

VIEWING LEADERSHIP HOLISTICALLY: Using Mind Maps to Teach Leadership

Abstract

Mind mapping can be a pedagogical tool that helps students brainstorm how to organize information in a way that incorporates creative and active learning, as well as critical thinking. In this article, we describe the application of using mind maps in an undergraduate course focused on teaching leadership theory as an effort to help students think more holistically about how theories intersect with their lives. The assignment description, rubric, and details of the application are provided. Examples of ways students have organized their maps to integrate theories into their lives (e.g., based on themselves, organizations, or metaphors) are also included. Through this practice, we found that mind mapping leadership concepts to areas of students' lives develop their ability to describe how leadership theories operate holistically in their life, rather than limiting their understanding to one or two popular theories. We recommend leadership educators consider mind mapping as a pedagogical tool to teach theories and other content that require understanding in a broader context.

Introduction

Leadership theory has evolved and expanded over time (Nelson & Squires, 2017), and contemporary theories are built on the foundation set by earlier ones. Many leadership education programs include a course that focuses on understanding various leadership theories and concepts and how they have shaped the field of study (Komives & Sowcik, 2020). Often, this type of course is offered at the beginning of an academic program of study, as this approach allows students in the program to have a shared

understanding of the meaning of the term, "leadership."

Authors within the field (see Dugan, 2017; Ebener & Jalšenjak, 2021; Northouse, 2021, for examples) have created resources to outline historical and contemporary theories of leadership. While these authors present the theories with different organizing schemes, it is clear there are a variety of theories that exist which serve as a foundation for leadership knowledge and practice. Some theories emphasize the individual (e.g., trait and behavior theories), while others highlight the leadership setting (e.g., situational and contextual theories). Each theory

provides insight, or an angle, into understanding part of the complex process of leadership; however, it is through synthesizing these ideas that students can think critically about the nature of leadership.

It can be challenging for students to synthesize and integrate leadership theories and concepts. While instructors have a wide range of teaching techniques to use, they are often limited by the time frame of the course. In some cases, especially in short courses (e.g., four to eight weeks), the amount of information introduced, explored, and discussed can be overwhelming. In our experience of teaching leadership theories, we find some students are able to see the forest from the trees, others tend to get lost in the woods. As a coping method, these students tend to choose a theory or concept that resonates with them, and focus narrowly on that concept, rather than try to make sense of all available information. This narrow focus ultimately becomes leadership to them, which leads to the student moving forward from the theory course with a skewed and/or incomplete idea of the leadership process.

In an attempt to address this problem, we created a mind map assignment designed to help students visually organize the relationships among leadership theories and concepts and apply it to their lives. The goal of this assignment was to help students recognize the connections between leadership theories and concepts, and to understand the process of leadership as something happening in the broader context. In this article, we describe our application of using mind maps in an introductory leadership concepts course in our undergraduate program, and present outcomes and implications of this practice. Lastly, we provide recommendations for leadership educators who would like to implement mind mapping as a practice for supporting students when integrating leadership theories and concepts holistically into their lives.

Literature Review

The teaching and learning methods used in any course have an impact on the student learning experience, and there are many methods to choose from when planning a lesson. Popular methods include: lecturing, class discussion, case studies, and role-play activities (Guthrie & Jenkins, 2018). Mind maps have also become a popular study tool in recent years, as a reflective strategy (Wilson et al., 2022), and to help students connect separate ideas and apply that knowledge (Mesa, 2018), as well as

introduce knowledge in a more sustainable way (Lozano et al., 2017).

Mind mapping is a brainstorming technique that allows people to develop their ideas by writing down a central idea and developing a “map” of the associations their mind makes with it (Jones, 2012). These associations can be in the form of pictures, different colors, or words connected to the central idea (Keleş, 2012). A mind map is often compared to a tree, with the central idea being the root and the related ideas being branches. In addition to brainstorming, mind maps may be used as a pedagogical tool to generate creative and active learning, help students “recall and connect previous knowledge,” organize information, and enhance critical thinking (Tavares et al., 2021). As technology has developed, it is becoming more common for students to use computer programs, rather than a pencil and paper, to create mind maps (Su et al., 2022), and therefore mind maps have become a more popular activity in the academy.

Tony Buzan popularized mind mapping as a tool to encourage critical thinking in students (Buzan & Buzan, 1996). Since then, mind mapping has been used to improve the critical thinking skills of nursing students (Wu & Wu, 2020), teach mathematical principles (Loc & Loc, 2020), and develop English writing skills (Gou et al., 2021). This strategy allows students to practice active learning and creativity while learning and reviewing information (Tavares et al., 2021). Mind maps give students the opportunity to analyze presented information and find new associations between seemingly unrelated ideas (Davies, 2010). This is considered an active learning strategy that helps students build their knowledge in a way that makes sense to them (Hegarty-McGinley, 2018).

Guthrie and Jenkins (2018) posit that developing knowledge of leadership through theories and concepts “represents a critical part of leadership education,” and that learning occurs “when applying leadership theories and concepts to personal experiences” (p. 59). Mind mapping is an active and practical, pedagogical tool that has been effective in other disciplines, and so in this article, we describe the use of mind mapping within an undergraduate leadership program to help students make connections between leadership theories and their lives, and subsequently, develop their knowledge of leadership.

Context of Application

To understand the outcomes of the mind mapping assignment discussed in this manuscript, it is important to understand the context in which it is administered. Fort Hays State University is a midwestern, public state university, which offers programs in three modalities: on-campus face-to-face, online, and through cross-border partnerships. Offering programs in 31 academic departments, Fort Hays State University offers the only undergraduate major in organizational leadership in the state. In addition, the Department of Leadership Studies offers a minor in leadership studies as well as multiple academic certificates. In total, the Department serves over 500 undergraduate students across all leadership programs, with around 200 students pursuing academic programs domestically on-campus or online, and a little over 300 earning their degree through a cross-border program.

The mind mapping assignment is the culminating assignment in our course, Introduction to Leadership Concepts, which serves as the first core course in our undergraduate major program, minor program, and academic certificate, and is a prerequisite for

most undergraduate courses in our programs. The purpose of the course is to introduce students to historical and contemporary theories, concepts, and issues associated with the leadership studies discipline; a multitude of approaches to leadership are covered. The course is offered on-campus and cross-border in a 16-week format, and online in an eight- or 16-week format. Students who participate in the course on-campus are typically of “traditional” student age, between 18-24 years. The online course includes some traditional students but is largely comprised of adult learners—who are defined as those age 25 and above (Chen, 2017; Osam et al, 2017).

The Introduction to Leadership Concepts course is organized into three units—each covering a sub-set of theories and concepts: (1) leader-centric, (2) relational, (3) context and process. See Table 1 for a list of concepts taught in the course, which are listed as conceptual categories (e.g., ethical leadership) rather than specific theories, models, or frameworks taught within that category (e.g., Kidder’s four patterns of ethical dilemmas).

Table 1
Leadership Concepts Taught in Introductory Course

Unit 1: Leader-Centric	Unit 2: Relational	Unit 3: Context & Process
Management vs. Leadership	Followership	Ethical leadership
Trait theory	Servant leadership	Toxic leadership
Charismatic leadership	Transactional leadership	Authentic leadership
Emotional intelligence	Transformational leadership	Adaptive leadership
Behavior theory	Power	Organizational, group, & national culture
Situational/contingency approaches	Influence	Diversity
	Leader-member exchange	
	Change	
	Social change	
	Civic/citizen leadership	

Description of Application

This mind map assignment is designed to help students visualize the connections between leadership theories and concepts and their own lives. Students are instructed to identify an area of their life—to establish a specific context—and draw connections to leadership. We encourage students to design “free-form” maps, meaning they have an unconstrained structure, allowing the student to “go where they want” with the map. Because this approach might make it difficult for the instructor to interpret the connections a student makes, students submit an essay alongside their map describing the connections and how and why the leadership concepts apply to any particular piece of life.

Assignment Instructions. There are three primary components to the assignment: (1) the mind map, (2) a description of the map and reflection on connected leadership concepts, and (3) a brief discussion on their holistic approach to leadership. When creating the mind map, students are asked to connect an area of their life to a minimum of five concepts taught in the introductory course. Our introductory concepts course covers a multitude of theories, models, and general concepts (see Table 1), including: early and contemporary trait and behavioral theories, contingency and situational models, shared leadership concepts (transformational leadership, servant leadership, adaptive leadership), followership, power, influence, organizational culture, leader-member exchange, diversity, and global leadership, so a minimum of five connections is easy to achieve for the students.

Students may use a variety of online platforms to aid this process such as Microsoft PowerPoint, Lucidchart, Plectica, MindMup, Visme, and Mind Meister. Many online platforms are available for free to the students. As noted above, we ask students to identify a piece of their life for which to establish leadership connections in order to set a context for their perspective. Some students select a specific organization they are involved in through work or personal connections, or they may select to connect leadership concepts to their family or friend groups. Once a context is established, it becomes the center “bubble” of the map, and they connect various concepts from that vantage point. We discuss the most common contexts and the leadership connections made in students’ maps later in this article.

Part two of the assignment requires students to describe their connections, with a thorough rationale and reflection on how the leadership concepts map to their life. The description of the map directs the reader on how to follow the connections, while the critical reflection seeks to discuss the connections in greater depth. For example, if a student creates a connection between their part-time job manager and the concept of power, students are expected to discuss *how* and *why* the connection to power is relevant, and how it impacts this portion of their life. In this instance, we would expect the student to specify the base of power (i.e., legitimate, coercive, referent, etc.) through which their manager operates, and what it is like, as an employee, to interact with another person who holds that power. Typically, this piece of the assignment is written in about four to six pages, double-spaced.

The final portion of the assignment asks students to define leadership in a personally holistic manner. Essentially, we ask, “Now that you know about all of these concepts, how do YOU define leadership?” This is usually a struggle for our students, as there are many perspectives through which to study leadership, and creating a personal point-of-view on the subject can be challenging. Considering leadership scholars and practitioners have chosen to adopt several definitions for leadership, we cannot be surprised our own students find this a difficult endeavor. We will discuss the outcomes of this particular portion of the assignment later in this article.

At the end of the semester, we also ask our on-campus students to share their map during the final class period of the semester. Though this presentation is not evaluated for a grade, it allows students to recognize the connections they have with each other, in addition to the connections they have to leadership.

Each portion of the assignment is evaluated using an analytic rubric (Figure 1), which specifies multiple levels of achievement the student can attain.

Figure 1
Grading Rubric for Mind Map Assignment

	Distinguished	Proficient	Apprentice	Novice
Part I: Mind Map 25 pts	Strong thought and effort evident in the mind map. Evidence of critical thought and numerous connections. Student makes five or more connections to leadership content.	Clear thought and effort evident in the creation of the mind map. Student makes four connections to leadership content.	Minimal effort in creation of the mind map. Student makes two-three connections to leadership content.	Little to no mind map is provided. Student makes only one connection to leadership content.
Part II: Explanation 20 pts	Clear and logical explanation of the mind map provided.	Clear and logical explanation of the mind map provided.	Minimal explanation provided. The mind map is still relatively unclear.	Little or no explanation of the mind map.
Part II: Reflection 35 pts	Strong and thoughtful connections to previous leadership theories and concepts discussed in the class. Understanding of leadership theories and concepts evident through detailed discussion of how and why the connections are made. Strong practical application discussed.	Clear connections to leadership theories and concepts discussed in the class. Some understanding of leadership theories and concepts evident through adequate discussion of how and why the connections are made. Some practical application discussed.	Minimal connection to leadership theories and concepts discussed in the class. Only brief discussion of how and why the connections are made.	Little or no reflection on leadership theory or concepts. Does not reflect on the leadership content or discuss how or why the connections are made.
Part III: Integration 10 pts	Strong and thoughtful ability to synthesize leadership theories and concepts into a more complete and/or comprehensive understanding of the leadership process. Strong connections to personal life.	Clear ability to synthesize leadership theories and concepts into a more complete and/or comprehensive understanding of the leadership process. Some connections to personal life.	Minimal ability to synthesize leadership theories and concepts. Few connections to personal life.	Little or no ability to synthesize leadership theories and concepts. Little or no connections to personal life.
Writing Quality (paper only) 10 pts	No formatting or grammatical errors. Meets minimum requirements. All sources are cited correctly within the text and on a reference page in APA format.	Few formatting errors and/or grammatical errors. Meets minimum requirements. All sources are cited correctly within the text and on a reference page in APA format.	Some formatting errors and/or grammatical errors. Does not meet minimum requirements. Sources are cited on a reference page.	Major formatting errors and/or grammatical errors. Does not meet minimum requirements. No sources are cited.

Faculty Approaches to the Assignment. Because this assignment serves as a culminating piece of the introductory course, faculty introduce the guidelines and expectations early in the term. For example, during a 16-week term, the assignment is introduced during week six of the class, at the conclusion of the first course unit. Students are encouraged to begin thinking about a context on which to base the map at that time, select an online platform with which to build the map, and build the map piece-by-piece throughout the rest of the semester. Of course, as faculty with years of experience, we recognize that while we encourage students to begin this work early, it is not necessarily likely they will do so. With that said, we often incorporate informal check-ins with students to ensure they haven't "forgotten" about the requirement. We usually do this at the end of the second unit, and mid-way through the third unit.

One way to conduct an informal check-in is to allow students some time in class, or in an online discussion board, to brainstorm contexts and connections for their map. We cannot underestimate the power of communal brainstorming for this assignment; bouncing ideas off of one another helps students formulate their approach to the map. Faculty also allow work time during class to give students the opportunity to clarify expectations and ask questions toward the end of the term.

Moreover, mind mapping is a new concept to most students in this course; therefore, providing opportunities for students to create mind maps in class can give them practice in mapping. For example, one of the authors has implemented an in-class activity for on-campus students to map their personal identities during the course chapter on diversity and leadership. Referring to Loden's primary and secondary dimensions of identity (see Loden, 1996), students practice the process of mapping by identifying their own dimensions and mapping each one to themselves. Doing this activity has helped students feel more comfortable with the practice of mind mapping prior to formulating their final mind map assignment.

Outcomes and Implications

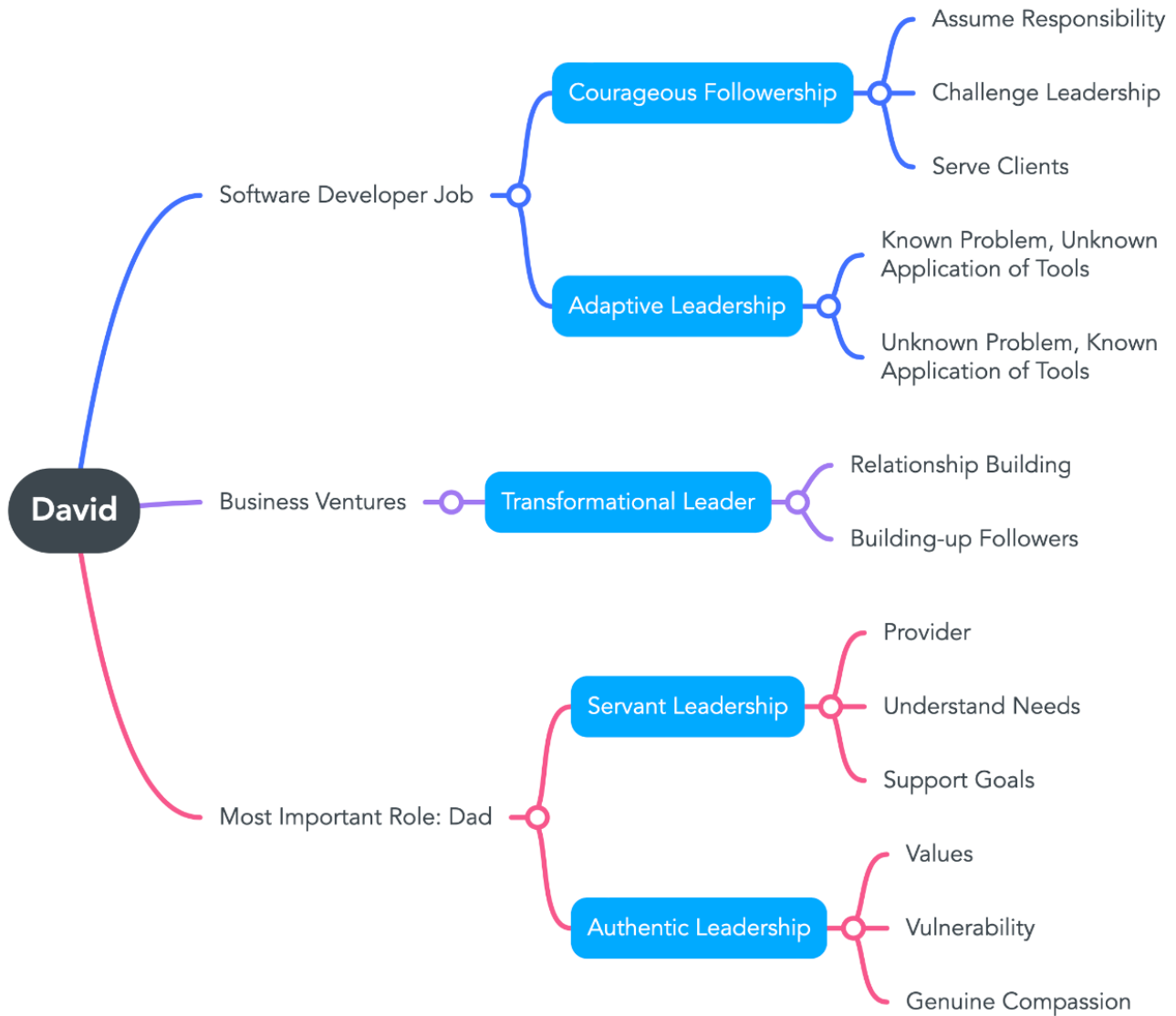
We reviewed 99 mind map assignments submitted in our on-campus and online courses in the spring 2022 semester to determine whether this assignment is effective in helping students connect a holistic view of leadership to their life. We examined three primary components of the submissions: (1)

how students chose to organize their mind map, (2) the leadership concepts students displayed in their mind maps and how they are applied, and (3) how students defined their personal holistic approach to leadership.

Organization of Mind Maps. There were three ways students chose to organize their mind maps: (1) placing themselves at the center of the map, (2) placing an organization at the center of the map, and (3) placing themselves or an organization at the center of their map but, with a metaphorical representation.

Organizing with the Self. The most common way students organized their mind map was to put themselves at the center, or as the primary foundation, of the map, and think about their life as a whole, rather than focusing on one area. Typically, each branch related to another area of their life such as their family, social groups, or organizations. These maps usually featured at least one theory for each branch of their life. For example, a student might map their family and connect authentic leadership to describe their mother; they may also include a student organization they are involved in and connect types of power to describe the officers in the group. Figure 2 displays a mind map created by David, a student who aligned both his personal and professional roles to multiple leadership approaches.

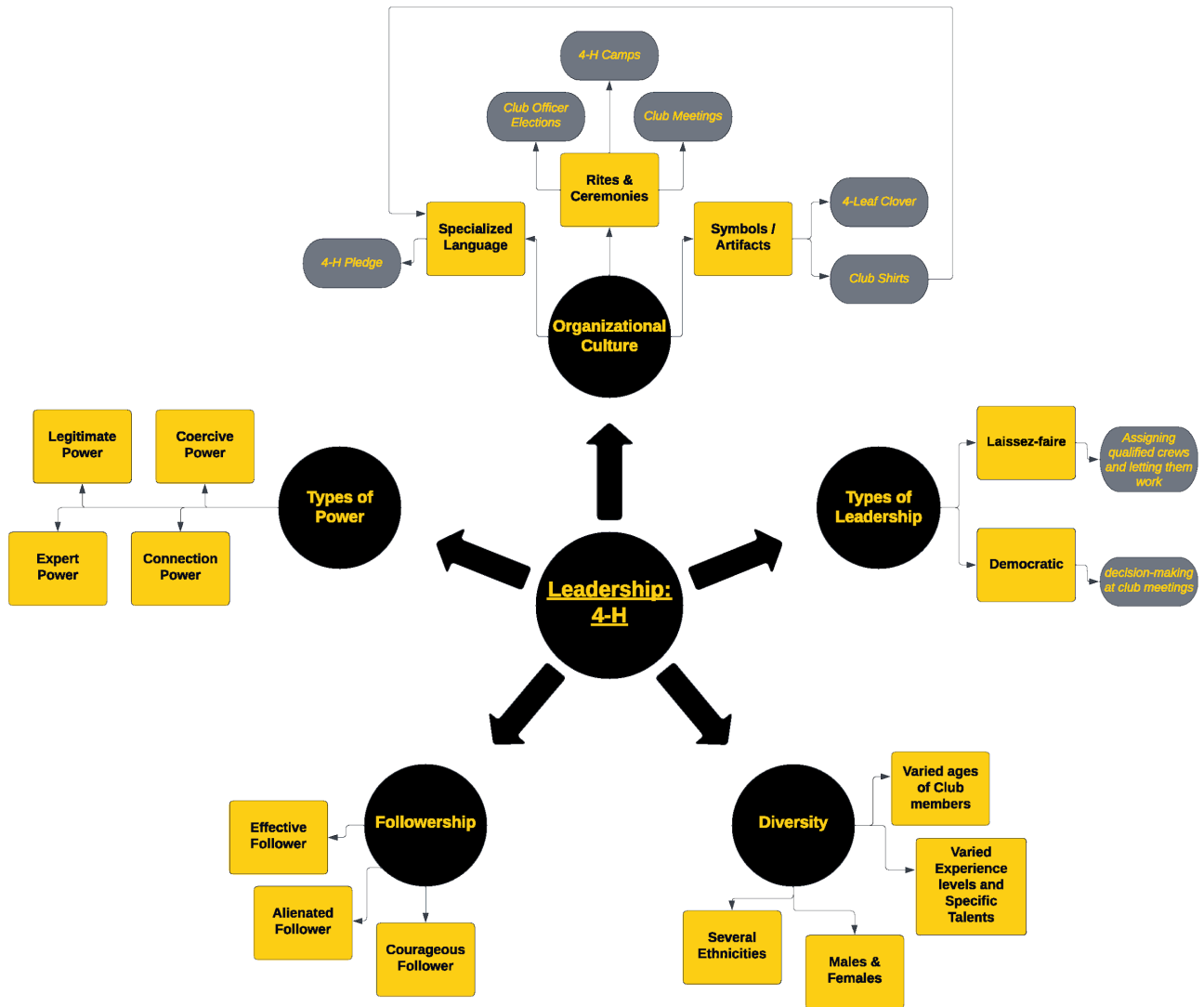
Figure 2
David's Personal Mind Map



Organizing with an Organization. Another common way students organized their map was by putting a group or organization at the center. For example, student athletes often put their teams at the center; the branches of the map typically related to people within that team such as a coach, themselves, a captain, and upperclassmen. Students also placed

organizations in which they are involved in the center. Figure 3 provides an example through which a student involved in 4-H defined multiple aspects of the organization and leadership concepts such as power, followership, and organizational culture. Adult learners often applied this method in the contexts of their workplace.

Figure 3
4-H Organization Mind Map



Organizing with Metaphors and Images. A less common, though notable, method in which students organized their map was to create an image or metaphor to design their map. For example, one student mapped a house where each element (the foundation, walls, windows, and roof) represented different leadership theories and concepts. Another student designed a butterfly; the wings symbolized two major elements of her leadership practice, and the center of the butterfly and the antennae represented her values and beliefs that founded her leadership practices. Some students also used

images within their map to illustrate connections to leadership theories or concepts. For example, one student described symbols related to organizational culture, and she included several images representing the cultural symbols of the Scouts of America organization. Figure 4 represents a metaphorical map from a student involved in the Future Farmers of America (FFA) organization; she created her map in the shape of an ear of corn, which is a symbol included in the FFA emblem (FFA, 2022).

Leadership Concepts and Applications.

Leadership concepts. Students chose to include a wide variety of leadership concepts in their mind maps. In our review, we found over 20 concepts were mapped, with the most common concept being power, followed by servant leadership, followership, and behavioral theories. The least commonly mapped concepts were social change, charismatic leadership, and management versus leadership. While one may assume students chose to map the concepts most recently covered in the course, we discovered students mapped concepts found in all three units of the class (see Table 2), suggesting this assignment challenged students to apply, comprehensively, a variety of leadership theories and concepts—historical and contemporary—in their map. Overall, students included an average of 4.71 leadership concepts in their maps, with the most being seven theories used and the least being one.

Table 2
Frequency of Leadership Concepts Cited in Student Mind Maps

Leadership Concept	Frequency in Maps
Unit 1: Leader-Centric	
Behavioral theory	31
Emotional intelligence	22
Trait theory	19
Situational/contingency approaches	17
Management vs. Leadership	5
Charismatic leadership	4
Unit 2: Relational	
Power	48
Servant leadership	39
Followership	32
Influence	28
Transformational leadership	27
Change	14
Civic/citizen leadership	16
Transactional leadership	7
Social change	1
Unit 3: Context & Process	
Authentic leadership	28
Organizational, group, & national culture	26
Adaptive leadership	22
Ethical leadership	19
Diversity	19
Toxic leadership	9
Leader-Member Exchange	6

Application of concepts. Students applied theories and concepts in multiple ways throughout their maps. The students who chose to center themselves in their mind maps often used the people in their lives to exhibit their chosen leadership theories. For example, students often chose to connect leadership concepts to their family members, followed by friends and coworkers. Notably, when students included their family members in the map, they often connected their mothers with servant leadership and their fathers with the use of power. Some students also chose to connect themselves directly to leadership theories. For example, Figure 2 demonstrates how one student, David, considers himself a servant leader because he is a provider, understands others' needs, and supports others' goals. Servant leadership was one of the most common connections students made to themselves, along with followership.

Students who placed an organization at the center of their map often took the opportunity to discuss aspects of the organizational culture. As shown in Figure 3, this student referred to mechanisms of culture to describe aspects of the organization; they noted rites and ceremonies, symbols, and the specialized language of 4-H. Further, the student identified leadership styles others used at different points in 4-H operations. Power was also a popular topic among maps aligned with organizations, as students often noted the types of power held by leaders of the organization (see Figure 3), as well as the influence tactics they may use (see Figure 4).

A noticeable trend among the use of the most cited concepts includes connecting those concepts to individuals or specific roles rather than the process or activities associated with leadership. For example, when making connections with power, students often identified a specific person in their life or organization and explained the types of power that person holds. Similarly, with servant leadership, authentic leadership, and various leadership traits or behaviors, students identified individuals who exemplified that approach to leadership. This approach to designing their map might imply that students continue to view leadership from a primarily leader-centric perspective. Perhaps this is because historical theories are leader-centric and are taught in the first unit, which is heavily aligned with popular understandings of leadership. While we shift to contextual/process perspectives later in the semester, it may be difficult for students to fully shift perspectives away from foundational leader-centric theories. It is worth exploring whether a shift in the order of our course units would make an impact on student understanding of contemporary approaches.

Personal Holistic Approaches. To better understand the outcomes of the mind map assignment, we examined how students viewed leadership theories and concepts before and after designing their map. An exam is given at the end of each unit, so we added an essay question to the unit three exam which included the same prompt as students would later answer in their mind map essay: "Describe how you would connect the various theories we've learned this semester into a holistic approach to leadership." We reviewed the exam responses and compared them to the responses in the mind map paper for patterns/themes.

Pre-Assignment Exam. The exam was the first time the students were asked to connect theories to create a holistic approach to leadership. Because this was on an exam, they did not have time to prepare a response or review the concepts within their notes. In reviewing the answers, we noticed several patterns.

- Students cited theories and concepts used more recently (likely because they were on the exam).
- Theories and concepts concerning adaptation were particularly popular. Students often discussed the need to "adapt to [the follower's] needs," and be prepared to adapt to "new goals and expectations" as a project evolves. This often did not include reference to a specific theory or model covered in the course.
- Students included values and ethics into a model of holistic leadership. According to students, leaders should be able to "integrate their value[s] into their everyday actions" to inspire followers to do the same. They also explored the need for leaders to "define [their] values" and voice those values to their team members.
- The majority of students commented on only one to two theories or concepts.
- More students left this essay question unanswered, compared to other essay questions on the exam.

Mind Map Essay. After using the mind map to connect leadership theories and concepts they have seen in their own lives, students were able to create a larger and more holistic view of leadership. Their responses were more varied and more intentionally written than the exam responses. In the essay portion of their mind map, students wrote about a variety of concepts covered across the class curriculum, from all three units of content. For example, the first unit in the class is leader-centric

theories, and students often incorporated statements about the traits and behaviors of a leader within their definition. Leaders who can “change their leadership style based on their surroundings” are considered successful as well as leaders who possess “good traits” for leadership.

The second unit in the class focuses on relational theories, and students focused on followership and change. Students included followers in their holistic view of leadership and put an emphasis on “valuing” their followers and communicating clearly with them. Some students also included the idea that “being a good follower is the first step” to becoming a good leader. The second relational theme they discussed was the idea of servant leadership. While in the maps many students connected this theory to their mothers or their pastor, this approach was highly referenced as their primary approach to leadership.

Students also brought forward theories from the final unit on context and process, primarily concentrating on process. Students often focused on values, authentic leadership, and adaptive leadership. One student commented that it is important for a leader to “articulate [their] values and expectations” to their team in order to create a positive environment. Other students commented that values are “important” in the leadership process. Holistic leadership also includes authenticity on the part of the leader. It “bring[s] honesty to the work environment” and requires a leader to “be authentic with their values.” The theme of adaptability was also popular in the student essay responses. It is crucial for a leader to “recognize what the group needs” when facing challenges.

Implications. Our intention was not to use the response to the exam and essay prompts as pre/post data to explore scientific variables associated with student mind mapping, but rather to explore the approaches students took to thinking holistically about theories and concepts learned in the course. When the students were asked to describe theories and concepts holistically in the exam, they had a difficult time drawing upon specific approaches taught in the course and making concrete connections to their lives. While it may seem obvious that students would respond to the prompt with more thoughtfulness and concreteness in the mind map assignment, we point to this as the primary implication of our application.

Students need intentional time to reflect on what they have learned—especially as it relates to themselves—and mind mapping provides that structured opportunity. In our dialogue with students

about this assignment—before and after class or through email—we found selecting the organizing structure of the map is one of the most difficult steps. Many students struggle to begin thinking about how leadership theories and concepts can be integrated into their lives. As they grapple through organizing the map and work to connect the theories and concepts into a comprehensive visual, it becomes clearer on how they would connect theories and concepts holistically into an area of their lives.

Recommendations

The application of a mind map tool provides a variety of benefits to leadership educators. While this article describes the integration of leadership theories and concepts, it is certainly not limited to that subject matter. For example, mind maps could be used to assist students in understanding the interaction of various leadership styles or personalities, deepen the exploration of cross-cultural differences, or map the working relationship between team members. It also allows educators to diversify their teaching strategies and better serve students with diverse learning styles (Guthrie & Jenkins, 2018). For those interested in implementing mind maps, clarity is an important consideration. As described above, prior to presenting the idea of mind mapping to students, one should carefully think through the reason behind the use of the maps, how the work will be described and understood by the student, and how it will be evaluated.

Limitations of the work described in this manuscript include that there is little to no evidence of *true* understanding. While the comparison of the exam responses to the mind map essays showed an expanded use of theory, there was no attempt to demonstrate the conceptual framework in any type of applied setting. It would be difficult to replicate the results of this work due to the varied nature of leadership programs and curriculum design (Greenleaf et al., 2018). Despite these limitations, future research could easily build on the foundation provided by this work to experiment with or improve the use of mind maps. It would be worthwhile to delve deeper into how these reflections shape students’ long-term perception and understanding of leadership, as well as how that understanding manifests itself in individual attempts to engage in the act of leadership.

Conclusion

Mind mapping is a pedagogical tool that helps students brainstorm how to organize information in a way that incorporates creative and active learning, as well as critical thinking. We shared an example of using mind maps in an undergraduate course focused on teaching leadership theory—including the assignment description, rubric, and a discussion of the application broadly. We discussed how we have seen students organize their maps based on themselves, organizations, or metaphors to integrate theories into their lives. Through this practice, we found that mind mapping leadership theories and concepts to areas of their life can develop students' ability to describe how leadership theories operate more holistically in their life, rather than narrowing their understanding to one or two popular concepts. Thus, we recommend leadership educators consider mind mapping as a pedagogical tool to teach leadership theories and concepts that require understanding in a broader context. Future research on this learning tool in leadership education could also help us understand the impact it has on student learning outcomes.

References

- Buzan, T., & Buzan, B. (1996). *The mind map book: How to use radiant thinking to maximize your brain's untapped power*. Plume.
- Chen, J. C. (2017). *Nontraditional adult learners: The neglected diversity in postsecondary education*. SAGE Open. <https://doi.org/10.1177/2158244017697161>
- Davies, M. (2010). Concept mapping, mind mapping and argument mapping: What are the differences and do they matter? *Higher Education*, 62(3), 279–301. <https://doi.org/10.1007/s10734-010-9387-6>
- Dugan, J. P. (2017). *Leadership theory: Cultivating critical perspectives*. Jossey-Bass.
- Ebener, D. R., & Jalšenjak, B. (2021). *Leadership for the greater good: A textbook for leaders*. Paulist Press.
- Future Farmers of America [FFA]. (2022). *Official FFA manual*. <https://www.ffa.org/official-manual/>
- Gou, X., Zhang, P., & Jia, W. (2021, May 25-27). *Mind map and its application in English teaching* [Conference session]. International Conference on Computers, Information Processing and Advanced Education, Ottawa, ON, Canada. <https://doi.org/10.1145/3456887.3457451>
- Greenleaf, J., Kastle, S. D., Sramek, K., & Brungardt, C. (2018). Majoring in leadership: Issues of consistency and credibility. *Journal of Leadership Studies*, 12(2), 53.
- Guthrie, K. L., & Jenkins, D. M. (2018). *The role of leadership educators: Transforming learning*. Information Age Publishing.
- Hegarty, S. (2018). *An investigation into the impact of instructional leadership methodologies, specifically; framing questions and wait time, mind map, group work and team games tournament on students' academic performance and wellbeing in a sample of Irish Post Primary history students* [Unpublished doctoral dissertation]. Letterkenny Institute of Technology.
- Jones, B. D., Ruff, C., Snyder, J., Petrich, B., & Koonce, C. (2012). The effects of mind mapping activities on students' motivation. *International Journal for the Scholarship of Teaching and Learning*, 6(1). <https://doi.org/10.20429/ijsotl.2012.060105>
- Keleş, Ö. (2012). Elementary teachers' views on mind mapping. *International Journal of Education*, 4(1), 93-100. <https://doi.org/10.5296/ije.v4i1.1327>
- Komives, S. R., & Sowcik, M. (2020). The status and scope of leadership education in higher education. *New Directions for Student Leadership*, 2020(165), 23-36.
- Loc, N. P., & Loc, M. T. (2020). Using mind map in teaching mathematics: An experimental study. *International Journal of Scientific and Technology Research*, 9(4), 1149-1155.
- Loden, M. (1996). *Implementing diversity*. Irwin
- Lozano, R., Merrill, M., Sammalisto, K., Ceulemans, K., & Lozano, F. (2017). Connecting competences and pedagogical approaches for sustainable development in higher education: A literature review and framework proposal. *Sustainability*, 9(10), 1-15. <https://doi.org/10.3390/su9101889>
- Nelson, T., & Squires, V. (2017). Addressing complex challenges through adaptive leadership: A promising approach to collaborative problem-solving. *Journal of Leadership Education*, 16(4), 111-123. <https://doi.org/10.12806/V16/I4/T2>

- Northouse, P. (2021). *Leadership: Theory and practice* (9th ed.). Sage.
- Olaya Mesa, M. L. (2018). Reflective teaching: An approach to enrich the English teaching professional practice. *HOW Journal*, 25(2), 149–170. <https://doi.org/10.19183/how.25.2.386>
- Osam, E. K., Bergman, M., & Cumberland, D. M. (2017). An integrative literature review on the barriers impacting adult learners' return to college. *Adult Learning*, 28(2), 54-60. <https://doi.org/10.1177/1045159516658013>
- Su, Y.-S., Shao, M., & Zhao, L. (2021). Effect of mind mapping on creative thinking of children in Scratch Visual Programming education. *Journal of Educational Computing Research*, 60(4), 906–929. <https://doi.org/10.1177/07356331211053383>
- Tavares, L. A., Meira, M. C., & Amaral, S. F. (2021). Interactive mind map: A model for pedagogical resource. *Open Education Studies*, 3(1), 120–131. <https://doi.org/10.1515/edu-2020-0145>
- Wilson, R. C., Crenshaw, J. T., & Yoder-Wise, P. S. (2022). Call to action: Prioritizing reflective practices for leadership success. *Nurse Leader*, 20(3), 258–264. <https://doi.org/10.1016/j.mnl.2022.01.008>
- Wu, H.-Z., & Wu, Q.-T. (2020). Impact of mind mapping on the critical thinking ability of clinical nursing students and teaching application. *Journal of International Medical Research*, 48(3), 1-8. <https://doi.org/10.1177/0300060519893225>