Ψ Psychology Press
Taylor & Francis Group

REJOINDER

Putting the "Use" Back in Data Use: An Outsider's Contribution to the Measurement Community's Conversation About Data

Cynthia E. Coburn

Policy, Organizations, Measurement, and Evaluation, University of California, Berkeley

Erica O. Turner

Educational Policy Studies, University of Wisconsin, Madison

We want to begin by thanking the commentators for their thoughtful and thought-provoking reviews of our article. As outsiders to the measurement community, we are honored to enter into dialogue with members of this community on the topic of data use. Data use is a phenomenon that spans boundaries of disciplines, implicating issues of measurement and assessment, issues of learning and cognition, issues of organizational context and change, and issues of power and politics, among others. Traditionally, scholarship on these different aspects of data use lives in different disciplinary homes. In our view, knowledge from multiple disciplines or areas of inquiry is required to understand such a complex social phenomenon. Cross-disciplinary conversation can be difficult because our training, conceptual tools, and even language lead us to think about problems in quite different ways, making it challenging to communicate sometimes. At the same time, if successful, conversations across disciplines have the potential to open new avenues for inquiry and spur new learning. Therefore, we welcome the opportunity to enter into this sort of exchange as a way to extend our own learning and, perhaps, bring diverse sets of ideas together in ways that help move the study of data use forward.

The commentators raise a number of questions, observations, and challenges for us to consider. Because time and space is short, we will address four key questions: What is our framework

Correspondence should be addressed to Cynthia E. Coburn, 3643 Tolman Hall, Berkeley, CA 94703. E-mail: cecoburn@berkeley.edu

a framework for? Where is the data? Who is the data user? And, what's the relationship between context and intervention?

WHAT IS OUR FRAMEWORK A FRAMEWORK FOR?

In responding to the commentaries, it seems important to first take a moment to clarify what our framework is a framework for. Sprinkled throughout the commentaries are explicit and implicit statements that speak to the purpose of the framework. Rose and Fischer (this issue), in a clever play on the opening statement of our article, write (twice): "After all, a data use framework is only as useful as the data that are used to make decisions." This statement seems to suggest that our framework is a framework for making decisions. Similarly, Perkins and Engelhard (this issue) make numerous statements throughout their commentary about dimensions that our framework should attend to in order to better guide data use. For example, they argue that our framework should include what they call an evaluative framework because "Data sources must be critically evaluated as an integral part of appropriate data use." They argue that our framework should promote a loosely coupled system because data users should have freedom to evaluate data in this manner. Furthermore, they suggest that our framework should attend to unintended consequences because data users should "evaluate the consequences of their action" in order to "minimize potential negative unintended consequences." These and other statements throughout the article suggest that the purpose of our framework is to guide data use.

However, the framework we propose is not meant to guide decision making. Nor is it intended to guide data use. Rather, it is meant to guide *research* on data use. In other words, our framework is not intended to lay out *what should be* for data users. It is meant as a guide for analyzing *what is*. Research on data use can help us understand the way the world actually works, illuminating why and how data-use interventions lead to a given outcome—intended or unintended; stasis or change. Given that the existing research on data use is impoverished in this regard, we offer an analytic framework to guide future research. It is our contention that a more empirically grounded understanding of *what is* can help ensure that efforts to promote the productive use of data are better targeted, not to our assumptions, but to evidence of how the phenomenon of data use is unfolding in real schools, districts, communities, and states in all their complexity.[1] Our framework is intended to provide guidance for research on data use to develop this more empirically grounded understanding.

WHERE ARE THE DATA?

Two of the commentaries call for greater attention to features of the data themselves. Perkins and Engelhard (this issue) call for attention to the quality of the data, specifically pointing out that our framework fails to "consider how test scores, assessments and other forms of data were originally conceived and constructed for specific purposes." Similarly, Rose and Fischer (this

---

[1]Our article focuses on classrooms, schools, and school districts as important contexts for data use. Perkins and Engelhard (this issue) and Piety (this issue) highlight other important contexts: communities (Perkins & Engelhard) and states (Piety).

issue) call for attention to the usability of the data. They argue that "addressing the 'useful data' issue will be critical to the success of any data use framework, not only because teachers rarely get instructionally valuable data, but also because advancements in developmental and learning science provide powerful methods and tools that, for the first time, allow us to create assessments that actually generate the kinds of data teachers would find useful."

We agree that it is important to attend to the features of data as an integral part of our framework. It is indeed an omission in the framework as it is currently represented and we are grateful to the commentaries for pointing this out. The question is what is the best way to integrate attention to the features of data into the current framework? We suggest that the framework should attend to how the features of data—quality, utility, and others—influence the underlying interpretive processes at the heart of data use in ways that are shaped by dynamics of social interaction, the organizational and political context, and the tools, interventions, and policies that typically accompany the data. In other words, we suggest that features of data must be understood not as operating on their own, but as interacting with a range of other dimensions of the social, organizational, and political context.

The commentaries of Perkins and Engelhard and of Rose and Fischer make claims about how features of data matter for use. Perkins and Engelhard argue that "unintended consequences related to data use are more likely when users deviate from original and intended uses of the data." Rose and Fischer write, "We *believe* educators do not use most assessment data because, frankly, the data are not useful" (emphasis added). We ask: How do you know? Rather than making assumptions about how features of data matter as these authors (and many others) do, we contend that these claims should be investigated empirically. Is it the case that if teachers have access to better quality data, there are, in fact, fewer unintended consequences? Is it the case that if teachers have access to more useful data, they use it more often?

The modest amount of existing research on this topic raises doubts about these claims. For example, there are accounts in the literature of teachers and others who have access to high quality data, but do not use it as intended (Birkeland, Murphy-Graham, & Weiss, 2005; Coburn & Woulfin, in press; Fuchs, Fuchs, Hamlett, & Stecker, 1991; Shavelson, 2006; Young & Kim, 2010). There is also evidence that teachers and others use data in widespread ways in spite of the fact that they do not find it useful or of high quality (Diamond, 2007; Marsh, Pane, & Hamilton, 2006; Supovitz & Klein, 2003), suggesting that factors other than utility are at play. And, we know that perceptions of utility vary quite a bit, both within and between role groups (Coburn & Talbert, 2006; Englert, Fries, Martin-Glenn, & Michael, 2005; Ingram, Louis & Schroeder, 2004), suggesting that utility is not a property of the data itself, but a property of the interaction between the data and the user.

If, as we argue above, the impact of features of data likely depends upon how those features interact with interpretive processes and the social, organizational, and political context, this suggests developing well-crafted studies to understand these interactions. For example, we know that teachers and others tend not to notice data in the first place or discount it when data does not conform to their pre-existing expectations (Bickel & Cooley, 1985; David, 1981; Hannaway, 1989; Ingram, Louis, & Schroeder, 2004; Kennedy, 1982; Young & Kim, 2010). Does this pattern differ if the data are of higher quality? Or greater utility? We also know that the public release of school data reconfigures the relationships between schools and communities and schools and districts in ways that create considerable pressure on school leaders. School leaders and others can respond to this pressure by narrowing the curriculum, gaming the test, rationing instruction,

or even cheating (Booher-Jennings, 2005; Bulkley, Fairman, Martinez, & Hicks, 2004; Christman et al., 2009; Fairman & Firestone, 2001; Henig, in press; Jennings, in press)—outcomes that may be considered unintended consequences. How, if at all, do these responses to power and political pressure differ when the data are better suited for the purpose of evaluating school quality? We know that tools, skilled facilitation, and the configuration of data-use routines influence how teachers and others notice data, attend to it, and draw implications for action (Brunner et al., 2005; Earl, 2009; Lasky, Schaffer, & Hopkins, 2009; Little, Gearhart, Curry, & Kafka, 2003; McDougall, Saunders, & Goldenberg, 2007; Supovitz, 2006; Timperley, 2009). How do these features of data use interventions influence teachers' and others' perceptions of utility, with what consequences for the nature of use?

Our main point here is that rather than making assumptions about the features of data that matter, we can and should study these issues empirically. Extending our framework to include more attention to the features of the data is perhaps a first step in this process. The next step is a set of carefully constructed studies that address how this dimension interacts with the others we have highlighted and how this interaction contributes to (or not) the outcomes of data use that we value.

WHO ARE THE DATA USERS?

Several of the commentaries suggest that our framework left out some key data users. Perkins and Engelhard (this issue) suggest that we should attend to parents and community members as key data users. They argue that "while Coburn and Turner do not explicitly list parents and students as data users, one can argue that they indeed make decisions based on their interactions with data. The communities in which these individuals operate can have a strong impact on how they use data." Hamilton (this issue) focuses on the importance of students, arguing, "As co-constructors of their educational experiences, students play a key role in influencing the quality and nature of the learning activities in which they engage both in and outside of the classroom." And, Piety (this issue) talks about state policymakers as both data users and context for data use at lower levels of the system: "State education departments could contribute to the context for a district or school's data practices. Alternatively they could be sites of data practice where important decisions are taken."

It is true that the main data users we focused on in our framework are teachers, school administrators, and district administrators. However, our framework does not preclude considering other stakeholders, and the commentaries point out some pretty important ones. The key question is what does it mean to use our framework to study how these users—community members, students, state policy makers—use data with what outcomes?

Hamilton provides a nice model for extending our framework to additional users. She discusses students' data use as involving the same interpretive processes as teachers and other users: noticing, interpreting, and constructing implications for action. She points out that students' interpretations unfold in social interaction with teachers, but also with their peers and their families. Contextual conditions, such as norms in the school and the configuration of data-use routines influence the degree to which students are brought into data conversations, the comfort they feel in participating in them openly, and the risks they are willing to take to respond to them. Hamilton points out that tools matter as well, such as interpretive guidance that is provided for students or new technologies that engage students in constructing implications for action. And

she suggests that, ultimately, student learning may be influenced in important ways by students' interpretations of data and the implications they draw for their own actions in response.

Hamilton's discussion, in combination with Piety's notion that some actors can simultaneously be users and contexts for others' use, also caused us to consider additional ways that students figure into the data-use puzzle. Hamilton emphasizes that students' interpretation may be influenced by their interaction with teachers. It is possible that teachers' interpretations of data and their construction of implications for action might be influenced by students' responses as well. We know that teachers carefully consider students' past and likely future responses as they make decisions about their instructional approaches (Cohen & Ball, 2000; Kennedy, 2005; Lampert, 2001). It is possible that when teachers engage students in data conversations, these interactions may influence teachers' interpretation of the nature of the problem (that is, what the data mean) and their sense of appropriate instructional solutions as well. Of course, power dynamics likely play a role in this social interaction between teachers and students, as authority is a fundamental aspect of life in classrooms (for a review, see Pace & Hemmings, 2007). Student data might become an additional tool for students to contest or resist their teachers' authority over them, while teachers may use student data to argue that students should conform to teacher expectations and demands. Particularly in the context of high-stakes accountability policies and questions about the commitment of teachers to the success of poor and minority students, teachers may attribute students' test scores to a lack of student motivation, while students may contest that interpretation of the data and use their grades or test scores as evidence of the teacher's poor instruction. In our article, we discuss how administrators shape teachers' interpretive processes, with implications for the actions they take in response. Hamilton (this issue) argues that teachers, in turn, are likely to influence students' interpretive processes. Here, we consider the possibility that influence in both of these instances may be bi-directional as well.

All this suggests that the framework can be extended to incorporate a wider range of data users, but that it may be important to investigate carefully how these different roles—as well as the relations of power and authority that shape interactions between them—influence the interpretive processes of all parties involved.

HOW ARE INTERVENTIONS AND CONTEXT RELATED?

Finally, Piety (this issue) argues for extending our framework in ways that are consistent with what he calls a sociotechnical perspective on data use. The sociotechnical perspective "looks at both technical things [in this case, data systems] and how they are used . . . [it investigates how] technology interactions . . . are part of social processes of meaning-making." We agree with Piety that the sociotechnical perspective appears to be consistent with the framework we put forth. Both emphasize social interaction as a central part of the social process of data use. Both acknowledge the way that systems of meaning become encoded in tools, influencing how data users come to understand and interpret the data and the phenomenon the data are meant to represent. Both emphasize the role of tools, although Piety extends this focus to include infrastructures as well.

There appear to be several implications of the sociotechnical approach for our framework. Here, we will focus on one that we think is quite important: the relationship between intervention and context. The sociotechnical perspective appears to suggest that the intervention and contexts
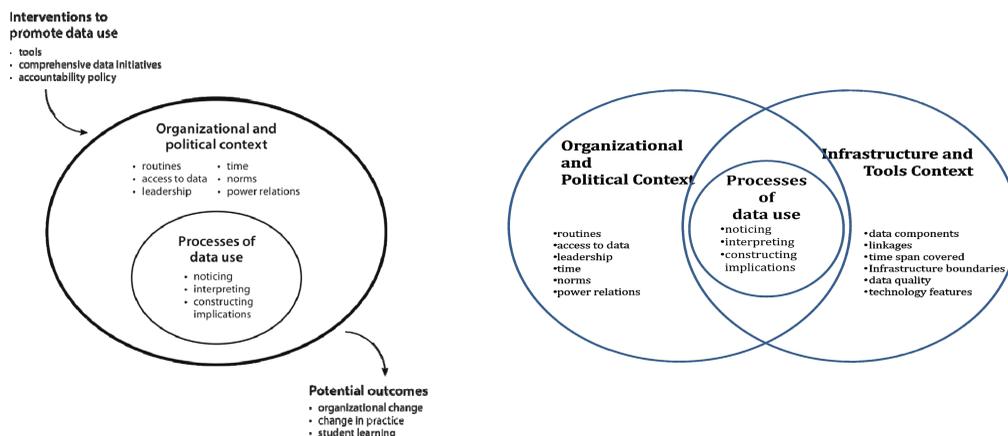
FIGURE 1 Comparing Coburn and Turner diagram to Piety diagram (color figure available online).

are much more interpenetrated than the relationship we portray in our account. You can see this simply by contrasting the diagrams included in our two articles (see Figure 1).

While we portray interventions with an arrow entering into the organizational and political context from afar, Piety portrays the relationship between the two as overlapping circles. In other words, in the sociotechnical framework, interventions (or infrastructure and tools in Piety's language) are a key part of the broader social context within which the social process of data use unfolds. Viewing the relationship between context and intervention this way suggests that data-use interventions are not static. They do not come into a social system and then act upon that social system as our account may suggest. Rather, as Piety points out with his example of state data systems, the interventions themselves evolve over time as part of the organizational context. They also are altered via interaction with users, who ascribe meaning to them, adjust, and adapt them over time (see also Wenger's discussion of the interplay of reification and participation on this point [1998]).

Practically speaking, this suggests that research must attend not just to the influence of data-use interventions on context and underlying interpretive processes, but also the role of interpretive process and context in shaping the data-use interventions themselves. It also suggests the utility of longitudinal designs as data-use interventions are likely to have implications on student learning, instructional practices, and organizational change in ways that shift as the interplay between context and intervention shift over time.

FINAL THOUGHTS

Ultimately, these commentaries suggest a range of ways to build on and extend our framework for studying data use. Our hope is that scholars from a diversity of fields will use this framework, along with the extensions proposed in the commentaries, to design high quality

empirical investigations of different dimensions of the data-use puzzle. We also hope that scholars will use the findings from these studies to adjust, alter, and improve the framework. There is still much to learn about the process of data use and its implications for important outcomes. We hope that the productive conversation started in this issue can continue over time in ways that foster richer, fuller, more nuanced understanding of the data use phenomenon.

REFERENCES

Bickel, W. E., & Cooley, W. W. (1985). Decision-oriented educational research in school districts: The role of dissemination processes. *Studies in Educational Evaluation*, *11*(2), 183–203.

Birkeland, S., Murphy-Graham, E., & Weiss, C. (2005). Good reasons for ignoring good evaluation: The case of the drug abuse resistance education (D.A.R.E.) program. *Evaluation and Program Planning*, *28*(3), 247–256.

Booher-Jennings, J. (2005). Below the bubble: "Educational triage" and the Texas Accountability System. *American Educational Research Journal*, *42*(2), 231–268.

Bulkley, K., Fairman, J., Martinez, C., & Hicks, J. (2004). The district and test preparation. In W. A. Firestone & R. Y. Schorr (Eds.), *The ambiguity of test preparation*. Mahwah, NJ: Erlbaum.

Brunner, C., Fasca, C., Heinze, J., Honey, M., Light, D., Mandinach, E., & Wexler, D. (2005). Linking data and learning: The Grow Network study. *Journal of Education for Students Placed at Risk*, *10*(3), 241–267.

Christman, J., Neild, R., Bulkley, K., Blanc, S., Liu, R., Mitchell, C., & Travers, E. (2009). *Making the most of interim assessment data: Lessons from Philadelphia*. Philadelphia, PA: Research for Action.

Coburn, C. E., & Talbert, J. E. (2006). Conceptions of evidence use in school districts: Mapping the terrain. *American Journal of Education*, *112*(4), 469–495.

Coburn, C. E., & Woulfin, S. L. (in press). Reading coaches and the relationship between policy and practice. *Reading Research Quarterly*, *47*(1).

Cohen, D. K. & Ball, D. L. (2000). *Instruction and improvement: Reconsidering the story*. Ann Arbor: Study of Instructional Improvement, University of Michigan.

David, J. L. (1981). Local uses of Title I evaluations. *Educational Evaluation and Policy Analysis*, *3*(1), 27–39.

Diamond, J. B. (2007). Where rubber meets the road: Rethinking the connection between high-stakes testing policy and classroom instruction. *Sociology of Education*, *80*(October), 285–313.

Earl, L. M. (2009). Leadership for evidence-informed conversations. In L. M. Earl & H. Timperley (Eds.), *Professional learning conversations: Challenges in using evidence for improvement* (pp. 43–52). Dortrecht, The Netherlands: Springer.

Englert, K., Fries, D., Martin-Glenn, M., & Michael, S. (2005). *How are educators using data? A comparative analysis of superintendent, principal, and teachers' perceptions of accountability systems*. Aurora, CO: Mid-continent Research for Education and Learning.

Fairman, J. C., & Firestone, W. A. (2001). The district role in state assessment policy: An exploratory study. In S. H. Fuhrman (Ed.), *From the capitol to the classroom: Standards-based reform in the states* (pp. 124–147). Chicago, IL: University of Chicago Press.

Fuchs, L. S., Fuchs, D., Hamlett, C. L., & Stecker, P. M. (1991). Effects of curriculum-based measurement and consultation on teacher planning and student achievement in mathematics operations, *American Educational Research Journal*, *28*(3), 617–641.

Hannaway, J. (1989). *Managers managing: The workings of an administrative system*. New York, NY: Oxford University Press.

Henig, J. (in press). The politics of data use. *Teachers College Record*.

Ingram, D., Louis, K. S., & Schroeder, R. G. (2004). Accountability policies and teacher decision making: Barriers to the use of data to improve practice. *Teachers College Record*, *106*, 1258–1287.

Jennings, J. L. (in press). The effects of accountability system features on data use. *Teachers College Record*.

Kennedy, M. M. (1982). *Working knowledge and other essays*. Cambridge, MA: Huron Institute.

Kennedy, M. M. (2005). *Inside teaching: How classroom life undermines reform*. Cambridge, MA: Harvard University Press.

Lasky, S., Schaffer, G., & Hopkins, T. (2009). Learning to think and talk from evidence: Developing system-wide capacity for learning conversations. In L. M. Earl & H. Timperley (Eds.), *Professional learning conversations: Challenges in using evidence for improvement* (pp. 95–108). Dortrecht, The Netherlands: Springer.

Lampert, M. (2001). *Teaching problems and the problems of teaching*. New Haven, CT: Yale University Press.

Little, J. W., Gearhart, M., Curry, M., & Kafka, J. (2003). "Looking at student work" for teacher learning, teacher community, and school reform. *Phi Delta Kappan, 83*(5), 184–192.

Marsh, J. A., Pane, J. F., & Hamilton, L. S. (2006). *Making sense of data-driven decision making in education: Evidence from recent RAND research* (OP-170). Santa Monica, CA: RAND.

McDougall, D., Saunders, W., & Goldenberg, C. (2007). Inside the black box of school reform: Explaining the how and why of change at Getting Results schools. *International Journal of Disability, Development and Education, 54*(1), 51–89.

Pace, J. L., & Hemmings, A. (2007). Understanding authority in classrooms: A review of theory, ideology, and research. *Review of Educational Research, 77*(1), 4–27.

Shavelson, R. J. (2006). On the integration of formative assessment in teaching and learning: Implications for new pathways in teacher education. In F. K. Oser, F. Achtenhagen, & U. Renold (Eds.), *Competency oriented teacher training: Old research demands and new pathways* (pp. 63–78). Boston, MA: Sense.

Supovitz, J. A. (2006). *The case for district-based reform: Leading, building, and sustaining school improvement*. Cambridge, MA: Harvard Education Press.

Supovitz, J., & Klein, V. (2003). Mapping a course for improved student learning: How innovative schools use student performance data to guide improvement. Philadelphia, PA: Consortium for Policy Research in Education.

Timperley, H. (2009). Evidence-informed conversations making a difference to student achievement. In L. M. Earl & H. Timperley (Eds.), *Professional learning conversations: Challenges in using evidence for improvement* (pp. 69–80). Dortrecht, The Netherlands: Springer.

Wenger, E. (1998). Communities of practice: Learning, meaning, and identity. Cambridge, UK: Cambridge University Press.

Young, V. M., & Kim, D. H. (2010). Using assessments for instructional improvement: A literature review, *Education Policy Analysis Archives, 18*(19), 1–3.