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INTERDISCIPLINARY LEADERSHIP: A Leadership Development Model for Scholar-Practitioners

Abstract

Leadership scholar-practitioners seldom need to be sold on the benefits of working together. Rather leadership educators want to know how to teach adult leadership scholar-practitioners how to work together across differences. The aim of this paper is to guide leadership development practitioners on how to nurture leadership that can address the complex problems the changing global arena demand of us today and into the future. We argue when preparing adult leadership scholar-practitioners, using adult learning theories and paying attention to the interdisciplinary roots of the field of leadership might lead to better learning and engagement with real world challenges. In this paper we present a leadership development model we call interdisciplinary leadership. First, we discuss the interdisciplinary roots of leadership. Second, we describe interdisciplinary leadership as a tapestry – an intricate combination of identities, practices, and outcomes used to prepare people to address complex problems. Finally, we describe the mission, structure, curriculum, and instructional strategies that can be used by leadership educators when applying interdisciplinary leadership. This model acknowledges the identity, practices, and outcomes needed to develop scholar-practitioners of leadership and provides practical techniques to help leadership educators prepare leaders to work together across differences to address complex problems.

Keywords: leadership development, interdisciplinary leadership model, complex problems, scholar-practitioner, adult development

Introduction

There is an increasing emphasis that siloed, centralized efforts do not create the innovative solutions that will address the problems that the changing global arena faces today and into the future (Ferraro et al., 2015; Rittel & Webber, 1973). Leaders from diverse disciplines must be able to effectively work together on complex problems; however, it is not enough to assume that merely bringing people together from different disciplines in the same space will result in successful collaboration (Strijbos, 2017). Being able to work together across differences is an emergent process that takes subtle, textured action practiced by individuals who embody a highly situated mindset (Bammer, 2016; Carroll et

al., 2008; National Research Council, 2015; Strijbos, 2017; Wheatley, 2006).

There are many terms used to denote efforts to effectively work together on complex problems, for example team science and collaboration (Chrislip & Larson, 1994; Fiore, 2008; National Research Council 2015). However, as both scholars and practitioners recognize, various disciplines must work together to create new ideas that will help address complex problems. The use of interdisciplinary perspectives is appearing more frequently throughout the leadership literature (e.g., see Liu et al., 2021). While interdisciplinarity appears more frequently in both formal and informal writing, what remains unknown are the practical techniques that leadership educators can use to develop leaders who can effectively utilize interdisciplinarity to address leadership challenges.

The conditions that bring about the coordinated and integrated activity between people from differing disciplines requires a systems-level understanding that cuts across disciplines, sectors, and differences (Strijbos, 2017). This means when it comes to the leadership approaches used when trying to work with people across differences there is a need to think less about individuals as leaders and more about leadership as 'more than the sum of the parts'. For example, the leadership-as-practice perspective within the field of leadership (Carroll et al., 2008; Raelin, 2017) is a dynamic approach to leadership that conceptually works with, not against, the complexity and uncertainty of complex problems that require input from diverse perspectives. It is also useful, as Edgar Schein says, "to examine the dilemmas of the scholar-practitioner, because it highlights the complexity of both what is science… and what is practice (2009, p. 142). As Day et al., (2021) suggest developing leadership scholar-practitioners that embody and embed diverse, scholar-practitioner perspectives will take a novel leadership development approach that is able to weave together learning experiences that look beyond individuals, to groups and systems.

The purpose of this paper is to describe one such leadership development approach. Interdisciplinary leadership is a leadership development model that embraces the potential of complexity, diversity, and integration to prepare scholar-practitioners to study and practice a different kind of leadership. Our aim in this paper is to provide guidance for leadership scholars and educational practitioners on how to nurture the kind of leadership that is needed for the complex problems that the changing global arena demands of us today and into the future. We will do this by first acknowledging and defining the importance of adult, graduate leadership learning and education. Second, we describe the current conception of interdisciplinarity in the leadership literature. Third, we use the metaphor of a tapestry to describe how the interdisciplinary leadership development model weaves a tapestry – an intricate combination of identities, practices, and outcomes – that move beyond a focus on the individual to acknowledge the groups and systems that are needed when addressing complex problems. Finally, we will provide examples of specific instructional strategies that can be employed by leadership educators when applying the interdisciplinary leadership development model.

Graduate Leadership Learning and Education

The concept of interdisciplinary leadership is not unique to graduate leadership learners and indeed, applies with equal importance to an undergraduate-learner landscape. However, the current conceptualization and application of an interdisciplinary leadership development model was born from a scholar-practitioner, graduate education lens (Bloomquist et al. 2018). The model applies an andragogical approach to leadership learning. This focus around andragogy, or adult learning theory (Knowles et al., 2015) is an important element of adult and graduate leadership learning. Among others, five characteristics illuminate the characteristics of a graduate or adult learner: as someone who (1) has a unique and independent self-concept who can direct his or her own learning, (2) has a deep reservoir of life experiences, (3) has learning preferences and needs related to his or her changing social roles, (4) is interested in immediate application of new knowledge, and (5) has an internal rather than external motivation to learn (Knowles, 1980; Merriam, 2001). These foundational

assumptions about adult or graduate learners were important in the conceptualization of the interdisciplinary leadership development model.

Indeed, doctoral leadership education has experienced a profound shift over the last several decades and one of the outcomes has been a surge in graduate-level leadership programs and a mainstream acceptance of the scholar practitioner model of doctoral study (Boud & Tenant, 2006; Boyer, 1990). As the call for integrated leadership education grows across fields of graduate study, leadership scholars such as Sheridan et al. (2019) acknowledge that the cross-professional challenge that graduate students will face cannot be addressed by individual leaders or by "a privileged few" (p. 136). In addition to stand alone doctoral and masters level graduate leadership training programs, fields of professional practice such as medicine and public health (Fennimore et al., 2019; Lachance & Oxendine, 2015; True et al., 2020;) are increasingly integrating leadership learning and development into their formal and informal curricula – an important acknowledgement that practical or clinical skills are rarely sufficient. Although pedagogical approaches to leadership learning in high school and undergraduate programs remain important and are well-studied, Sheridan et al. (2019) note that "an adult mind...is increasingly capable of complex and dialectical thinking with a notion of self that arises from dynamic relationships and being in community with one another" (p. 137). They go on to suggest that leadership education and training should not simply be a convenient byproduct of graduate programs, but instead a measurable outcome of graduate education through an "intentionally designed curricular experience" (p. 138). We tend to agree.

Interdisciplinarity Within Leadership Literature

From the perspective of leadership-as-practice, leadership is for everyone and can be practiced by anyone at any time (Carroll et al., 2008; Lowney, 2011; Raelin, 2017). Leadership happens within an individual, between individuals, within groups, between groups, and at organizational levels

(Bryman et al., 2011). Although the field of leadership has found supporting evidence that various leadership theories and constructs do create effective change, no one leadership theory is the right approach for every situation. As a result, there is a need for individuals to thoughtfully consider the subtly, context, and complexity of the multiple situations at hand when choosing actions, inactions, and reactions. This ability to integrate knowledge across multiple contexts is a key interdisciplinary skill.

Interdisciplinarity is valuable in a different way than transdisciplinarity or multidisciplinarity. Interdisciplinarity is about creating something by thinking across disciplinary boundaries (Choi & Pak, 2006; Welch, 2009). This idea of integration or synthesis is what separates interdisciplinarity from multidisciplinarity, "where the latter is only about the juxtaposition of different disciplines in understanding a problem or phenomenon while the former tries to integrate perspectives" (Trinidad, 2017, p. 6). Where interdisciplinarity is the "synthesis of two or more disciplines, establishing a new level of discourse and integration of knowledge" (Choi & Pak, 2006, p. 355), transdisciplinary is the transfer or borrowing of knowledge from one field or discipline to another field or discipline.

With interdisciplinarity, members from different disciplines share work on the same project to focus on the reciprocal action of the group members toward the shared goal of addressing a common, complex problem (Welch, 2009). There is a blurring of disciplinary boundaries because participants surrender some aspects of their own disciplinary role; but still maintain a discipline-specific base. An interdisciplinary process is interactive, integrative, and collaborative resulting in integration and synthesis wherein individuals learn about and from each other while developing internal coherence (Welch, 2009). Interdisciplinarity has a pluralistic and diverse vision of the world that is interactive, not reductive, and seeks to contribute to matters of shared concern (Kramnick, 2018). When it comes to the outcome of interdisciplinary work, the different combinations of ideas from the different individuals creates originality and distinctiveness that is more than the sum of the individual parts (Choi & Pak, 2006). The more diversity among the different

individuals from different disciplines, the more vitality and originality emerges.

Applied to the field of leadership, it seems leadership has interdisciplinary roots (e.g., for biology, engineering, technology examples see Mwaffo et al., 2018; for economics, politics, and religion examples see Smarr et al., 2018). If the field of leadership wants to accept the idea that the roots of leadership are interdisciplinary, leadership educators will need to recognize the methods and norms that come from the different background disciplines, and intentionally build leadership up as the diverse, integrated, and emergent field of its roots. However, even if we accept the idea that leadership has interdisciplinary roots it does not mean that leadership is being *practiced* or *taught* in an interdisciplinary way. The blurring of distinctions between multi-, inter-, and trans-disciplinarity within the current leadership scholarship (i.e., Lindsay & Friesen, 2021), slow the progress that can be made toward greater acceptance of leadership and interdisciplinarity.

The long tradition of research in psychology, sociology, economics, political science, and ecology has already offered a large and growing set of insights that are applicable to leadership, from the role of social influence to the functional value of diversity (Bryman, 2011; Liu et al., 2021). And although leadership studies may lack a single unifying theory, the field borrows from and contains a body of knowledge that draws from many disciplines. We do not dispute the idea that the field of leadership studies and leadership development currently use insights, ideas, and models from multiple disciplines and bodies of knowledge in a transdisciplinary way. However, we believe, like Liu and colleagues (2021), embracing the interdisciplinary underpinnings of leadership will help the field of leadership development by paying attention to how to prepare individuals with capabilities for dealing with complex, real world situations.

There remains a lack of clarity within the leadership literature regarding the meaning and methods of understanding leadership and leadership development (see Hackman & Wageman, 2007 for a related commentary on leadership; see Day et al.,

2021 for related commentary on leadership development). Drath et al. (2008) suggest that "as the contexts calling for leadership become increasingly peer-like and collaborative" (p. 636) old ways of thinking about leaders and followers will become limiting. A new way of thinking about leadership, "would no longer necessarily involve talk of leaders and followers and their shared goals, but would necessarily involve talk of direction, alignment, and commitment" (Drath et al, 2008, p. 636). This means that the realized outcome marks the occurrence of leadership, not merely holding the identity of a 'leader' or purportedly 'practicing leadership.' In contexts that are complex, and diversity is needed, leaders need integrative thinking, and the ability to work with others in a shared, constructive, and emergent manner that leads to direction, alignment, and commitment (Nicolaides & Marsick, 2016). The emerging paradigm of leadership-as-practice (Carroll et al., 2008; Raelin, 2017) provides a direction that aligns with the interdisciplinary roots of leadership and orients leadership development practices toward a commitment to the lived experiences and everyday action faced by leadership scholar-practitioners.

As the field of leadership development continues to expand its search for approaches to adult leadership development (Day et al., 2021) that can address complexity and utilize diversity and integration, leadership scholars and educational practitioners will need to borrow from interdisciplinary studies as well as from multiple leadership approaches, e.g., understanding the typologies of interdisciplinarity (Klein, 2017); interdisciplinarity as teamwork (Fiore, 2008); and current interdisciplinary practices (Holley, 2019); complexity leadership (Uhl-Bien et al., 2007); adaptive leadership (Heifitz et al., 2009); collaborative leadership (Chrislip & Larson, 1994); team leadership (Zaccaro et al., 2001), and leadership-as-practice (Carroll et al., 2008; Raelin, 2017). We have found that by looking at leadership through an interdisciplinary lens we are better prepared to address the growing need to develop the underlying capacity of adults to work together and engage across differences in specific leadership contexts (Carroll et al., 2008; Day et al., 2021; Nicolaides & Marsick, 2016).

In the next section we will examine why complex problems call for interdisciplinarity when studying and practicing leadership. We will also begin to describe how the novel leadership development model of interdisciplinary leadership can help prepare scholar-practitioners to address complex problems.

The Nature of Complex Problems

There is a growing need for more adults to be fully conscious of the complexity of real-world problems, recognize opportunities to do something about them, and experiment and use diverse ideas to co-produce solutions. Historically, when faced with complex problems, like pandemics, separate discipline-specific leaders – a physician, an economist, a psychologist, a scientist, and a sociologist – would be asked to come up with a simple, linear solution to the problem. In these situations, the leader "remains responsible for the overall performance of the project within a traditional, linear, and hierarchical power structure" (Geerlof, 2017, p. 4). However, these complex problems (e.g., poverty, homelessness, and pandemics; Ferraro et al., 2017) often continue to persist because these adult leaders were not prepared to work together effectively. Therefore, many of the problems we face in society today are some of the same complex problems we have faced in the past—now comingled with *new* complexity (i.e., the ethics of artificial intelligence, climate change, poverty, global pandemics). To focus our attention on why a novel adult-focused leadership development approach is needed and what interdisciplinary leadership can provide we begin with a discussion around three core principles: (1) complexity exists, (2) diversity is beneficial in complex situations, and (3) where innovation is needed - knowledge can and should be integrated (Brooks et al., 2019; Page, 2017; Welch, 2009).

Complexity. When complexity increases a problem's dimensionality, and interdependencies increase to the point where no single person's repertoire will be sufficient−working together, for example in a team, will be needed. One of the most difficult problems for leadership practitioners, i.e., anyone who wants to help and who wants to make a difference (Wheatley, 2006), is defining and locating the exact problem to work on. As Rittel and Webber (1973) postulate, there are two main types of problems: tame and wicked. The types of problems that require interdisciplinarity are wicked problems. Wicked problems are complex, ill-defined, contextually grounded, and have no clear mission or solution. With wicked problems, no single person can explain how to get the answers.

Prevailing leadership theories treat leadership as an interactive process between leaders and followers (Northouse, 2016). However, these theories often assume a relatively stable social context. The disruption of complexity that has come with the rise in hyper-connected societies and increasingly knowledge-based economies (Organization for Economic Cooperation and Development [OECD], 2013) requires new, robust approaches to leadership development that can respond to rapid, new demands. These new demands require leadership scholar-practitioners to accurately diagnose the context to determine whether it calls for a leadership approach that is primarily simple, complicated, complex, or chaotic (Nicolaides & Marsick, 2016). Knowing that the best leadership choice is not always the simplest, individuals and teams benefit from expanded leadership options that can address complexity. Similarly, a complex leadership approach is often unnecessary and inappropriate in simple or complicated situations. Preparing individuals with the skills to identify the level of complexity of a problem will ultimately help them choose the appropriate leadership action—the hammer or the anvil, so to speak. No one leadership approach meets all challenges, but complex challenges require a type of approach that is more complex than it is simple (Avolio et al., 2009).

As Gott et al. (2018) suggest, "the leading-edge of leadership scholarship and teaching acknowledges complexity and calls for increased capacity for interconnectedness, systems-thinking, and inclusion" (p. 57). As with interdisciplinarity, complexity does not occur at one extreme or another, "complexity occurs in an in-between region" (Page, 2015, p. 30). In 2013 the OECD released their findings

highlighting the range of adult skills needed to meet the needs of the 21st century. The results emphasized the need for information processing skills that acknowledge the human and societal interdependence that have come with the exponential increase in the body of knowledge available to humans in technology-rich environments (OECD, 2013).

Today, no single person can independently understand the complexity and depth of knowledge across all the disciplines necessary to address wicked problems. In response to the rise in the body of knowledge and the need to focus on the interdependence that occurs in-between disciplines there has been a rise in the use of teams and the need for effective teamwork (Fiore, 2008; Page, 2017). The leadership development model of interdisciplinary leadership embraces this idea of complexity existing in the in-between, giving leadership educators and adult students the opportunity to explore at this intersection and work together with others across differences.

Diversity. With complex problems, when complexity requires teamwork, the teams must be made up of members with diverse backgrounds, gifts, and talents (Page, 2017). To address society's most difficult issues, it is not enough that teams merely include "two or more individuals who must interact and adapt to achieve specified, shared, and valued objectives" (Salas et al., 1992, p. 4). It is necessary that *diverse* teams play a central role (Page, 2017). Specifically, complex, wicked problems benefit from cognitive diversity. Cognitive diversity can improve predictions, problem solving, creativity, and outcomes by tapping into different mental models, representations, perspectives, and knowledge (Page, 2017). For complex problems, the best team will balance individual ability with collective diversity.

Most adult leadership practitioners are aware of the benefits of working together. What many leadership practitioners lack is the knowledge and skills in how to work together across differences (Mansilla, 2017; Wheatley, 2006). Many leadership theories shed light on the 'what' and 'why' of leadership, rather than the 'how'. For example, scholarship related to

shared leadership within teams, defined as "the transference of the leadership function among team members in order to take advantage of member strengths (e.g., knowledge, skills, attitudes, perspectives, contacts, and time available)" (Burke et al., 2003, p. 105) provides a strong foundation, but is inadequate. The social intelligence and cooperative work required to participate in interdisciplinary teamwork is a science and an art that has to be taught with a focus on adult learning theories and practiced with patience (Fiore, 2008; Mezirow, 1997). As noted by Raelin (2017) in the scholarship around leadership-as-practice, a shift in focus toward habits, process, consciousness, awareness, control, everydayness, and identity are needed when fostering and establishing leadership for the 21st century.

For wicked problems, where the mission is unclear and we do not know what knowledge, perspective, or model might lead to a breakthrough, we want as much disciplinary cognitive diversity as possible on each team (Page, 2017). However, interdisciplinary teamwork requires the ability to hold the paradox between courage and modesty in tension because team members must expose their exploratory thinking to others. Mezirow's (1997) adult transformational learning theory suggests, by engaging in an exchange of ideas, collectively groups of adults end up with better ideas in the end. The overarching goal of interdisciplinarity and transformational learning is the systematic integration of ideas (Newell & Klein, 1996) and the development of a new approach to understanding that emerges from diversity (Klein, 2017; Mezirow, 1997). Interdisciplinary leadership therefore includes the preparation of adult leadership scholar-practitioners from diverse disciplines to practice a form of collaborative transformational learning.

Integration. When diverse teams are needed to address complex problems, producing integrative understanding is a sought-after outcome (Mansilla, 2017). Due to the increasing amount of information available today, the ability to synthesize and integrate information becomes ever more crucial. Interdisciplinary syntheses and integration are

among the most complex endeavors that humans can attempt (Brooks et al., 2019). As Gardner (2007) explains, the process of synthesizing takes information from disparate sources and puts it together in ways that make sense to people. Interdisciplinarity entails integrating more than one perspective to generate a kind of higher-order knowledge that is more than the sum of its parts (Klein, 2017; Stein et al., 2008). The notion of integration and synergy, i.e., emergence and the capacity for broadened ways of knowing (Nicolaides & Marsick, 2016), is one of the central ideas behind the leadership development approach of interdisciplinary leadership.

The conditions that make coordinated activities successful between team members who come from diverse backgrounds are related to the level of team members' capacities for synthesis and integrative thinking (Trinidad, 2017). The complexity of wicked problems requires individuals to have flexible, adaptable, and open mindsets and to work interdependently with others that have varied types and levels of expertise (Fiore, 2008; Nicolaides & Marsick, 2016). To look at situations and problems through the lens of interdisciplinarity requires interaction, i.e., people need to communicate and collaborate across disciplines to practice integration. What emerges, according to Fiore (2008), is "a coordinated effort to synthesize concepts and methods from respective disciplines in such a way that a common but much more complex goal is met" (p. 254). Shifting the consciousness and developing the patience and social intelligence of adults for effective collaboration in interdisciplinary environments is at the heart of the interdisciplinary leadership development approach.

As we will describe in the next section, to develop adult scholar-practitioners who can practice the leadership needed for the 21st century, leadership educators need a leadership development model that moves beyond a focus on the individual to acknowledge the groups and systems needed when addressing complex problems. The vast amount of interdisciplinary knowledge from social and organizational psychology, communications sciences, and management research deserves the attention of leadership educators when developing practical techniques to promote teamwork and systems thinking.

Leadership as a Tapestry

Our aim with this novel leadership development approach is to encourage individuals to think about leadership development as a tapestry – an intricate combination of identities, practices, and outcomes used when developing adults that can work effectively to address complex problems. Just as a tapestry is a complex form of art that tells a story while also serving as a cover for furniture, walls, or floors, leadership training and development is a complex field that considers capacities, outcomes, and practices. Leadership development framed in this way is not a position or role, it is a life-long learning process, and can be an engine for innovation (Liu et al., 2021).

To prepare leadership educators to weave a tapestry, there is a need to move past simplistic and reductionist notions of leadership as an entitative approach (i.e., leadership is about the entities of leader and follower) and understand leadership as an emergent process. As Margaret Wheatley (2006) suggested, a leader's identity and practices churn away, often unseen, and give rise to leadership as we experience it. Adult leadership scholar-practitioners in this case are bundles of potential, able to have an impact only when they are seen and felt by another to be leading. Therefore, the interdisciplinary leadership model weaves the threads of identity, practices, and outcomes to create leadership scholar-practitioners that can effectively work in interdisciplinary contexts to address complex problems.

The first thread of identity is "not seen in itself but in its manifestation through thoughts, feelings, and actions and as expressed in behavioral events" (Newstead et al., 2018). As an example, as the field of leadership studies experiences a paradigm shift toward an understanding of leadership-as-practice, different leadership identities might include an inclination toward a complexity perspective, believing diversity has value in specific situations, seeing integration, innovativeness, and collective

intelligence as emergent properties in which to develop capacity, and the desire to structure networks to create virtuous circles of activities, like sharing responsibilities with others when addressing complexity. These forms of leadership identity vary greatly from leadership identities associated with the old paradigm in which leadership practitioners sought hero identities that create dependencies in our societies.

The second thread is practice. Leadership practices are the behavioral events and characteristics generated by leadership identity. The expectations, mental models, knowledge, desires, etc. that make up an individuals' identity impact the behaviors carried out by individuals. When these behaviors are done repetitively over time the routine turns to practice and reinforces certain identities. Just like in a tapestry, the repeated weaving of the threads creates a pattern that reveals a story.

This leads to the final thread outcomes, which are the results of behavioral events. Leadership outcomes are experienced and made sense of as expressions of identity and practice as leadership is created. Although leadership outcomes are the subjective interpretation of leadership practice, several key questions need to be asked that focus on the applied nature of leadership rather than abstract processes, i.e., what is changed as a result of leadership practiced in this situation? When it comes to address complex problems that require the use of teams and systems, is there direction, alignment, and commitment among members of a diverse group of people who are sharing work on this challenge? As the paradigm around leadership shifts from focusing on individuals as leaders to focusing on leadership as more than the sum of the parts, more tapestry weaving will be needed. As we will describe in the next section, the leadership development model of interdisciplinary leadership weaves together identity, practice, and outcomes by using adult learning theories (Knowles et al., 2015; Merriam, 2001; Mezirow, 1997) as well as interdisciplinary learning strategies, such as systems thinking, the use of metaphors to leverage integrations, paradoxical thinking, and maintaining a critical stance (Mansilla, 2017; Newell & Klein, 1996).

Interdisciplinary Leadership: A Leadership Development Model

In this section the leadership development model of interdisciplinary leadership currently in use by a U.S.-based graduate-level leadership program for scholar-practitioners will be described. This model provides a guide for thinking about leadership as a tapestry with the leadership educator being the weaver and the practical techniques described herein providing a model for how to weave a tapestry using the threads of identity, practice, and outcomes. We believe this model can be used as a method to design, conduct, and assess leadership education and its outcomes.

Applying interdisciplinary leadership intentionally involves bringing together diverse individuals and challenging them to use integrative thinking to work on complex tasks or problems to practice finding direction, alignment, commitment, and integration. The objective of interdisciplinary leadership is the development of leadership scholar-practitioners who have a repertoire of dispositions, consciousness, and embodied skills that will help them feel, respond to, cope with, and negotiate with the day-to-day actions and outcomes of a complex world. The interdisciplinary leadership model described next includes intentional design elements from the systems level to the individual level. The mission, structure, curricula, and instructional strategies are guided by research and theory to facilitate the complex learning of identity, practices, and outcomes that takes place.

Mission. The interdisciplinary leadership model considers the mission statement as an integral component of any leadership development program. Just as an individual or group has an identity, the mission statement communicates collective clarity around program identity. Program mission statements that articulate the values, principles, and purpose of the leadership program can help the leadership educators within the program find a common direction and commitment. Just as with individual leadership scholar-practitioners' identity, clarity related to the leadership program's identity provides a foundation from which practices and

outcomes emerge. As an example, when our U.S.-based leadership program achieved its 10-year anniversary our faculty and staff chose to reflect on our mission statement to make sure it still reflected our program identity. We asked ourselves, what is the program we want to create and how can we clearly communicate the unique identity of our program? Our new and updated mission statement then gave us a chance to talk about our program identity and mission with students, faculty, and administrators in a renewed, emergent, and evolving way.

Structure. Leadership programs and educators who care about addressing complex, real-world problems should be concerned with how leadership scholar-practitioners are being prepared because it shapes how individuals and groups make decisions that affect others. Higher education in the United States is tasked with structuring the environments in which students are prepared to become active participants in the transformation of their societies. Therefore, the structures and pedagogical and andragogical practices used within higher education that prepare individuals to address the diverse problems facing our global community can have a significant effect on the kind of information processing and mental models that become regularly utilized by graduates (Argyris, 1991).

As outlined by Bloomquist et al. (2018) the key design elements that make up the structure of a leadership program applying the interdisciplinary leadership model are (1) create diverse student groups, (2) build reflection directly into each course, (3) expect and invite students to bring their lived experience into the learning environment by using an andragogical approach, and (4) recruit and support high-quality teachers. These structural elements describe fundamental aspects unique to the interdisciplinary leadership model.

    Diverse Student Groups. In recent years we have seen an increasing global demand for individuals capable of working collaboratively with others to use disparate sources and types of information to produce new ideas (OECD, 2013). In response, educators have felt a continual need to develop leadership scholar-practitioners instilled with the leadership identity and practices that will positively dispose them to the outcome of creating high-quality interdisciplinary syntheses. The interdisciplinary leadership model uses interdisciplinary cohorts to facilitate the culture of learning that would favor preparation of adult scholar-practitioner. Creating diverse student groups who engage in transformational discourse (Mezirow, 1997) brings a powerful tool to the development of leadership scholar-practitioners.

Effective transformational discourse is accomplished by combining students from multiple disciplinary and practitioner backgrounds into a single cohort where they, over time, can more thoughtfully consider the perspectives of diverse others and develop humility as they engage in deep discussions across multiple curricular topics (Knowles et al., 2015; Merriam, 2001; Mezirow, 1997). Interdisciplinary cohorts include deep and broad diversity. This means cohorts are not just members of different subcultures of the same professional practice like a principal and a teacher. In the program that currently uses the interdisciplinary leadership model the interdisciplinary cohorts include diversity that is as broad and deep as a Catholic priest, fire chief, elementary school teacher, and a member of the military.

Reflection Across Coursework. "Critical reflection and metacognition have long been central to interdisciplinary pedagogies" (Dezure, 2017, p. 568). Internal human growth based upon experience that has been reflected upon is manifested in identity formation, clarification of one's priorities, and behavior choices that are displayed through practices. The interdisciplinary leadership model intentionally incorporates reflective practice across the curriculum. The use of 'reflection-in-action' (Schon, 1983), deep

learning (Agyris & Schon, 1978), and situated learning (Lave & Wenger, 1991), whether in curricular or co-curricular activities helps students interiorize the meanings, attitudes, and values that impel leadership scholar-practitioners to act.

Andragogical Approach to Student Engagement. The interdisciplinary leadership model uses principles based on andragogy to approach student engagement (Knowles et al., 2015). A learning environment that honors the vital life experiences of adult learners reminds them (1) that the world is larger than their own experiences, (2) to think about what causes people to differ in what they know, and (3) that a broad sense of community makes clear the connections between what the student needs and what the world needs (Page, 2017; Palmer, 1998). The formal and informal curriculum within the interdisciplinary leadership program intentionally invites students' lived experiences into the learning environment – not merely to affirm the experiences but to question and re-visit the experiences with diverse others to draw out and pay attention to patterns.

Leadership for the 21st century requires courage and modesty, in which the practitioner needs to start with a mindset that will help change the thinking that got them into the problem (Dweck, 2016). By applying an andragogical approach people learn together and share expertise where both sides are willing to engage in true dialogue and possibly change (Knowles et al., 2015; Mezirow, 1997). The structure of the environment helps people expose their exploratory thinking to others in the hopes that by engaging in the exchange of ideas one might end up with better ideas in the end (hooks, 2003). As we venture into the 21st century there are new lenses that help us think about the world, both internal and external. When preparing adult students to look at and make sense of the 21st century world the intentional use of andragogical

learning practices and the importance of paying attention to the patterns of interaction that are created is an important component to the application of the interdisciplinary leadership model.

High-Quality Teaching. Finally, recruiting and supporting high-quality teachers are fundamental to the interdisciplinary leadership model. Faculty recruitment that identifies qualified scholar-practitioners, with disciplinary and cognitive diversity, and the requisite teaching experience for the level of instruction they are hired for is a staple within the interdisciplinary leadership model (e.g., if hiring for doctoral-level instruction the teacher has taught at the undergraduate or graduate level or has relevant educational experience). Recruitment and retention of outstanding teacher-scholars who pursue academic excellence and are committed to fostering an environment in which faculty, staff, and students from a variety of backgrounds, cultures, and personal experiences are welcomed and can thrive is essential. In addition, appropriate faculty development opportunities designed to systematically challenge teachers to continuously learn and reflect on their own teaching practices helps develop the andragogical, philosophical, and practical skills needed for teachers to effectively engage with students within an interdisciplinary leadership program. To ensure the continuity of the interdisciplinary leadership model once it has been adopted faculty need opportunities to collaborate on curriculum development and the development of educational resources that maintain the expected high levels of teaching and learning quality.

Curriculum. Along with mission statement and the structural design elements, when applying the interdisciplinary leadership model, the curriculum further enhances the diversity of experiences that cultivate leadership scholar-practitioners' abilities to make sense of the world and prepare them for

leadership practice. The curriculum provides opportunities for intentional guided practice – the tackling of real-world problems in a contained, supportive environment. Program curricula, or a program plan of study, that applies the interdisciplinary leadership model includes coursework with guided feedback, peer review opportunities, thoughtful discourse with faculty and peer critiques, opportunities to fail safely, and multiple opportunities to practice working with diverse classmates. Clear connections between the program learning outcomes and course objectives (Wiggins & McTighe, 2005) create program arrangements that both faculty and students can rely on to create a strong, professional, collaborative culture of teaching and learning in which students feel safe and supported to critically examine real-world problems and develop as scholar-practitioners.

As an example, the program plan of study within the interdisciplinary leadership program starts with exploring leadership identity and reflective practice to set the foundation for the program journey. The program plan of study continues with courses in leadership theories, research methods, applied ethics, social justice, organizational theory and behavior, policy analysis and development, and systems thinking. Students also take a series of elective courses at prescribed times throughout the curriculum to give them opportunities to explore personally appealing topics such as servant leadership, change management and quality improvement, women and leadership, and university teaching and learning.

The intentional use of adult development theories and the constructivist educational philosophy within the interdisciplinary leadership model has created a rigorous, well-designed curriculum. Constructivism refers to the idea that learners construct knowledge rather than just passively take in information (Hein, 1991). Fisher and Frey's (2014) gradual release of responsibility framework is based on the constructivist philosophy and is used in the interdisciplinary leadership model by moving students through a period of focused instruction and collaborative work into more independent work with their dissertation in practice. As an applied doctoral (i.e., EdD) leadership development program the courses within the program plan of study are designed to gradually release responsibility to the student to produce original scholarship by applying social science methodologies to improve leadership practice.

Instructional Strategies. We now turn from system level considerations, like mission, structural design elements, and curriculum, to individual level considerations, like instructional strategies. The interdisciplinary leadership development model guide individuals to identify with certain beliefs about leadership, and those beliefs are the basis for leadership practice by which outcomes, like direction, alignment, commitment, and integration are produced and assessed. There is some consensus about effective instructional practices in general, however when it comes to interdisciplinary teaching and learning there are not unique sets of instructional practices. "Instead, interdisciplinary teachers employ an array of instructional methods to support interdisciplinary learning outcomes" (Dezure, 2017, p. 558). The instructional strategies presented in Table 1 represent some of the instructional strategies used by leadership educators employing the interdisciplinary leadership model. These instructional strategies help leadership educators develop within their students the leadership identity, practices, and outcomes that promote the emergent qualities of leadership needed to address complex problems.

Table 1

Instructional Strategies Used in the Interdisciplinary Leadership Model

Leadership Identity

To foster critical reflection:
- Use reflective writing and structured integrative assignments to enable students to bring together their disparate experiences and make meaning of them

To foster learning how to learn and metacognition:
- Create opportunities for students to ask questions – relevant, appropriate, and substantial questions.

To foster and model diversity:
- Use multicultural curricula and inclusive pedagogies to promote "empathy and understanding for other viewpoints, critical analysis, and synthesis" (Dezure, 2017, p. 563).

To foster tolerance for complexity and ambiguity, openness, and humility:
- Use simulations, role playing, and audio-visual materials to stimulate students' imagination

Leadership Practice

To promote the skills needed to engage in individual and team-based interdisciplinary problem solving:
- Use collaborative learning, e.g., discussion boards, that are "concerned with the nature of reasoning, questioning, and informed conversation" (Dezure, 2017, p. 562).

To promote the skills needed to collaborate, cultivate partnerships, foster shared cultures:
- Use active and experiential approaches like peer feedback, and co-curricular offerings

To promote the skills needed to express vision beyond the status quo, weigh diverse insights, establish purpose, and communicate with multiple audiences:
- Structure writing assignments that encourage the use of metaphors to leverage integrations

To promote the skills needed to appropriately monitor and evaluate resources and outcomes:
- Use individual and small group meetings to discuss their learning progress

Leadership Outcomes

To assess the key attitudes of leadership identity:
- Use rubrics to assess interdisciplinary and leadership as practice attitudes, such as quality of replies with cohort members and shifts in mental models, consciousness, and awareness

To assess the key actions that create effective leadership practice:
- Look for the use of metaphors that have shifted from foundational and linear structures to networks, webs, and complex systems (Klein & Newell, 1998).
- Look for expressions of paradoxical thinking, critical analysis, and interdisciplinary understanding, and reflective equilibrium (Mansilla, 2017; Newell & Klein, 1996).

To assess whether the leadership development program is applying the mission, structures, curricula, and/or instructional strategies of the interdisciplinary leadership model:
- Are high-quality teachers being recruited and maintained?
- Upon graduation are alumni life-long learners?
- Is there evidence that the program, 1) cultivates inclusivity, 2) partners outside academia, 3) uses impact-based metrics, 4) uses long-term funding to allow relationship building, and 5) has a visible brand and mission to identify interdisciplinary and leadership ethos.

Implications and Future Research

We know as we continue to grow in our understanding of interdisciplinary leadership there will be a few challenges that need to be faced and can be the focus of future research. First, additional conceptual and empirical foci are needed to offer guidance on how to address both ongoing and unmet societal needs in the preparation of leadership scholar-practitioners. For example, although uncertainty remains regarding the effectiveness of the solutions to the global pandemic (World Health Organization [WHO], 2020), the need to document and describe how people worked together during the pandemic can help us draw lessons about how to prepare individuals for the type of work that is currently being demanded of individuals in leadership positions.

Second, there is a need to continue to clarify the terminology, assumptions, and domains that help distinguish this approach from other leadership development approaches. It will be important for teachers and students to share best practices in engaging with the interdisciplinary leadership model, for example, the continued exploration of the application of interdisciplinary leadership in online graduate education (e.g., Bloomquist et al., 2018). Although scholars stress the importance of developing solutions informed by interdisciplinary perspectives (Brooks et al., 2019; Holley, 2019; Newell & Klein, 1996; Welch, 2009), they are less explicit on how to prepare people to think differently about leadership and act in turn, in an interdisciplinary way. Although leadership programs and curricula may be developed with an interdisciplinary approach in mind (Bloomquist et al., 2018; Brock et al., 2015), currently, 'interdisciplinary' is not necessarily synonymous with 'leadership.' Specifically, one question that may warrant focus in the field of leadership education and leadership development is, does engagement in online course discussions between members of an interdisciplinary cohort, help prepare individuals to be more inclined to practice leadership in a way that is more effective at achieving direction, alignment, commitment, and integration among groups of diverse people? Studying these leadership concepts in an educational context will enable us to further sketch the outlines of the distinct features of the interdisciplinary leadership model we have proposed.

Third, as is the case with any new approach, new knowledge often requires new methods (Kuhn, 1962). Future research will require the development of distinct methods and practices that set different levels of analysis apart at the individual, group, and system levels. To continue to build on the existing strengths and innovative potential in leadership studies and leadership development, scholars will need to draw on the diversity of qualitative and quantitative methods used to explore teaching and learning (e.g., see Fenton & Ross, 2016 volume on *Critical Reflection on Research in Teaching and Learning*).

Finally, an intentional and guided assessment plan of the model's effectiveness towards its intended outcomes will be an important and logical next step. While individual elements of the model have been assessed via a continuous improvement loop (for example, a restructuring of the size of diverse learning cohorts based on informal and formal assessment data across a number of years), the model taken together will benefit from holistic and well-articulated assessment practices. These practices will need to be addressed through both formal and informal assessment modalities as various elements of the model are more experimental than others, though each aspect of the model should be assessed with equal care.

Conclusion

This paper aimed to provide clarity by presenting a comprehensive leadership development model for preparing adult leadership scholar-practitioners. Leadership, when practiced well, offers the potential to address the negative consequences resulting from the mismatch between the people we are, organizations we have, and the society we desire. Leadership, when practiced poorly, can be the cause of the negative consequences that maintain and deepen the mismatch between who we want to be

and who we are as individuals, groups, and organizations. Only when individuals work together in interdisciplinary teams to share their different ideas and experiences, as well as share responsibility and accountability for the work, are we as a global society going to be able to begin to find lasting solutions to the complex, wicked problems of the 21st century. As leadership educators, we see a need to continually experiment with leadership development approaches that will build and promote high-quality interdisciplinary syntheses and instill the leadership identity and practices that will propel us toward collective alignment. This paper describes a novel leadership development model that leverages interdisciplinarity within the field of leadership and provides guidance on how to utilize the interdisciplinary leadership model.

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