SPANNING BOUNDARIES: TEACHER NEWSLETTER

The goal of this project is not to provide the reader with the latest PK-20 research. I will, at times, summarize articles published in the last 12 months, yet the intent is to share what I think are relevant, practical, and potentially transformative concepts from existing PK-20 research. Not all research presented in this newsletter is of equal methodological rigor. You might question the validity and reliability of some of the papers I share, yet this does not suggest that interesting and potentially useful ideas cannot be derived from more questionable empirical practices. This belief is founded on what I think is the purpose of education research—it is not, as Marc Tucker writes, intended to be a prescriptive recipe to follow, but rather a set of ideas strung together to create effective systems for learning[1]. You will see a lot of "might", "can," "maybe," "suggest," and other words that emphasize *possibility*, not certainty.

The SB Newsletter contains research briefs. Some of the links will take you to the full article, others to the abstract. As discussed in the SB Manifesto, this process requires *joint work*. Should you be interested in learning more about a specific article, you will need to access it via other means. You can also contact us to talk more about it. Importantly, some papers are harder to summarize in two pages and require you to explore the original text to get a full understanding of the relevant concepts.

Some concepts will feel obvious. You might, as a school or district leader, be performing some of the techniques explained in the provided research. I experienced this as I combed through research on classroom instruction and organizational change. These papers added much needed conceptual depth and language to the work I had been doing, and continue to do. I hope they do the same for you.

The process of editing this newsletter confirmed for me (and I hope this remains true) the formatting template for each article. A week before publishing, I felt good about the content. After making significant changes throughout the first few iterations of this product, I found myself making small and often superficial edits. I made a decision to print out this work. Sitting down with a hard copy and blue pen—something I used to do frequently but now often do on an iPad app—was an illuminating experience. I made additional not-insignificant changes that improved what you are reading today. Each article is one page, front and back. I want to save as many trees as possible, but interacting with a hard copy might increase your engagement.

Finally, future newsletters may not have as extensive an intro page. I felt it important to explain my "why" so that the reader better understands what I'm trying to do.

Happy Reading!

Matt Schneidman

The SB Teacher Newsletter, Volume 1, Issue 1
December 2, 2020

The first issue of the SB Teacher Newsletter covers a range of diverse yet relevant concepts. The first article can help teachers consider in more theoretical and practical terms their experiences as well as those of their students during a time of Covid; the second details an instructional strategy to help teach more complex language; the third is focused on using data to reflect on and transform classroom practice. The three papers are:

- Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6
- Brown, B. A. & Spang, E. (2007). Double talk: Synthesizing everyday and science language in the classroom. *Culture and Comparative Studies, 92*(4), 708-732. https://doi.org/10.1002/sce.20251
- Bertrand, M., & Marsh, J. A. (2015). Teachers' sensemaking of data and implications for equity. *American Educational Research Journal, 52*(5), 861-893. https://doi.org/10.3102/0002831215599251

Critical Inquiry (full-text linked here) is a particularly relevant article considering the increased importance of blended and distance schooling in a Covid and post-Covid world. Garrison presents a framework to analyze the experiences of students in a full online-learning environment. The summary discusses ways to use this framework not just as an analytical tool but as a lens through which to consider key instructional changes that might enhance the learning experience of students. An article in next month's educator newsletter will provide another way to think about online pedagogy.

Double Talk presents a unique analysis of linguistic practices in a science classroom as well as strategies that might support educators tasked with teaching complex concepts and new vocab terms (more or less all PK-20 teachers). Although not discussed much in the summary, double talk as a pedagogical strategy could be applied to blended or distance learning environments using various tech tools. If you are interested in learning more about this, feel free to contact us.

Teachers' Sensemaking of Data explores how educators conceptualize the root causes of student outcomes as observed through data. In a time of Covid, different types of data can take on new significance and meaning. For example, what does attendance look like in a virtual learning environment? How should educators make sense of assessment data when students have not had a single day of in-person instruction? How much responsibility do educators have for this data? The article provides a way for educators to think more about what is within their control, critique what they perceive to be outside of their control, and consider what changes they might make to mitigate perceived external factors. You can use this resource to assist in this process.

A FRAMEWORK FOR ONLINE LEARNING

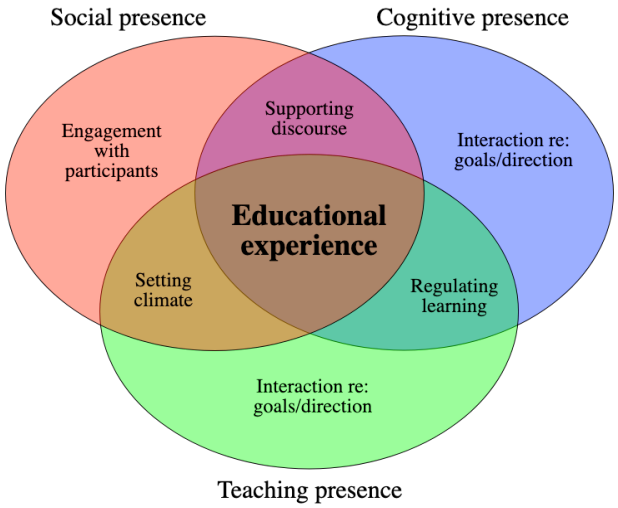
Title: Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education
Author(s) + Year: D. Randy Garrison, Terry Anderson, Walter Archer (2000)
Topic: Online Learning

Overview

"An educational community of inquiry is a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding"[2]. *Critical Inquiry in a Text-Based Environment* is one of the most highly cited conceptual or empirical papers that attempts to understand how individuals in a virtual community of inquiry learn from their teachers and from one another. Despite its focus on a "text-based" higher ed online learning experience, the Community of Inquiry (CoI) framework proposed by the authors in this paper (and expounded upon in numerous additional articles) is relevant for (a) researchers interested in analyzing PK-20 online learning experiences; (b) K12 practitioners teaching in a fully-remote or blended learning environment; and (c) education technology companies interested in developing online learning platforms. The framework comprises three "interdependent and dynamic structural elements" that ground the virtual learning experience[3]: social presence, cognitive presence, and teaching presence. It can act both as a guide for educators designing online learning activities (for kids and adults) and a frame to understand those experiences.

Theory

This is but one article Garrison and others have written using the CoI framework to understand the experiences of teachers and students in a virtual learning environment[4]. The framework is grounded in a constructivist paradigm that views learning as an interplay between individual sensemaking and social interaction: there exists "iterative and reciprocal relationships between the personal and shared worlds"[5]. The three components—social presence, teaching presence, and cognitive presence are co-constitutive, meaning they both influence and are influenced by one another.



Cognitive presence is the ability of participants within a CoI to construct meaning through sustained communication. It can also be defined as the processes and outcomes of critical thinking and often constitutes the most challenging element to facilitate in an online learning environment. This process is operationalized through a *Practical Inquiry* model consisting of four stages: a triggering event, exploration, integration, and resolution.

Social presence is defined as the ability of students to "project their personal characteristics into the community, thereby presenting themselves to other participants as 'real people'"[6]. Identification within a community through purposeful communication and meaningful peer and teacher interaction can encourage the development of social presence[7]. Social presence is also influenced by other factors: comfort with technology, motivation to participate, and organizational commitment[8].

Teaching Presence represents the design of the educational experience *and* the facilitation of that experience. In a subsequent paper, it is defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes"[9].

Engagement and collaboration within a virtual learning environment is dependent not just on the capacities of the users but on the medium itself and the facilitators within that medium—practitioners should therefore consider both the possibilities and limitations of the technologies they're using and the capabilities of the "coaches" that support virtual learning experiences.

What It All Means…and What Can I Do With This

The Community of Inquiry framework provides an analytical architecture to understand student experiences: Why is engagement (however that might be defined) high? Why is it low? Why did one lesson inspire rich discussion? How much content is appropriate? How long should a typical "unit of study" last? What are the limitations of the school- or district-mandated learning management system? How do answers to these (and other) questions interact with one another to create what is likely an emergent learning experience? The framework can also act as a concrete mechanism to make pedagogical decisions: As an educator, how am I developing social presence within my virtual community of inquiry? How am I engaging students in critical thinking (cognitive presence)? What am I doing to facilitate these experiences (teaching presence)? Filtering these questions through the CoI framework can provide a common language to discuss, understand, and design online learning experiences.

Furthemore, teaching in a virtual environment is not the same as teaching in a face-to-face environment. There exist both real limitations and exciting new possibilities. The authors suggest that distance learning might result in more convergent, in depth-thinking. They also suggest that a text-heavy communication medium might lead to increased opportunities for reflection—writing can encourage expanded thinking on complex issues as well as a search for deeper, meaningful learning experiences. Moving beyond consecutive 45-minute blocks of Zoom class to more creative uses of time might create space for the kinds of learning experiences envisioned by Garrison in 2000—time away from instruction to sit, think, write, reflect.

Possible Critique

The research for this paper was conducted in a higher ed setting over 20 years ago. Technological capabilities are far more advanced than they were when this paper was published—we have moved beyond *text-based* learning environments. How can this be relevant to the world of PK-20 in the year 2020?

Response to the Critique

This article acts as a point of origin. Garrison and others continue to use this framework to understand and explore the possibilities of online learning. And as Garrison writes, educators must operate within the technologies they're provided. A number of educators are observing the substantive limitations of the platforms they're being asked to use—acknowledging this fact might be liberating for some teachers. Based on the conversations I have had with school leaders and educators, there is a misunderstanding of the role of technology in the K12 classroom. Being explicit about what software and hardware can and cannot do could alleviate some of the pressures felt by educators to mimic traditional classroom experiences in a virtual learning space.

DOUBLE TALK IN THE SCIENCE CLASSROOM

Title: Double Talk: Synthesizing Everyday Science Language in the Classroom
Author(s) + Year: Bryan A. Brown & Eliza Spang (2007)
Topic: Science Pedagogy. Linguistic Practices. Equity.

Overview

K12 science research suggests that historically underrepresented students experience "identity conflict" in the traditional science classroom as a result of linguistic practices that fail to acknowledge students' cultural identities[10]. Some students rebel against this form of science instruction in order to maintain their cultural identity[11]. In their 2007 study, Brown and Spang explore the practices that emerge as Mrs. Murphy, a fifth grade science teacher in Detroit, attempts to challenge a traditional linguistic approach to science instruction in order to develop scientific literacy among a population of predominantly Black and Brown students[12].

Theory

Brown and Spang use sociolinguistic discourse analysis to analyze the use of classroom language: "Linguists have a long history of documenting how the act of speech is full of the individual agency that allows language to be a marker of identity (Agar, 1994, 1997; Gumperz & Huymes, 1972)"[13]. The complex connection between language and social identity is relevant to the learning experiences of all populations—especially in a domain that requires the application of highly technical language. To become a classroom scientist involves the use of "nonvernacular" (technical or formal) language[14], which itself requires students to appropriate a "scientific discursive identity" (Brown & Spang, 2007, p. 711). The absence of this discursive identity might preclude success in the science classroom[15].

Research

Mrs. Murphy "operated on an assumption that students' use of science language will be improved if teaching involves an explicit effort to help students manage the dilemma of appropriating a scientific identity while using science language in the process of learning"[16]. They employ a technique that Brown and Spang refer to as "double talk"—a process of explaining new ideas using a hybrid of vernacular and nonvernacular language ("Sacramento, the capital of California" is a basic example of double talk). This strategy creates an opportunity for a student to "balance dual communities. First, his discursive identity firmly embeds him among the community that appropriates scientific terms, while simultaneously placing him in a community that uses vernacular ways of scientific explanation"[17]. The teacher is establishing norms of discourse—in this case they are welcoming and infusing student vernacular into the science classroom—allowing students to maintain their cultural identity while appropriating a scientific identity critical for success in the science classroom. Complex concepts are made more accessible by providing students multiple points of entry[18].

What It All Means…and What Can I Do With This

The early introduction of formal scientific language can prevent students from fully engaging in the science classroom. Brown and Spang argue that the simultaneous introduction of technical terminology alongside new scientific concepts (at the beginning of a lesson) can be limiting[19]. They present a four-staged approach to scientific literacy development that introduces formal terminology once students have a foundational understanding of the relevant concept(s):

1. *Preassessment instruction phase*: This involves "a query-oriented approach to introduce the ideas of science"[20]. Students identify their understanding of the phenomenon. Teachers explore student preconceptions and begin to address misconceptions. Formal vocabulary is not introduced yet.

2. *Content construction phase*: The teacher introduces "accurate versions of the content"[21]. This is, at its essence, an exploration of the "big idea" of the concept.
3. *Introduction of explicit discourse phase*: Only at this time does the teacher introduce scientific language and ask students to use this language through discussion and writing.
4. *Scaffolding opportunities for the discourse phase*: The teacher provides students the opportunity to articulate their understanding of the phenomenon (through individual assessment) using the "technical terminology of science."

Introducing formal scientific language too early might act to both confuse students and dissuade them from engaging in scientific classroom practices (due to the cultural conflict discussed above). Double talk as a pedagogical strategy in a science (and math) classroom might (a) allow students to develop a deeper understanding of key concepts and (b) create a more inclusive space for black and brown students to adopt the role of classroom scientist.

In a subsequent article, Brown and Ryoo elaborate on the potential benefits of a "content-first" approach to science teaching—double talk is one component of this[22]. They found that students taught with the "content-first" approach demonstrated higher levels of conceptual understanding when compared to students taught in traditional ways. This technique extends beyond the science classroom into other domains rich in technical language.

Possible Critique

Students should use science language in science class—vernacular is not appropriate. White students are not using vernacular in the science classroom. This is yet another example of how critical race theory works to dumb down curriculum and subjugate Black and Brown populations by viewing them as incapable of meeting the expectations of their white counterparts.

Response to the Critique

Brown and Spang (and the teacher they observed) are not suggesting that nonvernacular be removed from the science classroom. On the contrary, the use of vernacular is a pedagogical tool to support a deeper understanding of scientific concepts—the teacher is creating a learning environment where the use of scientific language becomes the norm: "Ultimately, all languages begin as *nonvernacular*, and then become *vernacular* as the individuals develop shared understandings of the ideas and words"[23]. Double talk is a strategy used to give students "a vision of science that [is] connected to their collective experience"[24]. Data from 2010 shows that Black Americans made up 12.3% of the population and 5% of the science and engineering workforce; Hispanics comprised 15.8% of the population and 6% of the science and engineering workforce[25]. *One* way to address these demographic disparities might be to create science classrooms that more students can identify with.

To Act or Not to Act, That Is the Attribution

Title: Teachers' Sensemaking of Data and Implications for Equity (2015)
Author and Year: Melanie Bertrand, Julie A. Marsh
Topics: Data Use. Equity. ELL Instruction.

Overview

"Good data promotes transparency and accountability. It shows the public the value that they're getting in their investment in education. It gives teachers information they need to change their practices to improve student achievement"[26]. A belief in the efficacy of evidence-based decision making has elevated the role of data-informed decision making (DIDM) in the American K12 schooling system[27]. Despite its ubiquity as a tool for school improvement, much remains unknown about the practice. Understanding how classroom teachers use data to inform pedagogical decisions is a critical yet under-researched topic. In an attempt to fill that knowledge gap, Bertrand and Marsh ("B&M") observe how educators explain the root causes of student outcomes (as observed in assessment data). The manner in which participating teachers made sense of observed data influenced the instructional decisions they made and the expectations they had for students. B&M's findings suggest that much work is required if policy makers and education leaders expect teachers to use data to improve practice and address issues of inequity within their classrooms.

Theory

B&M reconceptualize a data use cycle using *attribution* and *sensemaking* theories. This cycle (in the form of a theoretical framework) demonstrates how educators turn data into information, information into knowledge, and knowledge into action. It instantiates "into static form what is actually a multiplicity of overlapping, nonlinear, and dynamic processes" that mutually reinforce one another[28]. To simplify, data use is a messy and complex process. During this process, teachers (Ts) attribute observed data to a multitude of root causes (*attribution theory)* that may or may not be within their perceived control. They consider (a) locus of causality (who is responsible for student data–T or not T?); (b) stability of data (can students improve?); and controllability (does T have the self-perceived agency to help students improve?). Attribution does not take place in a vacuum. Information is filtered through pre-existing knowledge, mental models, and organizational structures and imperatives, influencing how educators make sense of and justify the outcomes they observe (*sensemaking theory*).

Research

B&M observed that teachers "activated four distinct mental models of sensemaking when attributing student outcome data"[29] (a link to those four models and an activity using the framework B&M provide can be found here). Model 1 Ts attributed student outcome data to their instructional practice. These Ts believed that "(a) their instruction caused student outcomes, (b) their instruction was not always the same, and (c) they were in control of their instruction" (p.). Model 2 Ts attributed data to student understanding (or lack of). Model 3 Ts attributed student outcomes to the nature of the test—if they created the test, they were more likely to think they were responsible for student performance. Model 4 Ts attributed assessment data to fixed student characteristics: "Students in this group have inherent abilities and attributes, which affect their learning and outcomes"[30].

These models are *not* static. B&M found that the boundaries separating T1 behavior (sensemaking and attribution) from Ts 2, 3, and 4 were permeable—educators drew upon multiple models throughout the course of their study and often (implicitly) shifted between categories. An educator might believe that they were responsible for an observed data point (internal locus of control) yet also believe that that data point was outside their control (uncontrollability)—an example is a standardized test that may not reflect what was

actually taught in the classroom. The factors to which an educator attributes student data can motivate action or inhibit action—assessment data that is the perceived result of teacher instruction might prompt reflection and pedagogical transformation whereas data that is the perceived result of a socially constructed student deficit (ELL or SPED status) is less likely to motivate teacher change.

What It All Means…and What Can I Do With This

B&M (and others) have conceptualized a data cycle in which data is transformed into information, information into knowledge, knowledge into action, and action into new data[31]. Educators interested in addressing issues of inequity can benefit from reflecting on how they (as individuals) and their peers make sense of data during this data cycle. How do *they* turn data into information? Information into knowledge? Knowledge into action? To what do they *attribute* student outcomes? Is data used to inform instruction or is it used to confirm (potentially negative) assumptions about ELLs and SPED students? What routines or practices encourage individual educators and data teams to more thoughtfully analyze and act upon available data? Answers to these questions *matter*. Locus of causality, stability, and controllability *matter*. An educator who attributes poor performance on an assessment to their teaching practice is more likely to alter their practice than an educator who believes that data is a function of a student's ELL or SPED designation; citing a stable characteristic—such as ELL status—can inhibit reflection and reinforce low teacher expectations[32]. The data use framework provided by B&M can be used to develop protocols that challenge a deficit mindset in order to support the academic and emotional development of all students regardless of race, gender, socioeconomic status, or academic designation (ELL or SPED).

Organizational factors also play a role in attribution practices[33]. Educators interested in addressing issues of inequity beyond their classrooms can use a framework such as this to challenge school- or district-wide data use practices. School and district leadership interested in promoting a culture of data use for equity "could consider ways to encourage teachers to reflect on their sensemaking and attribution. For example, protocols to examine the four mental models could be embedded in professional development, along with opportunities to examine varying interpretations of data"[34].

Possible Critique

DIDM is a top-down policy requirement. As B&M and others have stated, it is also a complex and messy process. Teachers are being asked to use imperfect and limited data that may or may not represent what is actually going on in their classrooms. Furthermore, they rarely, if ever, receive training to use data well. It is, therefore, unrealistic to expect teachers to transform their practice and address issues of inequity without recognizing the resources required and challenges inherent in doing this. School and district leaders who want to get serious about using data to improve instruction must allocate resources to this practice.

Response to the Critique

B&M have shown that, contrary to Duncan's statement, data does not always give teachers the information they need to improve their practice. It is also true that educators rarely receive much, if any, training in DIDM practices. That being said, B&M show that there are educators who want to use data to create positive learning environments for all students. These teachers cannot expect school and district leaders to provide PD focused on building internal data literacy and equity skills. B&M have provided a framework that practitioners might use individually, during a grade-level/department/PLC meeting, and/or at an organizational level to reflect on data use routines/habits/structures in order to transform classroom practice and address the needs of all students.

Notes

[1] Tucker 2019.
[2] Garrison et al. 2001.
[3] Akyol et al. 2009.
[4] See Armellini and De Stefani 2016. Garrison and Akyol 2015. Shea and Bidjerano 2009. The visual is published under a Creative Common license and can be found here: https://commons.wikimedia.org/wiki/File:Community_of_inquiry_model.svg.
[5] Garrison et al. 2001, p. 98.
[6] Garrison et al. 2001, p. 89.
[7] Aykol et al. 2009.
[8] Shea and Bidjerano 2009.
[9] Anderson et al. 2001, p. 5.
[10] Brown & Spang 2007.
[11] Brown & Ryoo 2008.
[12] Although this study focuses on historically marginalized populations, the pedagogical techniques used by Mrs. Murphy could be used for all students.
[13] Brown & Spang 2007, p. 709.
[14] Brown and Spang write that "the common definitions of *vernacular* language assume that it involves commonly shared ways of communicating. [...] By contrast, *nonvernacular* language involves specialized language common to a small subset of the population" (p. 710). They also write that all languages begin as nonvernacular and become vernacular through frequent use and a "shared understanding of the ideas that the language is used to represent" (p. 710).
[15] There is a lot more to explore on the connection between language and social identity, as well as the social construction of scientific practices that have established an expectation for how science should be done in the K12 classroom. Brown and Spang (2007) discuss this a bit. For more on this topic, you can see Foucualt's *Power/Knowledge* (1980), Sandra Harding's *Objectivity and Diversity* (2015), Kuhn's *The Structure of Scientific Revolutions* (1960), and Latour's *Laboratory Life* (1987).
[16] Brown & Spang 2007, p. 710.
[17] Ibid p. 725.
[18] There is no shortage of literature on accessing prior knowledge. For examples of this, see: Bransford et al. 1999; Knowles et al. 1998; Merriam and Bierema 2014; and Villegas 2007.
[19] Brown & Spang 2007.
[20] Ibid p. 712.
[21] Ibid p. 712.
[22] Brown and Ryoo 2008.
[23] Brown and Spang 2007, p. 711.
[24] Ibid p. 731.
[25] https://www.scientificamerican.com/article/diversity-in-science-where-are-the-data/
[26] Bertrand and Marsh 2015, p. 861. There are implicit assumptions embedded in this quote that need to be addressed, yet these will be saved for another time.
[27] Ibid, p. 863.
[28] Ibid, p. 863.
[29] Ibid, p. 874.
[30] Ibid, p. 878.
[31] Ibid. See also Coburn and Turner 2011. Datnow et al. 2012. Marsh and Farrell, 2015.
[32] Bertrand and Marsh 2015.
[33] Ibid.

[34] Ibid, p. 888.

Bibliography

Akyol, Z., Garrison, D. R., & Ozden, M. Y. (2009). Online and blended communities of inquiry: Exploring the developmental and perceptional differences. *International Review of Research in Open and Distance Learning, 10*(6), 65-83. https://doi.org/10.19173/irrodl.v10i6.765

Anderson, T., Rourke, L., Garrison, D. R., & Archer, W. (2001). Assessing teacher presence in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5*(2), p. 1-17. https://doi.org/10.24059/olj.v5i2.1875

Armellini, A., & De Stefani, M. (2016). Social presence in the 21st century: An adjustment to the community of inquiry framework. *British Journal of Educational Technology,* 47(6). 1202-1216. https://doi.org/10.1111/bjet.12302

Bertrand, M., & Marsh, J. A. (2015). Teachers' sensemaking of data and implications for equity. *American Educational Research Journal, 52*(5), 861-893. https://doi.org/10.3102/0002831215599251

Bransford, J., Brown, A. L., Cocking, R. R., & National Research Council (U.S.), (1999). *How people learn: Brain, mind, experience, and school*. Washington, D.C: National Academy Press.

Brown, B. A., & Ryoo, K. (2008). Teaching science as a language: A "content-first" approach to science teaching. *Journal of Research in Science Teaching, 45*(5), 529-553. https://doi.org/10.1002/tea.20255

Brown, B. A. & Spang, E. (2007). Double talk: Synthesizing everyday and science language in the classroom. *Culture and Comparative Studies, 92*(4), 708-732. https://doi.org/10.1002/sce.20251

Coburn, C., & Turner, E. (2011). Research on data use: A framework and analysis. *Measurement: Interdisciplinary Research and Perspective, 9*(4), 173-206. https://doi.org/10.1080/15366367.2011.626729

Datnow, A., Park, V., & Kennedy-Lewis, B. (2012). High school teachers' use of data to inform instruction. *Journal of Education for Students Placed at Risk*, 17(4), 247–265. https://doi.org/10.1080/10824669.2012.718944

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2-3), 87-105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., & Akyol, Z. (2015). Toward the development of a metacognition construct for communities of inquiry. *Internet and Higher Education, 25*, 66-71. https://doi.org/10.1016/j.iheduc.2014.10.001

Knowles, M., Holton III, E., & Swanson, R. (1998). *The adult learner: The definitive classic in adult education and human resource development*. Elsevier.

Marsh, J. A., & Farrell, C. A. (2015). How leaders can support teachers with data-driven decision making: A framework for understanding capacity building. *Educational Management Administration & Leadership, 43*(2), 269-289. https://doi.org/10.1177/1741143214537229

Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: Linking theory and practice*. Jossey Bass.

Shea, P., & Bidjerano, T. (2009). Community of inquiry as a theoretical framework to foster "epistemic engagement" and "cognitive presence" in online education. *Computer & Education, 52*, 543-553. https://doi.org/10.1016/j.compedu.2008.10.007

Tucker, M. (2019). *Leading high-performance school systems: Lessons from the world's best*. ASCD.

Villegas, A. M. (2007). Dispositions in teacher education: A look at social justice. *Journal of Teacher Education, 58*(5), 370-380. https://doi.org/10.1177/0022487107308419