nodes in students' minds.

Methodology

Kinchin, De-Leij, & Hay (2005) have developed a teaching methodology for the utilization of concept maps. Their four-pronged approach was developed to optimize the concept map procedure for the learner. First, the instructor must set up a constructivist and student-centered environment. Having a student-centered philosophy is imperative in allowing students

to develop their own connections with leadership and the components that frame the phenomenon. The second condition as described by Kinchin et al. is the collaborative nature of concept mapping. Students must be able to collaborate together as well as with the instructor to fully understand not only the process of concept mapping but also share ideas about the nodes of leadership. This collaboration will lead to new ideas being expressed and shared by the students. The third component is time. Students must be "given sufficient time for reflection and development" (Kinchin et al., 2005, p.1). Devoting an entire class session for concept mapping is a valuable use of time. The fourth strategy is to "avoid using specific terms that restrict conceptual development by hindering appropriate switching between opposing conceptual frameworks" (Kinchen et al., 2005, p.1). Giving creative license to the students allows them to define the phenomenon as they have constructed it in their minds.

At the beginning of the semester, students were instructed in the methodologies of concept mapping. When understanding of how concept maps work as well as how to construct one was accomplished, students were broken into groups of 4-6 and given the center word, or starting point, of leadership. From that one word, students then drew nodes and arcs to describe how they conceptualize leadership. When the students had completed the concept map activity, each group was given the opportunity to share their map with the other groups in the class. Teams described their thought processes in the linkages.

At then end of the semester, students were asked to split themselves up into their original concept mapping groups (we made sure their names were on the original concept map). They were again given the prompt of leadership and asked to draw a concept map. When they had completed the maps, they again shared with the class. The original map was then hung next to the new map, and the students compared their original leadership mental models with their new mental models.

Results

The most striking element of this exercise was to see the differences between the original concept maps and the end of the semester concept maps. The students went from seeing leadership as a position (nodes for the initial maps included: authority, good speaking, power, and responsibility) to conceptualizing leadership as a process (sample nodes for this mapping included: congruency between values and actions, visioning, and self-awareness. In this regard, our results are congruent with Kinchin et al. (2005) when they stated that concept maps "can both promote and assess conceptual change in a higher education setting" (p.2).

Students are able to see the progression of knowledge in their conceptualization of leadership. Students benefited from being able to see the growth and change of their mental models.

Advice to Others

Before students are allowed to construct their concept maps, it is imperative that they understand the process (the how and the why) of concept mapping. Kinchin, De-Leij, & Hay's (2005) model is a good place to start when constructing that lesson. Keeping the same groups

together for the original and the end-of-term concept map is also imperative in order for the students to accurately compare their growth and learning.

Resources

One of the strengths of this pedogological methodology is simplicity of instruction and material needed.

- Instructions on how to map an idea
- Large sections of paper (giant post-its, newsprint, or butcher paper works the best)
- Markers
- At least forty minutes to complete the activity

References

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