­­­­­Research, Theory, and Practice in Education Leadership

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1. **Understand theory and its usage and development**

**a. what is theory and what are its components?**

In general, a theory presents a systematic and analytical framework or paradigm of understanding events, behaviors and/or situations. (Bacharach 1989). It is a system of constructs (concepts) and propositions (i.e., relationships between those constructs) that collectively present a logical, coherent, and testable explanation of a phenomenon of interest within some assumptions and boundary conditions. Thus, there are four components of a theory: construct, propositions, logic, and boundary conditions/assumptions (Whetten, 1989). More specifically, constructs capture the “*what*” (i.e., what concepts are essential for explaining a phenomenon), propositions capture the “*how*” (i.e., how are these concepts related to each other), logic represents the “*why*” (i.e., why are these concepts related), and boundary conditions/assumptions examines the “*who, when, and where*” (i.e., under what circumstances will these concepts and relationships work).

**b. how research in education leadership use and develop their theories?**

In this section, I will use transformational leadership as an example to discuss the theory use and development in educational leadership research. Transformational leadership is one of the main theories in this class. Similar to the claim 3 in Leithwood and Riehl (2005) that “a core set of basic leadership practice is valuable in almost all context” (p. 19), the concept of transformational leadership was firstly developed in the business literature. However, the change-oriented educational policy environment, which emphasizes restructuring and transformation to meet twenty-first-century schooling requirements, promote the popularization of transformational leadership theory in educational leadership (Hallinger, 1992; Leithwood, 1994). Because transformational leadership focuses on restructuring and preparing the schools in shared leadership with improved opportunities for innovation and change (Hallinger, 2003). After the transformational leadership was rapidly adopted in the field of education, researchers have started finding empirical evidence to prove the advantages of this theory. For example, Leithwood and Jantzi (1999) launched a large-scale survey (1818 teachers and 6490 students) in the elementary schools. They found that “transformational leadership had strong direct effects on school conditions which, in turn, had strong direct effects on classroom conditions” (p. 467), and a moderate but still significant total effects on both student participation and identification.

After decades in which transformational leadership theory has prevailed as the dominant paradigm in leadership scholarship, critical voices have started raising and even suggesting that transformational leadership theory should be abandoned (Van Knippenberg and Sitkin, 2013). Berkovich (2016) summarize three main critiques of transformational leadership: (1) the lack of a clear conceptual definition and absence of empirical distinctiveness from other elements of leadership; (2) the conceptualization of transformational leadership confounds behaviors with their effects; (3) inadequate causal models describing how transformational leadership affects outcomes and how the effects of transformational leadership are contingent upon moderators. However, these critiques, to some extent, help to clarify the directions of how to improve the theory constructively. For example, Berkovich (2016) evaluated transformational leadership with the criteria of falsifiability (i.e., scientific refutability), utility (i.e., usefulness in explaining and predicting), and fit (i.e., ability to bridge gaps between other existing theories, or to transform our understanding of them). He claimed that transformational leadership has its utility for the “educational administration community and underdeveloped potential to contribute to the understanding of education as a unique arena” (p. 610), though it has shortcomings in the area of falsifiability. To improve the falsifiability of transformational leadership, clarifying its conceptual definition and practical characteristics becomes important and necessary. In the guidance of this object, typology studies in educational leadership made a great progress in identifying the differences and relationships between transformational leadership with other. For example, Marks and Printy’s (2003) mixed-method study found that transformational leadership and shared instructional leadership co-vary. Urick and Bowers (2014) extend the work of Marks and Printy (2003) to a large notionally generalizable sample and provide substantial support for the hypothesis that transformational leadership is necessary but insufficient for shared instructional leadership.

In summary, theories in educational leadership are used and developed according to the the practical problems or theorical needs in school. They are used as “the application of scientific principles based on empiricism rather than ideological belief, personal experience, and prescription” (Heck & Hallinger, 2005; p.30). With the changes in the organizational context and practical demands, theories are clarified, adapted, and even redefined with failure. Finding insignificant or no effect is common, since many factors determine a study’s ability to detect an effect (e.g., theory, implementation, and research design; Seftor, 2016). However, these failure and critiques are signals for more comprehensive interpretations and sufficient evidences. Meanwhile, there are competing and sometimes complementary and contradictory theories that ask different types of questions and pursue them in different ways, instead of grand theory (Roegman & Woulfin, 2019). Consequently, theory should be “a system of interrelations among highly abstract concepts which serves to organize a large number of laws that were previously unrelated” (Bourgeois, 1979, p. 443). For example, transformational leadership is used, developed, and sometimes integrated with instructional leadership, culturally responsive leadership and many other theories for the big picture of education leadership. Thus, theorizing is the art of specificity in asking questions and providing answers rather than a dichotomous judgment of perfection (Goodson, 2010).

1. **New research agenda and new theory development**

**a. what is the new agenda and how does the literature relate to the agenda?**

The agenda that Firestone and Riehl (2005) outlined aims at extending our research-based knowledge about educational leadership, which has the potential for improving the leadership, learning, and equity of American Education. In general, there are four main aspects of Firestone and Riehl’s (2005) new agenda: teaching and learning, complex learning environments, equity and social justice, and leader preparation and methodology. Meanwhile, the new research literature in this class also follows the new agenda Firestone and Riehl (2005) outlined and provide substantial support for the conclusion that research-based knowledge about educational leadership is impactful.

In terms of teaching and learning, Stein and Spillane (2005) suggested that we should explore how leadership contributes to the teachers’ learning about practice and how a leader can create opportunities for teachers to learn. According to the agenda, it is also important to reconceptualize instructional leadership and explore educational leaders’ content knowledge to promote the co-participation in learning act by both teachers and leaders (Prestine & Nelson, 2005). In the past decades, the field of educational leadership has made substantial progress in identifying ways in which leadership contributes to learning in the school. For example, Boyce and Bowers (2018) conducted a meta-narrative review of quantitative studies from the nationally generalizable data set (Schools and Staffing Survey by US National Center for Education Statistics) and identify four instructional leadership factors: *principal leadership and influence*, *teacher autonomy and influence*, *adult development* (i.e., professional development and teacher induction), and *school climate*. They also detailed the relationship between these four factors and the other three factors: *teacher satisfaction*, *teacher commitment*, and *teacher retention*. Meanwhile, Hallinger (2011) presented four specific dimensions of leading for learning: *values and beliefs*, *leadership focus* (i.e., the indirect path through which leadership impacts learning), *contexts for leadership*, and *sharing leadership*. More specifically, principal's *values and beliefs* shape the thinking and actions of leaders and represent a potentially useful tool for strengthening the school's learning culture (Leithwood & Stager, 1989; McCrimmon, 2004). For *leadership focus*, leadership is linked to learning through three main avenues: (1) vision and goals; (2) academic structure and processes; and (3) people (Hallinger and Heck, 1996; Leithwood et al., 2010; Hallinger and Heck, 2010). Additionally, leadership effectiveness was dependent or contingent upon identifiable features of the situationor *context* *for leadership* in which the leader worked (e.g., staff characteristics, hierarchy, availability of resources, and power relationships; Day et al., 2010). Consequently, leaders must adapt their styles to the changing circumstances and choose different leadership style in response to different situational factors. Finally, principals should *share the leadership* and cooperate with others with a range of different behaviors or strategies for involving others in decision-making (e.g., consensus decision making, voting, input, and delegation; Murphy, 2005; Crowther et al., 2008; Gronn, 2009).

In terms of complex learning environments, the new agenda suggested to explore the relationship between school and community, so that we can take advantage of the elements, networks, and social capital in the community to support learning and conversely support the development of the community (Driscoll & Goldring, 2005). Additionally, we need to know how leaders cope with the multiple and contradictory accountabilities based on their interpretations of the complex learning environments (Firston & Shipps, 2005). In the past decades, the research in the field of educational leadership has made some progress on figuring out how educational leaders address the multiple needs of teachers, learners, and communities. For example, Khalifa, Gooden, and Davis (2016) emphasized the importance of developing positive and meaningful relationships with communities in culturally responsive school leadership (CRSL). They suggested school leaders should *serve as an advocate and public intellectual for community-based causes*, *find the overlapping space for school and community*, *understand students and families, nurture for others*, *and share information*. Collins and Halverson (2018) also discussed the learning and schooling system in the digital environment, which is more personalized, mixed-aged, multiple-centered, computer-mediated, and interactive. Consequently, they emphasized the urgency of seeking a coherent model for the future of education in the age of technology since the digital community is much more complex, dynamic, and powerful than the physical communities that Driscoll and Goldring (2005) discussed.

In terms of equity and social justice, the primary goal of the school is always serving diverse student populations to support their achievement, equity, and justice (Leithwood & Rihel, 2005). However, there is a dearth of empirical studies to link the leadership to the achievement of the student from diverse backgrounds, test different constructs of leadership, and examine the development of leadership capacity (Reyes & Wagstaff, 2005). Meanwhile, we need more evidence about how leaders improve leaning by pursuing social justice and democratic communities in schools (Furman & Shields, 2005). In the past decades, researchers pay more and more attention to this topic. For example, Khalifa, Gooden, and Davis (2016) synthesized the literature in CRSL. Their research extended the framework of CRSL to the entire school environment in response to the schooling needs of minorized students. They discussed behaviors of the CRSL in unique communities (e.g., communities of color). These behaviors include *critically self-reflect on leadership behaviors*, *developing culturally responsive teachers*, *promotes culturally response/inclusive school environment*, and *engaging students, parents, and indigenous contexts*. Additionally, Theoharis (2007) developed the theory of social justice educational leadership. He suggested that principals could enact social justice through *raising student achievement*, *improving school structure*, *re-centering and enhancing staff capacity*, and *strengthening school culture and community*.

In terms of leader preparation and methodology, new agenda suggested us to explore how to promote and evaluate new initiatives in leadership workforce development (Smylie & Bennett, 2005). There is also a need for finding the methodologies that can be used to produce significant and robust knowledge about educational leadership (Riehl & Firstone, 2005). In terms of the development of the leadership workforce, Bowers (2017) argued for administration preparation programs on helping leaders develop skills as practitioner-scholars. These skills include *data analytics*, *peer-reviewed research evolution*, and f*acilitate building evidence-based improvement cycles in their schools*. In terms of research methodologies, Jocob, Kim, Miller, and Goddard (2015) used the *randomized design* to assess the causal impact of the MacREL Balanced leadership program on principal leadership, instructional climate, principal efficacy, staff turnover, and student achievement. Urick and Bowers (2014) used the*latent class analysis*to identify the leadership styles in the United States and their relationship with principals’ background and school context. Wang and Bowers (2016) applied the journal *citation network analysis* to map the field of educational administration research. Sebastian, Huang, and Allensworth (2017) applied the *hierarchical linear modeling*to capture the multilevel structure of the survey data and measure the effects of principal and teacher leadership to organizational processes and student outcomes. Wang, Bowers, and Fikis (2017) used the *probabilistic topic modeling* to describe the topic evolution of educational leadership literature. Shengnan & Philip (2018) applied the *structural equation model*to measure the mediated-effects of principals’ instructional leadership on teacher professional learning. Day, Gu, and Sammons (2016) used the mixed-method (both quantitative analysis with the *structural equation model* and qualitative analysis with the *case studies*) to investigate how successful school leaders use transformational and instructional strategies to make a difference. These explorations promote the development of educational leadership research by introducing more robust and reliable research methodologies and data analysis techniques.

**b. how the theory in section 1 related to the new agenda and conclusion?**

The development in transformational leadership is also highly related to the recommendations and conclusion from Firestone and Riehl (2005). Transformational leadership is a highly relevant theory to our day and age, which is change-oriented (Hallinger, 1992; Leithwood, 1994; Berkovich, 2016). Leithwood and associates (1994) summarized six components of transformational leadership model, including *building school vision and goals*, *providing intellectual stimulation*, *offering individualized support*, *modeling professional practices and values*, *demonstrating high-performance expectations*, and *developing structures to foster participation in school decisions*. These components provide the useful guidelines for the principals to make an impact on the development of school, building of community, and improvement of student and teacher learning. In research, the most popular measure of transformational leadership and its dimensions in the general management field is the Multifactor Leadership Questionnaire (Leithwood & Jantzi, 2005). With this measurement, many studies also reinforced the conclusion that transformational leadership has an impact on teachers’ perceptions of school conditions, their commitment to change, and the organizational learning that takes place (Bogler, 2001; Day et al., 2001; Fullan, 2002; Leithwood & Jantzi, 2005). Additionally, the concept of transformational leadership sometimes is integrated with other theories. For example, Urick & Bowers (2014) used transformational leadership theory to provide empirical evidence about how principals across the U.S. schools choose the “idealized” leadership style to practice. They defined three significantly different principal types (i.e., controlling, balkanizing, and integrating) and identified the correlation between the principal background and school context with multiple principal types. However, whether integrating transformational leadership and instructional leadership is complete enough to provide a picture of leadership styles in reality? Do we also need to incorporate social justice leadership and culturally responsive leadership for typology study? How transformational leadership affects student performance under different contextual moderators? We need more research in the future to explore these questions. In general, all of these research development and unsolved issues support Firestone and Riehl’s (2005) hypothesis that research-based knowledge about educational leadership has the underdeveloped potential to be more impactful.

1. **Practical usefulness of the theory**

The research-based knowledge about educational leadership is helpful for the practice of principals, superintendents, and other leaders. Among all theories discussed in this course, I think the topic related education leadership data analytics is the most helpful one. EDLA is an emerging domain that is centered at the intersection of *education leadership*, the use of *evidence-based improvement cycles in schools* to promote instructional improvement, and *education data science* (Bowers, Bang, Pan, & Graves, 2019). The field of education is already in the midst of data transformation, and schools are inundated with an increasing amount of both qualitative (e.g., course evaluation survey) and quantitative (e.g., standardized tests assessment like SAT) data (Bowers, Shoho, & Barnett, 2014; Halverson, 2014). These data include but not limited to the assessment data (e.g., traditional teacher-assigned course grade), multidimensional performance measurement (e.g., the quick course feedback data in edsight.io), demographic and health information of students, staffs, and faculties. With the development of data collection and data storage technology, we are able to access even more data in education than ever before. For example, the Bill & Melinda Gates Foundation gave 1.4 million dollars in grants to the universities in 2014 to test a biometric device in middle-school classrooms. This device is developed as an “engagement pedometer” to identify which classroom moments excite and interest students.

Therefore, the school leader must think about how to use the data reasonably. On the one hand, there are potential risks in data usage in school related to the issues like privacy, bias (e.g., the bias in evolution), surveillance, social impact, and freedom. For example, FBI (2018) found that schools across the country lack funding to provide and maintain adequate security, and most student data disclosures are caused by human errors. On the other hand, school data has great potential for teachers and school leaders in decision making (Shildkamp, Poortman, & Handelzalts, 2016). Data science technologies offer opportunities to use data to inform instructional practice, so that the school system could improve their capacity in providing personalized, timely, and engaging learning experiences to the students. Based on my experience from National Science Foundation Education Data Analytics Collaborative Workshop, two main conclusions can be claimed for the school data use in reality: (1) school data usage in practice is below our expectation, even with the clean, standardized, and longitudinal data warehouse; and (2) school data has the protection for school leaders and teachers if we can promote the collaboration and commutation among educations and data scientists. For example, teachers usually feel frustrated since it is hard to get useful information from the overwhelming data source. They spend much more time jumping across different data warehouse pages than real data analysis. While, data scientists sometimes do not realize that the primary need for school leaders and teachers could be as simple as “identifying the student whom I should pay more attention.” Therefore, the challenges that we are facing today does not threat the underdeveloped potential and usefulness of EDLA. Instead, it indicates an urgent need for more research and practice.

Under this background, the research related to the education leadership data analytics (ELDA) becomes essential. In past decades, research has shown that improving school capacity to use data lead to an improvement in classroom practice and student learning (Halverson, Grigg, Prichett, & Thomas, 2007; Halverson & Thomas, 2007). However, school leaders lack a comprehensive theoretical framework of evidence-based improvement cycles in schools in school. Consequently, Halverson (2012) described the formative feedback system model, which extends the insights from the classroom to the school and provide useful information about teaching and learning in schools. His model would: (1) generate information signals that measure how students performed in terms of intervention, (2) develop sensor and processor functions to assess information signals, and (3) identify controllers that could actuate this new knowledge in order to adjust the instructional process.

Although effective data use can help improve the functioning of schools in terms of increased student achievement (Halverson, Grigg, Prichett, & Thomas, 2007; Halverson & Thomas, 2007), teachers often do not use data to its best effect, if at all (Schildkamp & Kuiper, 2010). Therefore, professional development in data use is need. Schildkamp, Poortman, and Handelzalts (2014) develop a program in professional learning communities: “the data team procedure.” The whole procedure contains eight steps: *problem definition*, *formulating hypothesis*, *data collection*, *data quality check*, *data analysis*, *interpretation and conclusions*, *implementing improvement measurements*, and *evolution*. They also summarized a theoretical framework of databased decision making in school, which contains *purpose* (similar to problem definition), *data* (e.g., data collection, filtering, and management), *information*, *knowledge*, *action*, and *outcome*. Additionally, components are connected. For example, information, knowledge, and outcomes can provide feedback to the data (e.g., adjust the data source) and purpose (e.g., change the plan). The framework that Halverson (2012), and Schildkamp, Poortman, and Handelzalts (2014) outlined focus on how to build up a positive loop of data use in practice. However, it is still a challenge to intergrade data analytics into educational leadership, since the school leaders and teachers sometimes are unclear about what skills they should obtain (Bowers, Bang, Pan, & Graves, 2019). Consequently, Bowers (2017) propose a more comprehensive framework that contains four domains of training in ELDA includes *practicing administrator*, *quantitative educational analyst*, *research specialist*, and *data scientist*.

Though ELDA does not provide a theoretical framework of an ‘idealized’ leadership style, it indeed provides the tools for evaluating, testing, and adapting our understanding in educational leadership practice with the feedbacks from empirical evidence. Different from the other theory we discussed in this class (e.g., instructional leadership, distributed leadership, and leadership for learning), ELDA focus on how to combine the domain knowledge of school education with the advance methodology in data science. Consequently, it requires more collaboration and community-building with all stakeholders involved. But, it also provides an great opportunity to bridge the ever-present gap between theory and practice with the evidence from data.

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