Original Paper

Leading Outside the Box: Principal Engagement in Entrepreneurial Mindset in Their Leadership

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Abstract

School principals commonly face a range of decision making that require creative or novel thinking, and these innovative thought processes align with a strong entrepreneurial mindset. We considered entrepreneurial mindset on a spectrum ranging from weak to strong as we empirically documented the entrepreneurial mindset of K-12 school principals. Using a survey, we gathered a combination of qualitative and quantitative data from 374 K-12 principals working in the south-central United States. We found those principals held a modest entrepreneurial mindset, and the mindset was predicted by age, the number of memberships to professional organizations, size of the school, and the academic performance of the school. Our findings have implications for K-12 principal preparation and practice.

Keywords

principal leadership, entrepreneurial mindset, mindset spectrum, innovative problem-solving, educational system restructuring

1. Introduction

The work of principals as the recognized leader in schools requires creative problem solving and innovation to establish a culture that is progressive, inclusive, and equitable. We argue the leadership disposition necessary to engage in creative problem solving and innovation is aligned with attributes that in aggregate contribute to a strong entrepreneurial mindset. We will provide more details of the entrepreneurial mindset in our review of literature, but briefly, we define the construct as approaching tasks with distinct consideration of entrepreneurial elements such as calculated risk taking, acceptance of ambiguity, and several other mental framings. Thus, the level of a principal's entrepreneurial mindset is

likely to be predictive of their capacity to be effective change agents and transformative leaders. Our combined experience of more than 40 years in K-12 education, work with principals both as teachers and administrators, and our current work preparing principals led us to wonder how much do principals approach their leadership role as entrepreneurs.

In our search of the literature, we were unable to locate any empirical studies that comprehensively documents K-12 school principals' entrepreneurial mindset. Thus, there is a gap in the literature. Further, the importance of holding a strong entrepreneurial mindset to be an effective change agent and leader provides the need to document the level of the mindset held by K-12 school principals. To address the gap in the literature and inform the field, we gathered a combination of quantitative and qualitative survey data to assess the entrepreneurial mindset of K-12 school principals to answer our research question: to what extent do K-12 school principals embrace an entrepreneurial mindset in their leadership and what elements of an entrepreneurial mindset do they apply in their practice? Thus, the purpose of our research was to document the entrepreneurial mindset of principals and how these leaders engage in entrepreneurial thinking in their practice.

2. Review of Literature

2.1 Role of a K-12 School Principal

Over a century ago, the pioneer of educational administration research Cubberley observed, "As is the principal, so is the school" (1916, p. 15), which reflects an early recognition for the importance and power of quality school leadership. However, as our society and norms have shifted over the last 100 years, so has the role of the school principal. No longer is it enough to maintain and manage facilities, budgets, attendance, discipline, etc. As 21st-century educators and policymakers contemplate how to accomplish essential and systemic changes to our educational institutions, the counterproductive barriers established in the economic, educational, and cultural thoughts of the early 20th century remain (Willms et al., 2009). To navigate their role principals must have an array of skills and traits that include being a leader and motivator, conveyor of a vision, resilient, passionate, flexible, risk-taker, and life-long learner (Gurr, Drysdale, & Mulford, 2006; Sanzo, Sherman, & Clayton, 2011).

According to Robinson (2010), student learning is directly influenced by the actions of the principal. We argue student success is substantially dependent on the principal's ability to develop the capacity of the school to meet the academic, physical, social, and emotional needs of all its students and teachers (Brown & Wynn, 2007; Louis et al., 2010; Turan & Bektas, 2013). Further, the greater the challenges facing the students outside the school (e.g., low income, remote location, marginalized communities) requires principals to be highly innovative to create productive learning environments (Grissom, 2011).

Principals act as the visionary and role models for teachers and students (Mitchell & Sackney, 2006). In taking action to achieve a vision for their schools, principals are role models and though leaders for considering possibilities, taking action, and being innovative (Moolenaar, Daly, & Sleegers, 2010). It is particularly important for principals to engage in entrepreneurial thinking and leading when supporting

change particularly in the adoption of innovation. For example, advances in technology and new learning applications have shifted learning and the interplay of knowledge, curriculum, teaching, and learning (Barth, 2001) which may be met with resistance. Principal leadership is critical for navigating the resistance and promoting adoption. Thus, we will use the context of technology integration for teaching and learning and the associated instructional innovations as a context for exploring how principals apply different facets of entrepreneurial thinking to lead others toward change.

Principals' leadership is critical for the integration of technology and the associated shift in instructional approaches required for sustained progressive teaching and learning. Principals leading the shift to innovative uses of technology for instruction must be able to share their vision, engage in innovative thinking, accept risk-taking, be creative, and have tolerance for ambiguity (Gonzales, 2019; Kozloski, 2006; McLeod, Bathon, & Richardson, 2011). Through the process of being instructional leaders, principals must also recognize that not all students have the same level of access to technology, creating situations of inequity (Mason & Dodds, 2005). Thus, as principals advocate for creative uses of technology for teaching and learning, they also must consider convey the moral and ethical responsibility to ensure access for all students (Garland, 2009). We argue that principals who hold a strong entrepreneurial mindset are more likely to provide the vision, role modeling, innovation, and problem-solving associated with the complexity of adopting education innovations (Gonzales, 2019) such as the integration of technology and equitable access (Ayub & Othman, 2013). Additionally, principals who hold an entrepreneurial mindset are also more likely to be better positioned to lead the creation and support for school cultures that foster teachers' beliefs that all students can grow, learn, and succeed (Dweck, 2007; Farrington et al., 2012).

The importance of principal leadership for student success, school culture, solving problems, and promoting innovations justifies researching the thought patterns of principals. Particularly of interest to us is the level to which principals think like entrepreneurs in their roles as school leaders. Holding and expressing entrepreneurial traits and thoughts is of critical importance for solving complex problems beyond those of innovation instruction. Entrepreneurial thinking is critical for effectively leading in complex situations such as orchestrating school building closures and implementing virtual teaching and learning necessitated by unanticipated crises such as the COVID 19 outbreak.

2.2 Entrepreneurial Mindset

We define mindset as the way people interpret and approach situations based on their knowledge, experiences, the situation, worldview, and goals. Mindsets should be considered on a spectrum (French II, 2016). Where one falls on a mindset spectrum is likely to be developmental (Paxton & Van Stralen, 2015) and may shift with context (Mehta et al., 2010). The people we interact with, the location we are in, our personal experience, and the nature of the interactions may influence the mindset that we hold and express (Haager et al., 2014). Both state and traits of individuals determine a mindset, and therefore, individuals may experience shifts in a mindset due to changes in context and/or the perspective of the

individual. We also maintain that rather than lacking a mindset people hold a weak mindset, sharing thoughts and perspectives that are essentially opposite of those holding a strong mindset.

We define an entrepreneurial mindset as the level to which an individual engages in entrepreneurial thinking. Entrepreneurial thinking is an amalgamation of multiple perspectives and perceptions. Typically, researchers only examine a single perception or perspective of entrepreneurial thinking to provide a fine gain assessment of the construct (Brockhaus & Horwitz, 1986; Davis, Hall, & Mayer, 2016; Haynie et al., 2010; McGrath & MacMillan, 2000). Our goal was to create a comprehensive model of an entrepreneurial mindset that includes accepting of ambiguity (Rigotti, Ryan, & Vaithianathan, 2008), tolerating failure (Ucbasaran, Shepherd, Lockett, & Lyon, 2013), engaging in calculated risk-taking (Vereshchagina & Hopenhayn, 2009), expressing creativity (Okpara, 2007), connecting people and ideas (Earl, 2003), seeking new opportunities (Eckhardt & Shane, 2003), and other elements of entrepreneurial thinking. Thus, we constructed our model (see Figure 1) by combining elements from research in which a reductionist approach was applied to focus on a specific aspect of entrepreneurial thinking. In addition, as we developed our framework, we took into consideration our prior work in which we attempted to create a comprehensive definition for entrepreneurial thinking (Nadelson et al., 2018). Although an entrepreneurial mindset is commonly associated with business ventures (e.g., Shepherd, Patzelt, & Haynie, 2010), the mindset could also be associated with other conditions or roles (e.g., Pollard & Wilson, 2014). Thus, an entrepreneurial mindset may be applied to a wide range of conditions, and that may not include business ventures such as how principals approach their school leadership roles. Thus, we contextualized our framework for the leadership role of principals.

For our research, we were interested in how principals engaged in their leadership roles using an entrepreneurial mindset. We wanted to determine if K-12 school principals have acceptance of ambiguity, tolerance for failure, do they display motivation to connect and support others, do they embrace calculated risk-taking, and do they seek opportunities as fundamental practices in their leadership. In our search of the literature, we found reports of principals applying elements of the mindset such as creativity (Ediger, 2001) however, we could not locate any studies examining principals applying a comprehensive entrepreneurial mindset in their leadership roles. Given the advantages of applying the entrepreneurial mindset attributes to problem-solving and creating new opportunities, there is a warrant for our research.

We developed the entrepreneurial leader mindset spectrum (see Figure 1) to reflect the different potential array of perspectives that leaders may hold regarding their approach to leadership. At the weak mindset end of the spectrum, the thoughts, feelings, and perceptions of the leader would be reflective of a leadership style that does not embrace entrepreneurial thinking. Such a leader would approach problems or situations with trepidation, apprehension, or with thoughts of mitigation or avoidance. The goal of a leader with a weak entrepreneurial mindset is to maintain the status quo and distance him/herself from conditions or situations that are threats to consistency.

In contrast, a leader aligned with the strong end of the spectrum would hold thoughts, feelings, and perceptions consistent with entrepreneurial thinking. Such a leader would approach problems and

situations with motivation, perceptions of opportunities, and the consideration of navigating the conditions as learning experiences. A leader with a strong entrepreneurial mindset would think about change, progress, and experimenting with new approaches and structures. Thus, the determination of the strength of an entrepreneurial mindset should not be considered in terms of a checklist of expression of each of the attributes listed in our model, but rather how any of the attributes are being conveyed in situations of uncertainty, distress, or controversy.
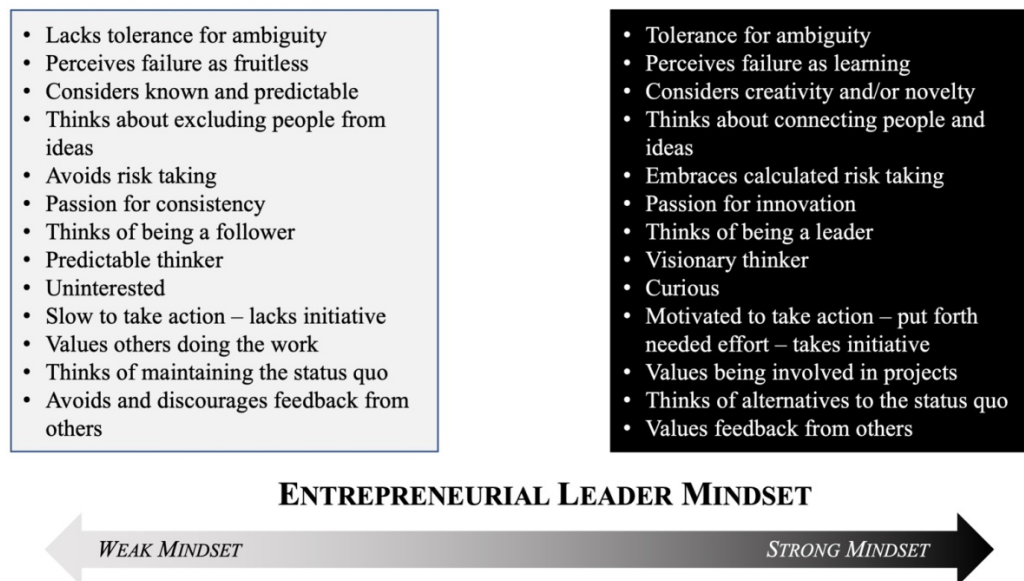
Weak Mindset	Strong Mindset
• Lacks tolerance for ambiguity	• Tolerance for ambiguity
• Perceives failure as fruitless	• Perceives failure as learning
• Considers known and predictable	• Considers creativity and/or novelty
• Thinks about excluding people from ideas	• Thinks about connecting people and ideas
• Avoids risk taking	• Embraces calculated risk taking
• Passion for consistency	• Passion for innovation
• Thinks of being a follower	• Thinks of being a leader
• Predictable thinker	• Visionary thinker
• Uninterested	• Curious
• Slow to take action – lacks initiative	• Motivated to take action – put forth needed effort – takes initiative
• Values others doing the work	• Values being involved in projects
• Thinks of maintaining the status quo	• Thinks of alternatives to the status quo
• Avoids and discourages feedback from others	• Values feedback from others

ENTREPRENEURIAL LEADER MINDSET

WEAK MINDSET   STRONG MINDSET

Figure 1. **The Entrepreneurial Leader Mindset Spectrum**

2.3 Application of the Entrepreneurial Mindset in the Principalship

The complexity of society and desire for equity and inclusion continues to evolve, which is reflected in the challenging situations experienced in many K-12 schools. For example, schools may have challenges associated with low socioeconomic status, cultural diversity, constrained resources, and retention of high performing teachers while trying to meet expectations of student academic achievement (Grissom, 2011). We argue the challenges found in many K-12 schools require the school leadership -principals- to be creative and innovative thinkers to develop viable solutions to complex ill-formed problems associated with the challenges they face.

We maintain that principals who exhibit and practice characteristics of an entrepreneurial mindset are uniquely qualified to lead the community, school, staff, and students associated with under-performing schools toward higher achievement and well-being. Educators have been slow to adopt new instructional practices that deviate from compliance-based, didactic, and explicit instruction, perpetuating traditions that may be highly detrimental to English language learners, students of low SES, and students of color (Darling-Hammond, 2001; Oakes, 2005). Principals with strong entrepreneurial mindsets would lead faculty and staff to identify, explore, and implement creative and innovative ways of teaching that can

result in instructional approaches that are highly beneficial to students who have been unsuccessful with traditional approaches to teaching and learning. For example, Riester, Pursch, and Skrla (2002) reported principals who lead with transformational and/or social justice orientations tend to think creatively, assume a tremendous amount of responsibility for catalyzing change, and are persistent in supporting the change when faced with barriers or challenges. We maintain the mindsets of principals seeking conditions of transformation and social justice are aligned with a strong entrepreneurial mindset.

A review of empirical educational research over the past thirty years verifies that the current compliance-based, factory model of schooling used by the vast majority of American schools no longer adequately meets the needs of young people in our contemporary society (Kohn, 2008; Rotherham & Willingham, 2009; Tyack & Cuban, 1995) indicating a need for change. Further, challenges such as school closures due to a pandemic, competition with private and charter schools for resources, perceptions of school effectiveness, and student need for quality education to prepare them for a highly competitive society requires K-12 principals to take risks, tolerate ambiguity, embrace a growth mindset, and connect people and ideas, which are some of the actions associated with a strong entrepreneurial mindset.

When principals demonstrate a strong entrepreneurial mindset, they push for change and promote new ways of thinking about achievement and underachievement; shifting the conversation from deficit model thinking to opportunity, asset, and growth model thinking (Riester et al., 2002). Such leaders change the conversation from what is wrong with our students based on poor achievement outcomes, to a discussion about possibilities and opportunities that can lead to the transformation of educational practices. For example, a principal would be instrumental in transforming the instructional practices of teachers from being teacher centered to learner centered, a transformation process that requires innovative leadership for vision and support. The entrepreneurial mindset principal realizes that successful missions in pursuit of the institutional vision can best be attained through initiatives aimed at improving or changing system processes (Cox, 2006; Senge, 2006).

Through collaborative, distributive, and servant leadership, principals can catalyze teachers' focus on affording students with opportunities to make connections, think analytically, solve problems, and perhaps even make contributions of new understandings within a body of knowledge (Barth, 2001). Currently, marginalized and underserved populations are often provided with fewer rigorous, challenging, and relevant instructional experiences than the more mainstream peers (Hammond, 2015; Oakes, 2005). We embrace the notion that it is fundamental for principals to possess a strong entrepreneurial mindset to lead instructional decisions that elevate educators' goals beyond traditional education activities that are needed to engage students in higher-order thinking (Conley, 2011; Kohn, 2008; Yair, 2000).

Given the potential for principals leading with a strong entrepreneurial mindset to be effective leaders and change agents who can positively influence school performance, we argue there is justification for documenting the entrepreneurial mindset of K-12 principals. Understanding the level of entrepreneurial

thinking of principals is likely to be critical to the preparation and ongoing professional development of K-12 principals.

2.4 Principals' Actions Based on Their Entrepreneurial Mindset

We maintain principals' actions are a reflection of their entrepreneurial mindset. In Figure 2, we provide examples of the actions associated with weak and strong entrepreneurial mindsets. The examples of the actions are common to school leadership and is a subset of the large array of possible and probable actions. Thus, the actions listed in Figure 2 do not necessarily directly align with the attributes of the mindset spectrum (see Figure 1) as some actions are likely to involve more than one mindset attribute. We also maintain that the example actions we included in Figure 2 can be evaluated in terms of entrepreneurial thinking and thus, the strength of the principal's entrepreneurial mindset.

We posit that many times a principal's mindset may shift due to context or their level of experience and, therefore, will likely take actions that indicate a varied level of entrepreneurial mindset thinking. However, in general, it is the actions of the principals that influence others and their effectiveness. If principals approach situations with a strong entrepreneurial mindset, they may be more effective due to positive actions that principals holding a weak entrepreneurial mindset are likely to fail to enact.

For example, a principal who leads using a weak entrepreneurial mindset may approach a problem by seeking to maintain a traditional solution and maintaining the status quo. In contrast, a principal who leads with a strong entrepreneurial mindset may approach the same problem by seeking innovative solutions and using the condition to create opportunities to provide transformational experiences for others. Further, a principal with a weak entrepreneurial mindset would seek consistency, frame conditions in terms of deficits, and recognize barriers as justification for inaction. In contrast, a principal with a strong entrepreneurial mindset would tolerate ambiguity (e.g., acceptance of the potential for an array of possible outcomes associated with risk taking) and try new approaches, frame conditions in terms of learning from failure, and perceive barriers as opportunities. How the principals approach the problem is reflective of the level to which the principals embrace the entrepreneurial mindset attributes of passion for innovation and connecting people with ideas. Given the connection a principal's entrepreneurial mindset and their actions in the role, there is value in looking at how principals resolve issues or challenges as a proxy for the strength of their entrepreneurial mindset.
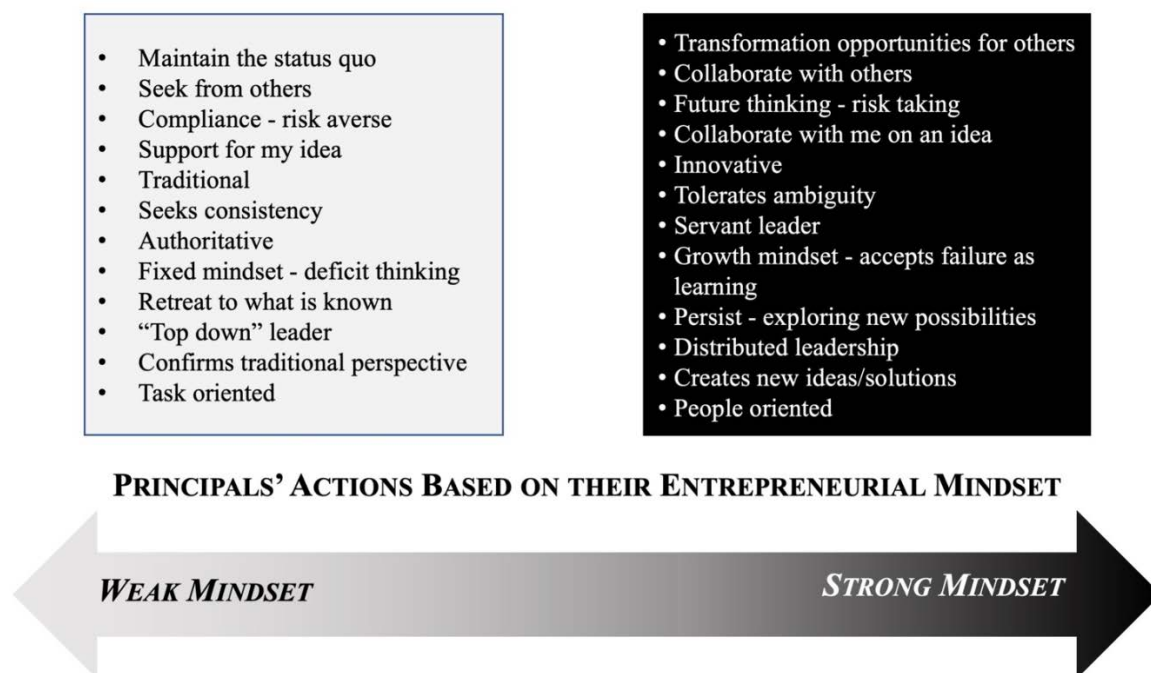
• Maintain the status quo	• Transformation opportunities for others
• Seek from others	• Collaborate with others
• Compliance - risk averse	• Future thinking - risk taking
• Support for my idea	• Collaborate with me on an idea
• Traditional	• Innovative
• Seeks consistency	• Tolerates ambiguity
• Authoritative	• Servant leader
• Fixed mindset - deficit thinking	• Growth mindset - accepts failure as learning
• Retreat to what is known	• Persist - exploring new possibilities
• "Top down" leader	• Distributed leadership
• Confirms traditional perspective	• Creates new ideas/solutions
• Task oriented	• People oriented

PRINCIPALS' ACTIONS BASED ON THEIR ENTREPRENEURIAL MINDSET

WEAK MINDSET   *STRONG MINDSET*

Figure 2. Principals' Actions Based on Their Entrepreneurial Mindset

3. Method

3.1 Research Question

The goal of our mixed methods cross-sectional survey research was to document the extent to which K-12 school principals embrace an entrepreneurial mindset in their leadership and what elements of an entrepreneurial mindset they apply in their practice. To achieve this goal, we developed the following guiding research questions:

- What attributes of the entrepreneurial mindset do principals convey in general questions about their leadership and role?

- What attributes of the entrepreneurial mindset do principals not convey in general questions about their leadership?

- What personal and professional variables (i.e., age, years of experience) predict principals' entrepreneurial mindset?

3.2 Participants

Using a publicly available roster of public school principals we distributed an email invitation to 8242 potential participants. WE had 492 emails bounced, 467 surveys started and had 381 participants link to our survey, but only 349 completed at least 90% of the survey, which is the size of our data set. The average age of the 349 participants was 49.13 years ($SD = 8.25$), and they had worked as a principal for an average of 7.97 years ($SD = 6.11$). Of the participants, 58% identified as male, and 42% identified as female. The majority of the participants were White (71%), followed by 18% Hispanic, 10% Black, and

1% Asian or Native American. The distribution of the location of the schools the participants worked in was 47% rural, 34% suburban, and 19% urban.

3.3 Principal's Survey of Entrepreneurial Mindset Components

Due to the novel focus of our research, we needed to develop a survey instrument to gather the data needed to answer our research questions. Using an existing framework for a comprehensive entrepreneurial mindset (Nadelson et al., 2018), we considered the application of the mindset elements in the context of the work of principals. We then generated a bank of items aligned with various entrepreneurial mindset elements. For example, in alignment with the mindset of tolerance for failure we created items such as "I am willing to take risks for high rewards even if there is a high potential for failure" and negatively stated items such as "When I fail on a project I tend to move on and forget about the project."

We generated over 40 items and then reviewed the bank of items for redundancies, complex stems, and lack of alignment with the work of principals. After our review, we retained 25 items. To validate the items, we asked several professionals who prepare principals to review the items and consider the items in the context of the work of principals. Based on the feedback from the professionals, we made minor adjustments to the language of the items. The 25 items are responded to on a five-point Likert scale ranging from strongly disagree (a value of 1) to strongly agree (a value of 5). Given we consider an entrepreneurial mindset as a whole, the survey did not include any subscales.

We also included three open-response items in our survey to gather qualitative data to document the entrepreneurial mindset of the principals. Thus, we included the following prompts to solicit the participants to respond: "In a sentence or 2 share why you became a principal" and "What is the most challenging part of your job" and "what is the primary goal as a principal." The participants were provided unlimited space for their responses. The goal of the open-response items was to elicit responses that would reflect an entrepreneurial mindset that is expressed naturally without explicit prompts.

In addition to the open and selected-response items, we included several demographic items such as age, experience, gender, ethnicity, and information about their schools. We used demographic data to determine if there were differences based on personal and professional variables.

We calculated the reliability of our instrument to have a Cronbach's alpha of .71, which indicates an acceptable level of internal consistency.

3.4 Data Collection

Using a cross sectional methodology, we distributed a survey to principals to determine their current leadership thoughts and practices. Our data collection took place online using a web-based survey site. We obtained the email addresses of school principals in a region of the south-central United States from a publicly accessible database. We sent an email invitation to over 8000 principals. We collected data for two weeks. At the close of our data collection, we had 467 started surveys and 381 finished surveys. Through data conditioning we eliminated the responses of any participant who had not completed at least 90% of the selected response items resulting in a dataset with the responses from 349 participants.

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3.5 Analysis

3.5.1 Quantitative

To prepare the quantitative data for analysis, we conditioned the data by replacing the missing values with the series mean function in SPSS and reverse coded the responses to the negatively stated items. We then calculated the descriptive statistics for the individual items and composite score to assess the levels of entrepreneurial mindset. We analyzed the responses to the individual items and composite scores using personal and professional variables as factors or independent variables.

3.5.2 Qualitative

We used a content analysis methodology for analyzing our qualitative data. We prepared to analyze the qualitative data by reviewing the attributes of the entrepreneurial mindset and the associated descriptions of the attributes. In Table 1, we present the attributes we used as codes and the corresponding descriptions we used to focus our analysis.

We began coding the data together, discussing each response, and how the data aligned with the different attributes. After our collective coding, we coded 20 items independently and then compared and discussed our coding. Once we established 80% interrater reliability, we then coded the data individually. We found we had achieved consistency in responses, saturating our coding after 100 responses. To confirm our perception of saturation we coded an additional 25 responses in our data set and found consistency was maintained.

Table 1. Entrepreneurial Mindset Attributes Codes and Associated Descriptors

Attribute Code	Descriptors
Tolerance for Ambiguity	Okay with not knowing what might happen, open to letting others take the lead, leads regardless of the level of predictable outcomes
Perceives Failure as Learning	growth mindset, no consequences for failure
Creativity	Thinks of new approaches, systems thinker
Connecting People and Ideas	Leverages peoples' capacity to implement new projects, success is collectively achieved
Risk-taking	Try new methods, high risk - high return
Innovation	Implement new approaches

Leadership	Transformational leadership approach, create opportunities for others to develop, collaborative/distributive leadership
Visionary	Future thinking, developing solutions, has goals based on what the leader envisions the organization should be
Curious	Life-long learning, seeks information
Motivated to Take Action	Motivated, persistence
Being Involved	Engaged, collaborative, community-minded, increase the growth of others
Alternatives to Status-quo	Disruptive, need for change, improvement
Feedback from Others	Seeks to know what others think, organization/goals come first, accepting of criticism by others
Passion (Emergent)	A deep emotional engagement to the situation, affective, personalize and owning the situation
No mindset attribute reported	

4. Results

4.1 Entrepreneurial Mindset Attributes Conveyed

Our first guiding research questions asked: What attributes of the entrepreneurial mindset do principals convey in general questions about their leadership and role? To answer this question, we coded responses to our items asking the participants to share why they became a principal and their primary goal as a principal. We chose the two items due to the expected positive responses that convey the enactment of the attributes. Following coding, we determined the percentage of responses corresponding to each entrepreneurial mindset attribute to assess the relative frequency of the expression of the attributes.

Our analysis revealed the participants most frequently conveyed the entrepreneurial mindset attributes of a desire to be involved, engaging in leadership, motivation to take action, and being visionary (see Figures 3). At a more moderate rate, the participants' responses reflected the entrepreneurial attributes of seeking alternatives to the status quo, connecting people and ideas, and innovation. Less than 10% of the participants communicated the remaining entrepreneurial mindset attributes in their responses. Our

results suggest that the principals tend to express some attributes of an entrepreneurial mindset but rarely consider others, which may indicate a fragmented mindset.
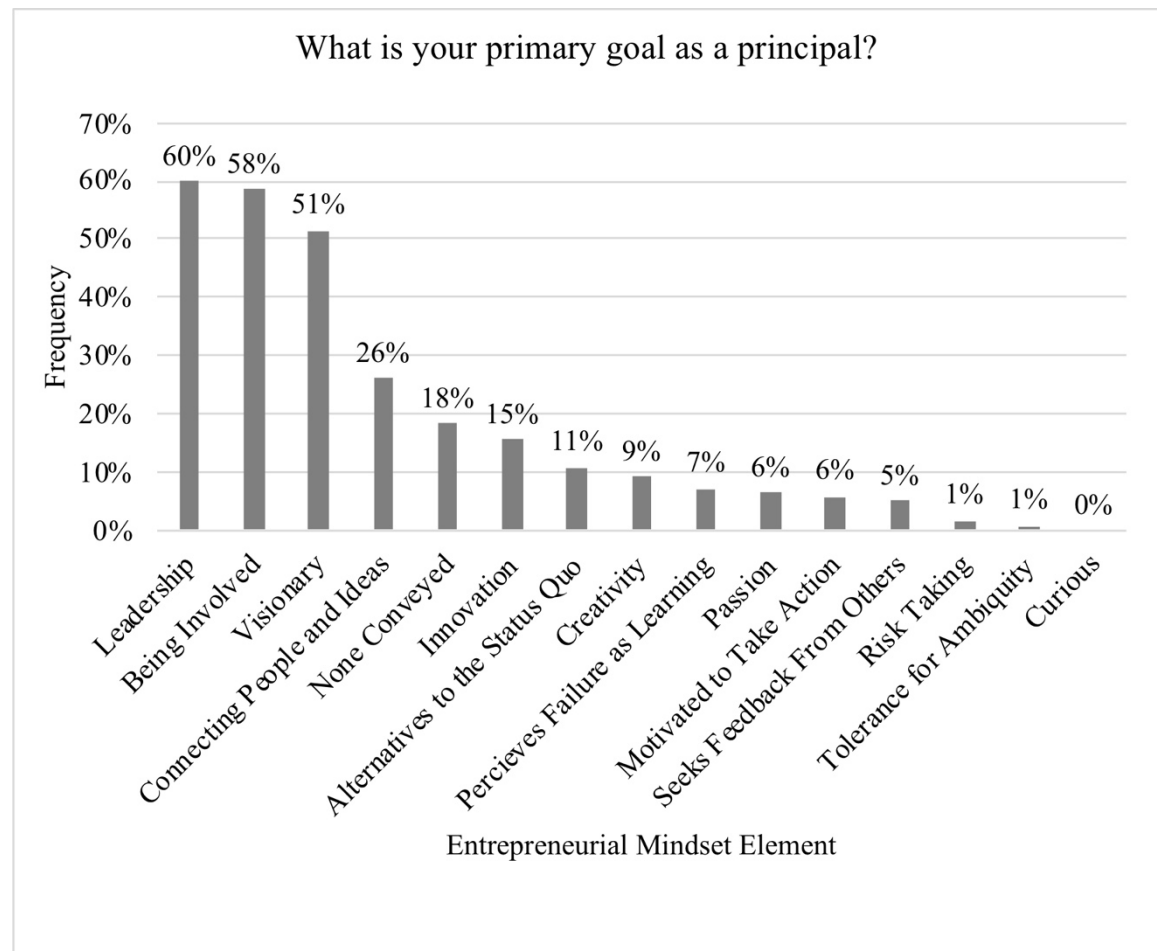

Figure 3. Relative Frequency of the Entrepreneurial Mindset Attributes Conveyed in Sharing the Primary Goals as a Principal and Motivation to Become a Principal

In Table 2, we present participants' responses to the two free-response items representative of the coded entrepreneurial mindset attributes. Our results indicate that the participants tended to convey a limited scope of entrepreneurial thinking when explaining their professional goals and motivation for becoming a principal. Our results suggest that the principals do not think in ways aligned with a strong entrepreneurial mindset and, therefore, may tend to hold and think using a weak to moderate entrepreneurial mindset.

Table 2. Attributes and Representative Responses from the Participants Conveying a Strong Entrepreneurial Mindset

Attribute	Representative Responses
Tolerance for Ambiguity	"...I also want to provide freedom for my risk-takers who want to try new things in their classroom."
Perceives Failure as Learning	"Coach and develop teachers to never stop learning and to try new things to increase student achievement. Protect them from outside distractions and influences to stay focused on our priorities as a campus."
Creativity	"To remove obstacles that stand in the way of teacher success with students."
Connecting People and Ideas	"To help all our students have choices and open doors when it comes to what they'll do post high school. Students only have the prerequisites we prepare them with and those pre reqs can broaden or limit options post high school."
Risk-taking	"I wanted to effect change at an institutional level, and influence the education of students positively on a broader scale than I could reach in the classroom."
Innovation	"To create a stimulating and engaging learning environment that promotes curiosity and improves self-esteem."
Leadership	"I have the ability to lead others and build capacity--being a principal has given me the opportunity to positively impact more students than I ever could as a classroom teacher." "I became a principal because I enjoy helping teachers understand the needs of students with challenging behaviors (academic or social-emotional)."
Visionary	"To change the world through education." "I am a strong believer in education and making a difference for our future."
Curious	NO RESPONSE FOUND
Motivated to Take Action	"I wanted to lead teachers and students in a way that would bring value to public education and their lives." "Attitude reflects leadership - change the culture of school."

Being Involved	"To serve the teachers and students to help them reach their maximum potential. I want our schools, not just mine, to be a staple in community pride."
Alternatives to Status quo	"To get the school off of the IR list." "Organizational change from the inside - out."
Feedback from others	"I became a principal because I like being able to have an impact on an entire organization by leading, listening, and learning."
Passion	"I love seeing kids grow. I believe it is the most rewarding job." "I love kids and teachers! I love being able to make a positive impact!"
No Mindset Attribute Identified	"It was a natural step in career advancement. My grandmother was a principal in this district, so people expected me to follow that path." "I was appointed to turn around this campus." "Student safety & support."

4.2 Entrepreneurial Mindset Attributes Not Conveyed

Our second guiding research questions asked: What attributes of the entrepreneurial mindset do principals not convey in general questions about their leadership? To answer this question, we coded one free-response item for attributes of the entrepreneurial mindset that would enable the principals to solve the challenges they face in their role. We choose the item due to the expected negative responses that convey a lack of enactment of entrepreneurial mindset attributes and, therefore, the thoughts and actions of approaching problems as opportunities for change.

Our coding revealed almost all the participants tended not to approach their challenges with a strong entrepreneurial mindset. In Table 3, we provide the attributes of a strong entrepreneurial mindset along with a representative response in which we perceive the challenge could be resolved by applying the mindset attribute. For example, the response "Not having consistent systems from district leadership" could be resolved through the mindset attribute "Tolerance for Ambiguity" which suggests the participant does not engage in the challenge with the entrepreneurial mindset attribute reflecting the potential for a weak mindset. With few exceptions, the challenges that the participants shared they faced were not framed in terms of problem-solving using the thoughts and actions that define an entrepreneurial mindset. An exception is a participant who shared, "It's all challenging but I don't look at it that way because I love what I do and I possess a growth mindset" which reflects a strong entrepreneurial mindset.

Table 3. Attributes and Representative Responses Not Conveying a Strong Entrepreneurial Mindset

Attribute	Representative Responses
Tolerance for Ambiguity	"Not having consistent systems from district leadership."
Perceives Failure as Learning	"To be an instructional leader for my teachers because there are constant interruptions of my day, starting at a clogged toilet to a child having a meltdown." "The baggage that students bring to school and knowing that sometimes I can't do anything to relieve that pressure because their life influences outside of school are too great."
Creativity	"Not enough time, staffing, and money"
Connecting People and Ideas	"...having to share information/mandates from the district level that I know are overwhelming for teachers."
Risk-taking	"...getting the staff to trust me and to buy into our mission and vision. I took over my current campus mid-year, replacing a principal who had been the campus leader for over 15 years." "After 12 months as the new principal, we have made significant physical changes to the campus and streamlined our processes and procedures. Buy-in from the district, parents, and students has been easy; however, buy-in from some staff members, mostly the tenured teachers, continues to be challenging."
Innovation	"Balance is the most challenging part of the job. How to balance between the bureaucratic things that must be done and moving forward in the work of being a learning organization." "Getting paperwork completed. Writing up formal observations; I would rather have conversations."
Leadership	"Ensuring everyone is working toward the same goal." "Working with a large number of people."

Visionary	"It is difficult to balance being supportive of the teachers as professionals when their core beliefs are not aligned with mine." "Working with adults who believe the school exists for them and not the students. I also struggle with individuals who do not look at students as individuals and are not willing to try new strategies in the classroom."
Curious	"Leaving work at work and not taking it home with me."
Motivated to take Action	"Keeping teachers focused during those months that can be tiring."
Being Involved	"Not feeling effective with students and teachers who are struggling."
Alternatives to Status-quo	"Personnel is the most challenging part of my job because I am dealing with adults who are often set in their ways." "Parental conceptions about school effectiveness and their role in that process."
Feedback from others	"Dealing with parents who do not value education."
Passion	"Leaving work at work and not taking it home with me."
No Mindset Attribute Identifiable	"Cash flow" "Politics" "Staffing" "Adult Interactions"

In Figure 4, we present the percent of the participants who conveyed challenges that could potentially be resolved by applying one or more attributes of a strong entrepreneurial mindset. Using the perspective of a strong entrepreneurial mindset, we found the principals most frequently conveyed challenges that might be resolved by applying the attributes of leadership, connecting people and ideas, getting involved, and innovation. At a moderate level of frequency, the challenges could be resolved if the principals applied the strong entrepreneurial mindset attributes of risk-taking, perceives failure as learning, creativity, seeking alternatives to the status quo, and tolerance for ambiguity. At a low frequency, the participants shared challenges that could be resolved through the application of the strong entrepreneurial attributes of being visionary, motivation to take action, seeking feedback from others, passion, and being curious. Thus, we found the challenges that principals convey are more likely to be resolved with a subset

of the strong entrepreneurial mindset attributes. It is important to note that we are not classifying the specific level on the spectrum of the mindset, but rather considering the narratives as being reflective of potential attributes associated with the mindset.
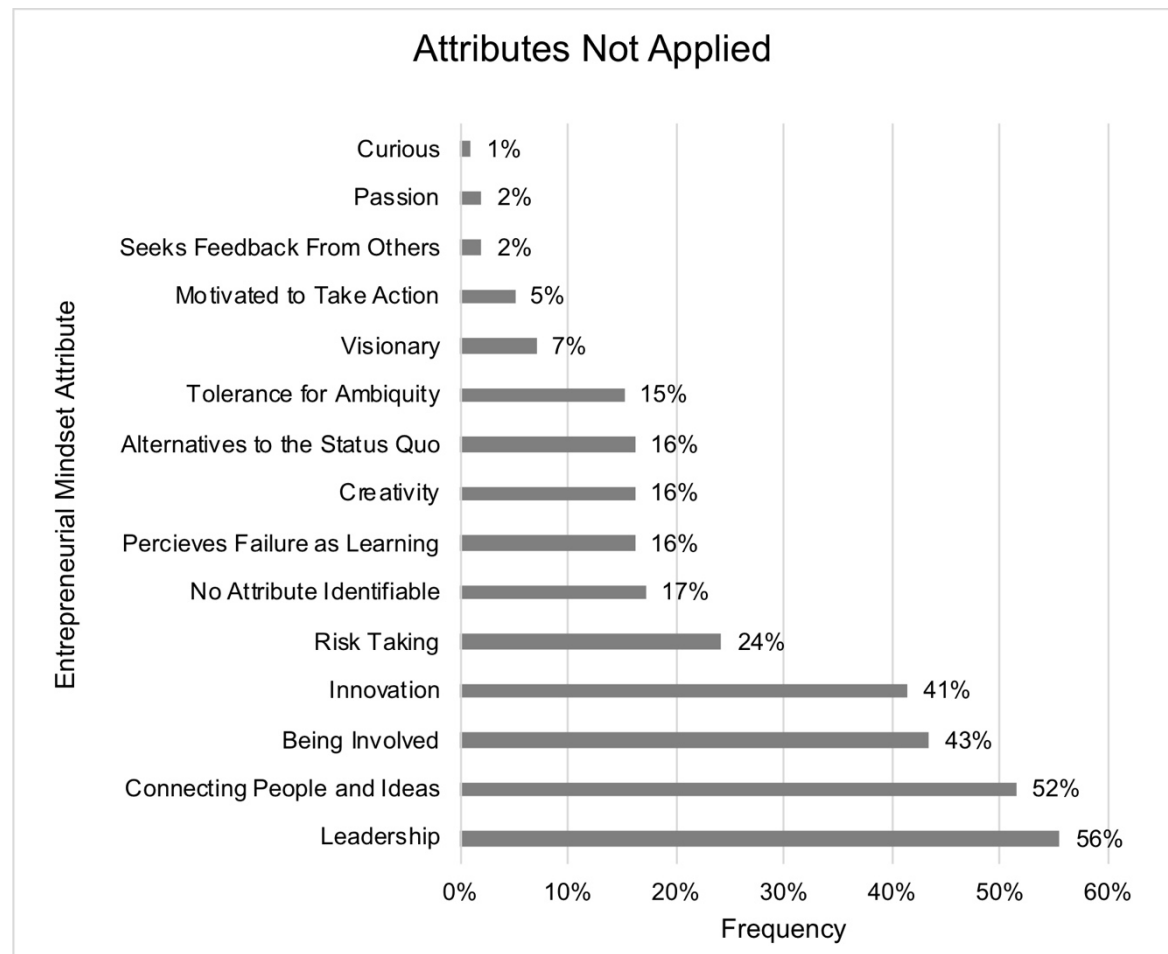

Figure 4. Frequency of the Entrepreneurial Mindset Attributes Not Expressed that Could Be Applied to Solve the Challenge

4.3 Entrepreneurial Mindset and Personal and Professional Variables

Our last guiding research question stated: what personal and professional variables (i.e., age, years of experience) predict principals' entrepreneurial mindset? To answer this question, we first calculated a composite variable from the answers to our selected-response items associated with the expression of the attributes of a strong entrepreneurial mindset. The mean for the composite score for the attributes was 3.65 (SD = .33). Interpreting the mean for attribute expression on the entrepreneurial mindset spectrum (see Figure 1) would indicate that the principals as a group have a modest expression of the mindset attributes which we equate to a modest entrepreneurial mindset. The modest entrepreneurial mindset is consistent with the findings from the analysis of qualitative data, which indicated fragmented mindset attribute expression.

With the composite score for mindset level under consideration, we proceeded with our analysis by conducting a series of descriptive and inferential statistical analysis including correlation, t-test, and ANOVA using the composite score for entrepreneurial mindset as the dependent variable and different personal and professional variables as predictors.

We began by conducting a series of correlation calculations to determine the relationships among the continuous variables including age, years of K-12 experience, years as a principal, years in current school, and the number of memberships to professional organizations. We found significant positive correlations between our composite variable for entrepreneurial mindset and age ($r = .12$, $p = .035$) and with the number of memberships to professional organizations ($r = .18$, $p < .01$). Our results indicate that as age increases or membership to professional organizations increases so does the level of an entrepreneurial mindset. There were no significant corrections with the other variables. We did not find age to be significantly correlated with the number of professional organizations.

We continued our analysis with an exploration of potential relationships of the composite for entrepreneurial mindset with our categorical variables such as gender, ethnicity, location of the school, type of school, percent of the students who qualify for free and reduced lunch, school performance, and school level. An ANOVA revealed a difference in the level of strong entrepreneurial mindset by the number of students in the school ($F(5,342) = 2.914$, $p = .014$), with the Tukey post hoc analysis revealing principals in schools with more than 1000 students having significantly higher mindset score ($M (30) = 3.79$, $SD = .32$) than principals working in schools with 200-400 students ($M(97) = 3.59$, $SD = .30$). Our analysis revealed a significant difference in the levels of a strong entrepreneurial mindset by the performance of the school based on state rankings in which the principals' worked ($F(4,330) = 3.40$, $p = .01$) with post hoc analysis revealing a significant pairwise difference with principals in B schools ($M(134) = 3.70$, $SD = .33$) being significantly higher than principals in C schools ($M(79) = 3.57$, $SD = .33$). We found no relationship between entrepreneurial mindset and gender, ethnicity, location of the school, level of the school, percent first-year teachers, and SES of the students.

5. Discussion and Implications

The goal of our research was to document the entrepreneurial mindset of K-12 principals and to determine the predictors of their mindset. The combination of quantitative and qualitative data afforded us the opportunity to document the mindset using two different methods. The result of both the quantitative and qualitative analyses revealed the principals held a modest entrepreneurial mindset.

5.1 Conveying Entrepreneurial Thinking

Our analysis of the responses to why the participants became principals and their primary goal as principals revealed fragments of entrepreneurial thinking. The fragments of entrepreneurial thinking were aligned with the general expectations of leadership, such as being involved, taking action, and leadership. A few exceptions were the high level of visionary thinking and connecting people and ideas. However, the responses did not reflect about half of the attributes of an entrepreneurial mindset. We

suspect that principals are not prepared to think using a strong entrepreneurial mindset, focused instead on the traditional role of leadership as that of authority. Further, we posit the general school culture has traditionally been about maintaining the status quo rather than innovative thinking, developing new approaches, and other activities that require entrepreneurial thinking, and thus a strong entrepreneurial mindset.

One implication for our finding is the modest entrepreneurial mindset that many principals hold will limit their ability to restructure schools and create new organizational structures and support new approaches to teaching and learning. A second implication is a limited perspective for problem-solving by principals due to limited scope of thinking in relation to their leadership positions. To resolve the issue of principals holding a modest entrepreneurial mindset may require shifts in principal preparation program curriculum and focused professional development. Our future research will focus on how much the curriculum of principal preparation programs is aligned with strong entrepreneurial mindset development.

5.2 Not Applying Entrepreneurial Thinking

When asked about the challenges faced in their role as a principal, the participants indicated a range of deficit thinking in which a strong entrepreneurial mindset could allow the principals to resolve the challenge. We found a few exceptions in which a participant recognized their role has challenges but approach the situations with a growth-mindset and innovation, reflecting a strong entrepreneurial mindset. Again, as a whole, the responses indicate a constrained entrepreneurial mindset. We postulate the reason the principals tended not to approach the challenges they face with a strong entrepreneurial mindset is again due to lack of preparation to approach problems with a mindset of innovation and creativity. Further, we speculate that the culture of school leadership and some of the immediacy of the challenges in schools are not conducive to engaging in strong entrepreneurial thinking to develop solutions. Future research should focus on exploring in more depth what is influencing principals' approaches to challenges and the lack of an application of a strong entrepreneurial mindset when considering the barriers they encounter in their leadership roles.

5.3 Relation to Personal and Professional Variables

Our quantitative data also reflected a modest entrepreneurial mindset, supporting our findings in the qualitative data. We also found the entrepreneurial mindset level was correlated with both age and the number of memberships to professional organizations. Our finding suggests that as people age, they may develop more of an entrepreneurial mindset, using their lived experience to inform how they approach leadership and other situations. We failed to find a relationship between years of experience as a principal and an entrepreneurial mindset, which suggests that an entrepreneurial mindset may be more trait dependent than state related. Thus, our results suggest that entrepreneurial thinking can transcend conditions or situations, and is influenced by time and a range of experiences beyond the principalship. However, our finding of an association between entrepreneurial mindset and the number of memberships to professional organizations suggest that age and experience may require focus or intention, such as engaging in knowledge seeking and lifelong learning, to influence the mindset development.

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Our quantitative data also suggests that the level of a principal's entrepreneurial mindset is related to the size of the school and school performance. We speculate it may be the conditions of the schools that attract principals who have mindsets aligned with the culture and expectations of the schools. If a school culture is conservative and resistant to change a principal may be met with substantial resistance to entrepreneurial thinking, due to adherence to tradition and status quo. Thus, schools with a conservative culture schools may be more likely to attract principals who hold a weak entrepreneurial mindset. However, schools with a culture of innovation and change may attract principals who hold a strong entrepreneurial mindset due to expectations of novel thinking and creativity. The implication for our finding is the expression of a strong entrepreneurial mindset may be more easily achieved in some schools than others; making the expression or suppression of the mindset contextual on school and community culture. Future research should delve deeper into the relationship between principals' entrepreneurial mindset in relation to school culture and conditions.

5.4 Implications for Principal Preparation Practice

There is high potential for principals to encounter complex problems in their role such as dealing with a global pandemic, school shooting, student suicide, pervasive bias, or financial retrenchment. These complex problems require creative solutions, teamwork, risk-taking, persistence, acceptance of ambiguity, and tolerance for failure. Essentially, solving complex problems require principals to think like entrepreneurs. Some principals may develop entrepreneurial thinking by chance over time. However, if principals are prepared to think like entrepreneurs, they may develop an entrepreneurial mindset faster and be better prepared to apply entrepreneurial thinking to solve complex problems. Thus, we recommend the leaders of principal preparation programs examine their curriculum and instructional methodology and determine how they may integrate opportunities to foster their candidates' entrepreneurial mindset, particularly in the context of solving complex problems. Further, by thinking like an entrepreneur, principals may be able to prevent or minimize potential problems before they become substantial and disruptive. We conjecture that when faculty of school leader preparation programs focus on authentic learning experiences they position aspiring leaders to more readily comprehend the relationship among vision and strategic actions, which can result in effective organizational initiatives. A related direction for research is how preparing principals with an entrepreneurial mindset influences how they approach solving complex problems as practitioners.

6. Limitations

The first limitation of our research is the participants were drawn from the same region of the United States. Although we found trends and consistency in our data, it may be possible that principals in other regions of the United States or from different cultures may convey divergent thinking. Examining the entrepreneurial mindset of principals in different regions and cultures will be needed to determine if our data is representative of the greater community or if our findings are regionally bound.

A second limitation of our research is the potential for bias in the sample. We distributed our survey to over 4000 principals but had data from only had 349 participants in our final dataset. Thus, the participants may not be representative of the greater population, and responded due to their interest in ideas of entrepreneurial thinking. Future research may need to do more targeted data collection from a sample of principals to ensure our results are representative of the broader community.

A third limitation of our research is the nature of our data collection. We used an anonymous survey to gather data which did not allow us to follow-up with the participants to determine why they answered the way they did to some of our items. We did go through a process to validate our survey items, so we presume the participants' interpretation of the context and content of our items was consistent with our expectations. However, future research may want to do interviews and observations of principals to determine if our findings are genuinely representative of the entrepreneurial thinking and actions of principals.

7. Conclusion

Principals can be more effective leaders if they lead using a strong entrepreneurial mindset. Our research is the first empirical study we are aware of to document the entrepreneurial mindset of principals. Our finding of principals holding a modest entrepreneurial mindset suggests a need for a shift in the preparation and ongoing professional development of principals. Additional research is needed to further understand the phenomenon and the ramifications of principals' entrepreneurial mindset influence on their leadership.

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