

Is It Rational or Intuitive? Factors and Processes Affecting School Superintendents' Decisions When Facing Professional Dilemmas

Walter H. Hart, Ed.D.
Winthrop University

Abstract

Given the critical impact of their decisions and of the community's perception of their performance, it is reasonable that school superintendents would seek to understand the factors that influence their decisions and the processes used to make them. The researcher in this study used a qualitative approach, interviewing 13 school superintendents about the factors that affected their decisions and the extent to which they utilized a rational or intuitive decision-making model. The results show that superintendents' decisions are influenced by the belief that they must safeguard the interests of students, by their perceptions about community acceptance of their decisions, and by the advice of trusted consultants. Their responses suggested that superintendents blend a rational approach with their intuition when making decisions, a strategy that mimics dual process approaches.

Every aspect of an organization's success depends upon leaders making effective decisions. Hiring and retaining personnel, long-range planning, goal setting, resolving conflict, professional development, and budgeting are just a few examples of functions that depend upon quality decisions, and within every major decision lies the opportunity for success or failure (Lunnenburg & Ornstein, 2012).

Before we delve into this matter, it is important to clarify some key terms. A decision is a choice among alternatives; decision making is the process used to make that choice. Because decision making is part of all administrative functions, effective leaders must be adept at this skill (Kowalski, 2013). Individuals occupying mid-level management positions often rely on established policies to guide their actions, making what Lunnenburg and Ornstein (2012, p. 136) call "programmed decisions." Kasten and Ashbaugh (1988) found that whereas routine programmed decisions required discretion, enforcing existing policy is less challenging than the creative problem solving and complex decision making that executives engage in when facing professional dilemmas. Unlike routine decisions, a dilemma is a predicament for which there is no clear solution, unclear or nonexistent policy, and typically no precedent (Hoy & Tarter, 2008). Executives at the highest level of the organizational hierarchy frequently face dilemmas (Agor, 1985).

Like CEOs in major organizations, school superintendents frequently face dilemmas (Touchton & Acker-Hocevar, 2011). Limited resources, relations with elected boards, conflicting community values, teacher performance issues, and curriculum changes are just a few examples of such challenges (Noppe, Yager, Webb, & Sheng, 2013). Dilemmas faced by superintendents often stem from political and external forces that manifest through state and federal mandates. Dilemmas require creative thinking and may cause discrepancies between the superintendents' values and the organization's expectations. Superintendents are committed to following the rules of the organization, a belief system called the "standard administrative orientation" (Langlois, 2004, p. 78). Experienced superintendents understand the difficulties associated with resolving dilemmas and develop mechanisms for coping with this uncertainty (Langlois, 2004). In fact, superintendents must learn to accept ambiguity and conflict (Litchka, Fenzel, & Polka, 2009).

The lively nature of organizations, coupled with the multiple demands placed on executives, requires efficient and logical decision making. The traditional response to this challenge has been to use rational analysis, a process taught in leadership programs for decades (Sadler-Smith & Shefy, 2004). However, Sadler-Smith and Shefy (2004) suggested that the limits of rational models require decision makers to also utilize intuitive approaches, combining two seemingly contradictory models of decision making: rational and intuitive. This "blended" approach is captured through a variety of dual processing theories that have emerged since the 1990s (Akinci & Sadler-Smith, 2012). Although they use a different terminology, these theories advance the idea that our brains use rationality and intuition in tandem to facilitate effective decision making (Salas, Rosen, & DiazGranados, 2010). Context also plays a role in determining which approach is best for a given situation. The experience and beliefs of the leader, the demands (or lack of) from the community, and the level of impact of a decision are some of the contextual factors that leaders consider when determining which decision-making approach to utilize (Khakheli & Morchiladze, 2015).

Given the complex demands on schools, superintendents continuously face professional dilemmas. Although other models/theories have been put forward (Domagoj, 2015), the rational model and the intuitive approach emerge as two opposite ends of the decision-making spectrum.

If, as Sadler-Smith and Shefy (2004) suggest, leaders should integrate both models when making decisions, then considering the factors that affect which method is considered by superintendents would seem worthy of further study. Furthermore, examining the extent to which superintendents utilize a rational process versus their intuition and under what circumstances would also be of interest.

Related Research

The Rational Versus the Intuitive Approach

The rational approach. Peter Drucker (1967) argued that effective executives made decisions by using a systematic process. The rational model requires a step-by-step approach, including problem definition, generating alternatives, and implementing a solution after examining all options (Kowalski, 2013). This model is based on the notion that decision makers will have the time and insight needed to uncover different options and predict the outcomes of each. Tanner and Williams (1981) argued that the rational approach was popular because of its focus on accomplishing goals by minimizing subjectivity and political influence.

However, Simon (1993) found limits to the rational model. Specifically, decision makers do not always have the time or abilities to fully comprehend the problem, search for multiple solutions, and accurately predict the possible outcomes. Therefore, Simon introduced the process of “satisficing” to describe when administrators use intuition, advice from others, experience, and creativity to develop compromise solutions. Kowalski (2013) and Lunenburg (2010) noted that the conflicting demands placed on school administrators and the political context in which they work cause them to engage in satisficing behaviors by implementing acceptable (rather than ideal) solutions.

The intuitive approach. The definition of “intuition” continues to be refined, as the theoretical research base becomes more nuanced over time (Akinci & Sadler-Smith, 2012; Volz & Zander, 2014). Intuition has been described as a quick, affectively charged, subconscious understanding of a complex situation related to experience-based, holistic associations (Dane & Pratt, 2007; Myers, 2002), which can serve as a catalyst for or a warning against quick action (Goleman, 1988). Sadler-Smith and Shefy (2004) noted that intuition is instinctive, and that decision makers find it difficult to describe their reasons for intuitive decisions beyond noting how they felt. Recent developments in neuroscience, particularly the use of brain imaging, have enhanced our understanding of intuition (Dreyfus, 2010). Kandel (2007) noted that all mental functions, including memory, stem from physiological processes and molecular events, many of which are nonconscious. Neurological research also suggests a link between emotions and intuition, as the neural mechanisms that play a central role in engendering the associations that spur intuitive judgments are aroused by positive affective stimuli (Koch, 2015; Liberman, 2007).

Our comprehension of the role of intuition in decision making also continues to be refined. Several studies have noted that executives make decisions based on intuition (Hayashi, 2001; Hensman & Sadler-Smith, 2011; Mintzberg, 1988; Sadler-Smith & Shefy, 2004). However, Campbell, Whitehead, and Finkelstein (2009) found that executives admitted that their intuition is often wrong. For example, individuals may overemphasize the occasions in which their intuition was accurate, causing excessive confidence in their ability to make effective decisions (Kahneman & Klein, 2009). Individuals may also see patterns where none exists or take unnecessary risks to compensate for a disappointing loss (Campbell et al., 2009).

Despite its limitations, however, intuition plays an important role in decision making. Ignoring the intuitive feel that something is not right can result in the implementation of bad decisions, whereas the overemphasis on data analysis suggested by the rational model can result in missed opportunities (Hayashi, 2001). Intuition may also be integral to completing complex tasks with short time horizons (Crandall, Klein, & Hoffman, 2006). Combining intuition with objective analysis can result in an effective management style in which intuitive judgments are intelligently used (Haidt, 2001).

The Influence of Context

Regardless of which approach is used, the existing literature has long noted the importance of context as a factor in decision making. In the 1970s, Vroom and Yetton (1973) argued that the social context surrounding a decision influences its outcome and acceptance, claiming that the best approach for resolving a dilemma is dependent upon situational variables including problem complexity, time availability, leader and follower understanding, and the impact of the decision on subordinates. Argyris and Schön (1974) suggested a possible link between beliefs, decisions, and intuition, as individuals often state that their beliefs guide their actions. However, Argyris and Schön also noted that tacit knowledge often affects decisions in ways that do not always align with those stated beliefs. More recently, Kahneman and Klein (2009), proponents of the naturalistic decision making approach, noted a link between the decision maker's experience with a particular environment and the effectiveness of the resulting decision. Salas et al. (2010) also described the level of expertise as a contextual factor, arguing that intuition becomes more useful as the decision maker's expertise within a specific domain increases.

This research project was designed to further investigate the factors that affect superintendent decision making and the extent to which their decision-making processes reflect rational or intuitive models. The researcher sought to answer the following questions:

1. What factors affect school superintendents' decisions when resolving professional dilemmas?
2. To what extent are those decisions based on rational or intuitive processes?

In this era of heightened accountability, increasing competition between public and private schools, and growing privatization efforts (such as charter schools and voucher systems), superintendents are going to continue to face unprecedented dilemmas. Given the critical and widespread impact of their decisions, understanding the factors and processes that affect them is a salient issue.

Method

Understanding the nature of decision making requires engaging in dialogues in which participants can elaborate upon their responses. Therefore, this study involved a qualitative design, which is appropriate when there exists a need to better understand "the nature of persons' experiences with a phenomenon" (Strauss & Corbin, 1990, p. 19). I conducted the research at an institution in the southeastern region of the United States that prepares teacher and school administrator candidates. Here, I conducted semi-structured interviews with 13 school superintendents in spring 2017. The interviews lasted for about 45 minutes and took place in the participants' offices. Participants were selected from a convenience sample of North and South

Carolina superintendents because of their familiarity with the researcher. Thirteen participants from districts ranging in size from 4,000 to 150,000 students were invited to participate; all contributed to the study. Seven participants (54%) were from North Carolina and six (46%) were from South Carolina. Eight males (62%) and five females (38%) participated; one (8%) participant was African-American and the rest (92%) were White.

Interview questions were developed according to the rational decision-making framework described by Kowalski (2013) and the use of intuition described by Sadler-Smith & Shefy (2004). I hypothesized that recommendations for how to best navigate decision making for superintendents would require an understanding of the extent to which rational and intuitive processes influenced their decisions. To this end, I designed questions targeting the superintendents' perceptions of the types of dilemmas they find most challenging, their good and bad experiences with decision making, the factors they consider when making decisions, and the advice they would provide to a beginning superintendent. Finally, I speculated that the superintendents' perceptions of how others in the same role make decisions would provide information about the culture of superintendent decision making in general.

I analyzed the data collected from the interviews using a grounded theory approach (Glaser, 1992). Individual responses to the interview questions were grouped together, and the responses in each group were independently analyzed line by line. In keeping with Saldana's (2013) suggestions, I conducted two rounds of coding.

Results

Factors Affecting Superintendents' Decisions

Three themes emerged in response to the first research question regarding the factors that affected participants' decisions. The most dominant factor was the participants' beliefs about what is best for children. Next came their predictions about how the community would react, as conveyed through the lens of the board of education. Finally, the participants gave much weight to advice from trusted colleagues.

Students first. The participants' most frequent response about the factors affecting their decisions was the belief that they should do what is best for students. The participants felt responsible for the students' well-being, with this responsibility taking precedence over the concerns of adults. Words like "belief," "guiding principle," and "duty" were used to illustrate this point. Participant 8 said: "I have to do what is in the best interest of students. It's like a personal, moral compass." The participants also said that they faced dilemmas when teachers and principals wanted to address problems without keeping the interests of students as their main concern, with this type of situation typically resulting from a disagreement about the interpretation of policies. Participant 2 stated: "When it is a student issue, it may not be what the adults agree with, but I am going to make a decision that is in the best interest of the student."

The participants' responses about their empathy for the students led to follow-up questions investigating how they would know that their judgment was more accurate than that of adults with whom they disagreed. Their responses suggested that they perceived themselves to be objective when addressing such challenges because they were removed from the immediacy and emotions of the situation. Participant 13 described asking others to consider a personal perspective when addressing student issues:

The test is, if this were for your child, would you feel differently about the solution we are coming up with. The answer should be no. When it becomes personal, you take a broader view than you might when it is somebody else's child.

The participants noted that when facing disagreements about student issues they would often seek input from those with expertise, such as legal counsel, curriculum specialists, or other district officials. Doing so helped to ensure they would balance policy guidelines with the best interest of the students. Participant 13, noted that it is challenging to make decisions that adhere to established policies when those policies do not always effectively account for individual student needs: "How do we honor our policy and get to a situation we can stand on but allow a solution to support a child?"

The public context. The responses revealed that the participants were influenced by how they thought stakeholders would respond to their decisions. Participant 6 noted: "I am constantly thinking about how the city council is going to react." Participant 9 said: "You earn the trust of the community every day. Decisions we make cannot erode that trust."

The participants described seeking input from those who were going to be affected by their decisions, a process that Participant 13 called "360-degree decision making." They believed that doing so increased decision acceptance while decreasing mistakes. Several participants attributed negative stakeholder reactions to decisions to not gathering sufficient input. Participant 3 recalled misjudging how poorly a seemingly innocuous decision would be received: "We did not vet or educate or get feedback from every level of the organization to build understanding. The teachers misunderstood our intentions. The miscommunication snowballed. It became a big deal." Participant 4 said: "If you are going to make a good decision, and it is going to affect a lot of people, you have to make that decision with the input of a lot of people."

As boards of education represent community views, the participants said that they sometimes consulted with their boards when facing dilemmas and tried to anticipate how they would react to various proposals. The participants said that discretion was required about when to consult, because the board might have to serve as an appeals panel in student or employee discipline cases. When asked who influenced his decisions, Participant 2 responded, "My team, and all the people around me. The principals. And the board. The board forces their will. Everything I do I am thinking about what the board is going to think. They are omnipresent."

When discussing public context, the participants described satisficing behaviors, seeking workable but not necessarily ideal solutions. Participant 1 said: "There isn't just one right answer. You go through a process to come up with the best answer you can." Participant 2 commented: "You implement the solution that is the win-win." Participant 3 noted: "No matter what we do somebody isn't going to like it. There's the right decision and then there's the one the community may like more or less." Participant 5 said:

I wrote a budget plan and delivered it to the board and to a public hearing. The process of multiple steps and involving a lot of people gave us a result we could live with. We didn't necessarily like it, but we could live with it.

Consulting counts. Another theme to emerge was that the participants' decisions were influenced by the opinions of advisors, frequently district leaders and fellow superintendents. Participant 6 said: "Surround yourself with good people and listen to them." Participant 12 said: "I value input and I'm ok with disagreement. I tell my folks to not let us fall into a hole that you saw." Participant 5 said: "I try to build a strong cabinet and I tell them, 'Don't say yes to me. We will get in trouble quickly if you are all yes people.'"

The participants said they often consulted with other superintendents who had faced similar dilemmas. Participant 5 said: “I have close superintendents that I talk with. I ask them, ‘So what do you think about this?’ I have one who thinks totally differently than me and thinks of things I would have never thought of.” Participant 4 added: “I have a group of superintendent mentors I look to. I ask if they have ever experienced it before. I want to know how they handled it.”

Decision-Making Processes Used by Superintendents

Two themes surfaced in response to the question about whether superintendents use rational or intuitive processes. First, more deliberate (rational) processes were used when time was not a limiting factor. Second, participants’ decision making incorporated elements of the rational model with superintendents’ experience-based intuition.

Context of time as a factor. Responses suggested that the nature of dilemmas influenced the decision-making process. Crises involving safety were resolved in a quick, autocratic manner with limited input from others. When a quick response was not necessary, participants consulted with others using a more deliberate process to clarify the problem and identify and analyze possible solutions. Participant 2 said: “I make the decision if it involves safety or law. I use participatory management when I need to get input and involve stakeholders and I need to hear different perspectives.” Participant 3 described an approach that is used when time is not a factor:

We use a decision-making process. It does two things. One is, hey, what are all the issues? Let’s get them out on the table. The other is, we have options. Let’s put them on the table and make a decision. Sometimes it is hard to buy into, but when you are finished there is a decision.

Rational intuition. The second theme to emerge was that participants used a blended process when facing dilemmas. They described integrating a rational approach and their intuition, with neither used at the complete exclusion of the other. Whereas a rational approach was used to clarify the problem and analyze solutions, a decision still had to be made about which solution to implement. Although participants were informed through dialogue and analysis, their intuition considerably affected the choice of which option to implement.

To illustrate the blending of intuition and methodical processes, the participants described times when they felt an unexpected sense of clarity about the best solution for a dilemma that was being methodically analyzed. They noted that they were not certain why this phenomenon, which happened at unusual times and places, would occur. However, their descriptions suggested that intuition manifested itself during times of reflection. They used phrases like “gut feeling,” “it hit me,” or “something was nagging” when describing intuition.

Participant 8 illustrated this theme:

I tend to take my time and be reflective and talk to people and let the dust settle and then see if two weeks from now I feel the same way. When I act quickly I don’t feel as good about a decision. One option emerges if I allow the process to take its time.

Participant 5 noted:

For me, it’s in the middle of the night or in the shower in the morning. I worry and worry and go over something in my mind and then it hits me and I think about it another way. I really wish I knew why it happened. If I did I would do it more often.

Participant 2 observed:

I always try to look at it from the approach of, “Is there a win-win?” You are wrestling for a win-win and have a mental process going on to come up with a solution. It will hit me that we could do that. Maybe it’s divine intervention. I don’t know other than it’s just there.

Participant 9 described an intuitive moment that occurred after thoughtful consideration of how to resolve performance concerns affecting two employees: “It hit me driving to work one morning [snaps fingers], we need to flip these two folks [have them switch assignments]. I was getting ready to dismiss both of them. Now, it works great.”

Participants with lengthier tenures in their districts related intuition to a compilation of learning experiences, believing that they were more intuitive as veteran superintendents. Participant 8 said: “I don’t even remember the specifics, but I will get that intuitive feeling when something comes up that this has the potential to bite somebody if we don’t handle it a certain way. I know it’s from past experiences.” Participants with lengthier tenures believed their experiences helped them to anticipate concerns and predict outcomes. Participant 6 noted: “I trust my gut. I trust the history. I try to remember where we have been and what the community would think is a good decision.” Participant 9 commented: “As long as I have been doing this... I can predict. Anytime I do a presentation for our board, I anticipate the questions so that in the presentation those questions are answered.” Participant 13 added: “I have years of context, so it is hard to ignore that. I have a sense of how the community is going to respond.”

To summarize, in response to Research Question 1, the participants indicated that their decisions were affected by three primary factors. First, they believed that they were supposed to safeguard the children’s interests even if doing so created conflict with the adults. Next, their decisions were affected by the public context, which caused them to engage others and use satisficing behaviors. They were also influenced by the opinions of trusted advisors. In response to Research Question 2, the participants described blending a rational approach with their intuition, with experience positively affecting their intuition. The extent to which a methodical approach was used was dependent on the nature of the dilemma, particularly the amount of time available to make a decision.

Discussion

Superintendents face complex dilemmas, including increased accountability, diverse demands from students and staff, the explosion of technology, and conflicting views from governing boards and communities (Kowalski, McCord, Peterson, Young, & Ellerson, 2010). Complicating these challenges is the fact that stakeholders become emotionally invested, lobby for a particular outcome, and may express their dissatisfaction. The ability to resolve dilemmas is vital to the success of superintendents. This study adds to the understanding of this issue by identifying the factors that affect superintendents’ decisions and analyzing the extent to which their decision making involves intuitive or rational methods. The results provide guidance for superintendent preparation programs and for practicing superintendents.

This study identified three major factors affecting superintendents’ decisions. First, the superintendents exhibited the desire to safeguard the interests of students, a belief system referred to as “guiding principles” and “a moral compass.” They believed that they analyzed student situations more objectively than adults who were emotionally attached to the situation.

Next, the superintendents were influenced by their perceptions about how constituencies would react to their decisions. They had to make decisions that met broad organizational goals while balancing the perceived needs of constituents with different priorities, which caused them to seek pragmatic and generally acceptable solutions to dilemmas. Finally, the public context often caused the superintendents to mimic Vroom-Yetton's (1973) consultation model by seeking advice from district officials, community representatives, or other superintendents.

The second question aimed at understanding the extent of superintendents' use of a rational or intuitive approach. The superintendents in this study blended a rational process with their intuition, an approach advocated by Hoyle, Bjork, Collier, and Glass (2005) and Sadler-Smith and Shefy (2004). They began with a rational approach like that described by Hoy and Tarter (2008), in which problems are clarified and potential solutions are vetted. In some cases, this process was informal, whereas in others it was rather scripted. Either way, trusted consultants shared information, suggested solutions, and provided feedback because the superintendents believed this would help them avoid mistakes they might make if they approached the dilemma in isolation. However, after reviewing such feedback, the superintendents ultimately had to decide which solution to implement, and no matter how deliberate and objective the analysis, uncertainty surrounded this act, since there were no guarantees of one "right answer." It was at this point that the superintendents relied on their intuition about what would work successfully. This intuition, which the superintendents believed was more effective as their tenures increased, created familiarity with the nuances of their districts and a savviness about how to proceed, a phenomenon that aligns with Salas et al.'s (2010) description of expertise-based intuition. When their experiences were limited, the superintendents sought advice from other superintendents, thereby utilizing the intuition of others. The superintendents reported that when they allowed time for reflection and introspection about alternatives, they often had an unexplained aha moment in which the best solution became clear. The superintendents' intuitive understanding about the chances of acceptance influenced which of the rationally developed and objectively analyzed solutions they would implement. Therefore, it was not a matter of using either rational decision making or intuition: The superintendents blended both, in frequent consultation with advisors, and in ways that aligned with dual process theories.

Several recommendations arise from these findings. Preparation programs should emphasize the rational decision making and intuitive practice needed for effective decision making. There are several ways to do this, including the use of case studies, debate, reflective writing assignments, and clinical internships. Candidates should practice resolving mock dilemmas that mimic the complexity, liveliness, and ambiguity of those faced by superintendents.

The rational decision-making model, with its emphasis on objectively creating and analyzing solutions, should be utilized as an effective starting point. However, aspiring superintendents should also receive training on the role of intuition and understand the inevitable influence of their experiences and biases on the decision-making process. Sustained clinical internships in which they observe and assist veteran superintendents resolving actual dilemmas would be especially helpful. Finally, candidates must master the skills needed to facilitate the involvement of others, because this study demonstrated that superintendents found consultation to be important when they faced dilemmas.

Several recommendations arise for practicing superintendents. First, they should seek to understand their own decision making, realizing that there are advantages to blending the rational approach with their intuition. The superintendents in this study often attributed bad decisions to the failure to adequately involve others in a rational process, and in some cases, the failure to effectively utilize their intuition. Allowing time for reflection and gathering stakeholder input are helpful strategies for resolving these problems. Next, superintendents need to recognize the situational nature of dilemmas, whereby some require a rapid response whereas others demand more deliberate, methodical, and reflective action. Finally, this study illustrated that the effectiveness of decisions was affected by the involvement of quality advisors. Therefore, superintendents need to develop a network of internal and external advisors to provide insight and challenge their own thinking. These shared support systems would allow superintendents to network, share ideas, and debrief about dilemmas. Finally, superintendents must establish community relationships that will help them to understand norms that must be considered and to increase the acceptance of their decisions.

There are several limitations in this study. The small numbers of participants in a convenience sample lessens generalizability. The participants were all from a geographic region that has experienced similar budget and accountability challenges, which may have affected responses. The qualitative results, although informative, would be enhanced by a quantitative study capable of randomization and a more robust sample size. Further research should consider the impact of additional factors on superintendent decisions, such as (a) gender, (b) length of service, (c) district size, (d) presence of the school on academic watch lists, and (e) superintendents' values.

Effective decision making has always been vital to the success of school superintendents. Making the superintendents' role unique is the critical impact of their decisions as well as the ambiguity, risk, and heightened stakeholder sentiments that characterize them. As the demands on schools continue to increase, the superintendents' ability to make effective decisions when facing professional dilemmas will continue to be a cornerstone of good leadership.

References

- Agor, W. H. (1985). Intuition as a brain skill in management. *Public Personnel Management*, 14(1), 15–24.
- Akinci, C., & Sadler-Smith, E. (2012). Intuition in management research: A historical review. *International Journal of Management Reviews*, 14, 104–122. doi:10.1111/j.1468-2370.2011.00313.x
- Argyris, M. & Schön, D. (1974). *Theory in practice: Increasing professional effectiveness*. San Francisco, CA: Jossey-Bass.
- Campbell, A., Whitehead, J., & Finkelstein, S. (2009). Why good leaders make bad decisions. *Harvard Business Review*, 87(2), 60–66. Retrieved from <https://hbr.org/2009/02/why-good-leaders-make-bad-decisions>
- Crandall, B., Klein, G., & Hoffman, R.R. (2006). *Working minds: A practitioner's guide to cognitive task analysis*. Cambridge, MA: MIT Press.
- Dane, E., & Pratt, M. (2007). Exploring intuition and its role in managerial decision making. *The Academy of Management Review*, 32(1), 33–54. Retrieved from <http://www.jstor.org/stable/20159279>
- Domagoj, H. (2015). *Radical decision making: Leading strategic change in complex organizations*. New York, NY: Palgrave MacMillan.
- Dreyfus, S. (April, 2010). Neuroscience and operations research: a two-way street [online forum]. *Operations Research Management Science Today*. Retrieved from <http://www.orms-today.org/orms-4-10/frforum.html>
- Drucker, P. F. (1967). The effective decision. *Harvard Business Review*, 45(1), 92–98.
- Glaser, B. G. (1992). *Basics of grounded theory analysis: Emergence vs. forcing*. Mill Valley, CA: Sociology Press.
- Goleman, D. (1998). *Working with emotional intelligence*. New York, NY: Bantam Books.
- Haidt, J. (2001). The emotional dog and the rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108(4), 814–834. doi:10.1037/0033-295X.108.4.814
- Hayashi, A. (2001). When to trust your gut. *Harvard Business Review*, 79(2), 58–62.
- Hensman, A., & Sadler-Smith, E. (2011). Intuitive decision making in banking and finance. *European Management Journal*, 29(1), 51–66.
- Hoy, W. K., & Tarter, C. J. (2008). *Administrators solving the problems of practice: Decision-making cases, concepts, and consequences* (3rd ed.). Boston, MA: Pearson.
- Hoyle, J. R., Bjork, L. G., Collier, V., & Glass, T. (2005). *The superintendent as CEO*. Thousand Oaks, CA: Corwin Press.
- Kahneman, D., & Klein, G. (2009). Conditions for intuitive expertise: A failure to disagree. *American Psychologist*, 64(6), 515–526. doi:10.1037/a0016755
- Kandel, E. (2007). *In search of memory: The essence of a new science of mind*. New York, NY: W.W. Norton & Co.
- Kasten, K., & Ashbaugh, C. (1988). A comparative study of values in administrative decision making. *Journal of Research and Development in Education*, 21(3), 16–23.
- Khakheli, M., & Morchiladze, G. (2015). Factors affecting decision making in an organization. *International Journal of Management and Commerce Innovations*, 3(1), 425–428.
- Koch, C. (2015). Intuition may reveal where expertise resides in the brain. *Scientific American*.

- Retrieved from <https://www.scientificamerican.com/article/intuition-may-reveal-where-expertise-resides-in-the-brain>
- Kowalski, T. J. (2013). *The school superintendent: Theory, practice and cases*. Thousand Oaks, CA: Sage Publications.
- Kowalski, T. J., McCord, R. S., Petersen, G. J., Young, I. P., & Ellerson, N. M. (2010). *The American school superintendent: 2010 decennial study*. Lanham, MA: Rowan & Littlefield Education.
- Langlois, L. (2004). Responding ethically: Complex decision-making by school district superintendents. *International Studies in Educational Administration (ISEA)*, 32(2), 78–93.
- Lieberman, M. D. (2007). Social cognitive neuroscience: A review of core processes. *Annual Review of Psychology*, 58, 259–289. doi:10.1146/annurev.psych.58.110405.085654
- Litchka, P., Fenzel, M. L., & Polka, W. (2009). The stress processes among school superintendents. *International Journal of Educational Leadership Preparation*, 4(4), 1–7.
- Lunenburg, F. C. (2010). The decision making process. *National Forum of Educational Administration and Supervision Journal*, 27(4), 1–12.
- Lunenburg, F. C., & Ornstein, A. C. (2012). *Educational administration: Concepts and practices* (6th ed.). Belmont, CA: Wadsworth Cengage Learning.
- Mintzberg, H. (1988). *The nature of managerial work*. Reading, MA: Addison-Wesley.
- Myers, D. (2002). *Intuition: Its powers and perils*. New Haven, CT: Yale University Press.
- Noppe, R., Yager, S., Webb, C., & Sheng, B. (2013). Decision making and problem-solving practices of superintendents confronted by district dilemmas. *International Journal of Educational Leadership Preparation*, 8(1), 103–120.
- Sadler-Smith, E., & Shefy, E. (2004). The intuitive executive: Understanding and applying “gut feel” in decision making. *Academy of Management Executive*, (18)4, 76–91. doi:10.5465/AME.2004.15268692
- Salas, E., Rosen, M., & DiazGranados, D. (2010). Expertise-based intuition and decision making in organizations. *Journal of Management*, 36(4), 941–973. doi: 10.1177/0149206309350084
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Simon, H. A. (1993). Decision making: Rational, nonrational, and irrational. *Educational Administration Quarterly*, 30(1), 97–101. doi:10.1177/0013161X93029003009
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications.
- Tanner, C. K., & Williams, E. J. (1981). *Educational planning and decision making: A view through the organizational process*. Lexington, MA: D.C. Heath.
- Touchton, D., & Acker-Hocevar, M. (2011). Decision-making quandaries that superintendents face in their work in small school districts building democratic communities. *Journal of School Public Relations*, 32(3), 210–236.
- Volz, K., & Zander, T. (2014). Primed for intuition? *Neuroscience of Decision Making*, 1, 26–34. doi:10.2478/ndm-2014-0001
- Vroom, V. H., & Yetton, P. W. (1973). *Leadership and decision making*. Pittsburgh, PA: University of Pittsburgh Press.