

Ethical and appropriate data use requires data literacy

Student data can be a powerful, transformative tool in teaching, but to reap those potential benefits practitioners must become more data literate.

By Ellen B. Mandinach, Brennan M. Parton, Edith S. Gummer, and Rachel Anderson

Teachers know all the terms: data-driven decision making, data-informed decision making, data-based decision making, data use, iterative cycles of inquiry, and more. Whatever you call it, data-driven decision making is a hot topic in education. It also has become a focal point for strong opinions — positive and negative. Policy makers believe student achievement will improve when educators use data to inform their teaching. Yet the research evidence proving this is inconsistent at best (Carlson, Borman, & Robinson, 2011; Hamilton et al., 2009; Konstantopoulos, Miller, & van der Ploeg, 2013).

Many educators worry about the growing emphasis and reliance on data. Some teachers actually refer to data as “the other four-letter word” — time being the first one. Teachers say that poring over reams of data takes time from where they want to be — in the classroom with students. Skepticism abounds, and concerns about how data are used are very real. Some educators worry that data are part of the “gotcha,” being used to evaluate their performance in unrealistic ways. What’s more, they say the data they are being required to examine has little utility in their practice.

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Parents and the broader public share those concerns and have raised issues about what data are being collected about students, how they are being used, whether they are secure, and who has access to them. Data breaches at the federal level and in the private sector have garnered media attention and stoked fears. Regulations to guide data use and protect the privacy and confidentiality of student data exist in the Family Educational Rights and Privacy Act (FERPA). But FERPA is not easy to understand. Parents likely receive a legal notice about FERPA from their school district each year. Teachers and administrators likely receive FERPA compliance training annually. But such notices and training don't help parents and teachers understand their rights and roles in protecting student privacy, and they sometimes lead to fear that nothing should be done with the data.

Ethical and responsible data use is part of knowing how to use data, and that knowledge focuses on how to protect student privacy and maintain confidentiality of student data.

For teachers, using data ethically — in a way that's mindful of their responsibility to keep individual student information private — is a requirement of using data effectively. So how do we help educators understand their role in protecting student data and using data responsibly? The short answer is that they need to be data literate.

Data literacy and ethics

Data use is not an isolated event (Earl & Katz, 2006). Data use should be a continuous, integrated part of practice that is used all the time. In fact, Mandinach (2012) maintains that good teachers have been employing data-driven decision making all along — it just hasn't been recognized by that term. But there is more work to be done to ensure that educators know how to continuously, effectively, and ethically use data — that is, to help them to be data literate.

Gummer and Mandinach (in press) have defined a construct they call data literacy for teaching:

The ability to transform information into actionable instructional knowledge and practices by collecting, analyzing, and interpreting all types of data (assessment, school climate, behavioral, snapshot, longitudinal, moment-to-moment, etc.) to help determine instructional steps. It combines an understanding of data with standards, disciplinary knowledge and practices, curricular knowledge, pedagogical content knowledge, and an understanding of how children learn.

The construct has three main domains of knowledge, which combine to enable teachers to know what the data mean in terms of their content area and within a learning progression and then to translate that knowledge into instructional steps.

- **Data use for teaching** or what might be considered the ability to analyze and use data.
- **Content knowledge** or the teacher's understanding of a specific domain or subject.
- **Pedagogical content knowledge** (Shulman, 1986) or the ability to apply knowledge of pedagogy in the context of the content area.

These domains are composed of components comprising specific skills that are all part of an inquiry cycle and include:

- How to identify problems of practice;
- How to frame questions;
- How to use data;
- How to transform data into information;
- How to transform information into a decision;
- How to evaluate the outcomes of a decision.

Ethical and responsible data use is part of knowing how to use data, and that knowledge focuses on how to protect student privacy and maintain confidentiality of student data. Such knowledge includes how and when to discuss students' performance, behavior, attitudes, etc. with other teachers, administrators, and parents. It also includes knowing how to remove identifying information from a student record and how to maintain proper student records — whether electronic or in paper-and-pencil format. It includes knowing who has access to student records and when, how, and the process by which to release data or results. Responsible data use also includes knowing when and when not to discuss a student's performance in public.

Take, for example, two teacher colleagues who run into each other in the grocery store checkout line and begin talking about a student who's experiencing

TABLE 1.
An assessment of data use practices



Good practice

- Using data to differentiate instruction and group students.
- Using data walls to organize and clearly understand student data
- Using data walls to talk to other teachers about what the data show and problems of practice
- Placing data walls that contain student names and other identifiers in rooms accessible only to teachers and school leaders
- Removing student identifiers when those data walls are moved to common areas
- Discussing student data at school in collaboration with colleagues to set goals and identify problems of practice
- Using student artifacts in collaboration with other educators for collaboration and improving practice
- Communicating about an individual student's data with his or her parents
- Using only secure systems to upload and manipulate personally identifiable information, such as those provided by the state or district



Practices to avoid

- Using data to track or label students as unable to succeed.
- Hanging data walls with student names and other identifiers in classrooms where anyone who comes into the room can see them
- Keeping data walls with student names or other identifiers in rooms where the public might see them during events or meetings
- Talking about individual student successes and challenges in public
- Sharing student artifacts outside of an education setting, such as on a web site like Pinterest, Facebook, or Twitter
- Dismissing parent requests for data, or ignoring their concerns about how it will be used
- Comparing a student's performance to that of other individual students in conversations with parents
- Storing or manipulating student data through applications like Dropbox, on thumb drives, or in email

some difficulties. Someone passes by and overhears the teachers' discussion. That is a violation of the student's privacy, even if the teachers didn't mean to do so and even if the passerby did not know the student.

But such a conversation would not be a privacy violation if the teachers were working in a data team or a professional learning community, where the expectation is professional discourse about student performance, learning issues, and potential remediation. See Table 1 for a more comprehensive assessment of data practices.

These may be fine lines of distinction, but being

data literate requires that teachers know what constitutes responsible data use and what is inappropriate. But the characterization of a construct such as data literacy in terms of cognitive aspects of knowledge and skills is only part of what we need to examine to truly understand what teachers need to know and be able to do. Educators also need to consider how data literacy plays out in teacher identity, values, and epistemic beliefs. How teachers see themselves as data users — as individualists or part of a team — influences what they do. The extent to which data use is seen as a valuable addition to teacher practice

is important. And what teachers consider important data or evidence has real implications for what they will use.

States, districts, and educator preparation programs must do more to promote teacher data literacy and ethical use of data through policy, training, and practice.

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The setting matters

Data literacy skills can become a powerful tool to inform teacher practice. Teachers need to use data, and they need to do it foremost in a way that is in the interest of their students. Student-focused data use includes:

- Using data to inform instruction;
- Using access to student data appropriately;
- Displaying data appropriately; and
- Disclosing and communicating data appropriately.



“Not only did the cat eat my homework, it went viral on YouTube.”

Conclusion

Data literacy is a critical part of effective teaching, and as the proliferation of data increases, and as parent and public concerns about the safety of data remain, the ethical use of data must be a focus for teachers. Teachers are the front-line communicators to parents and their communities about education. But as parents and the public at large express concerns over data use in education, they're also demonstrating that they don't fully trust educators to use data in ways that benefit students. Teachers have a new role to not only explain the value of data to parents and the community but also to demonstrate that they only and always use information in the best interest of students.

Teachers cannot gain valuable data use skills in a vacuum. There is much more to do to provide educators the support they need to access, interpret, act on, and communicate data effectively and ethically, and this includes promoting data literacy among state and district leaders, and in teacher preparation programs. Teachers need preservice and ongoing instruction in using student data and their role in protecting it — training on FERPA compliance alone won't lead to ethical data use. All these actors have a role to play to be sure that the public and teachers feel comfortable that data are a tool for helping students, not tracking, labeling, or shaming. **K**

References

- Carlson, D., Borman, G.D., & Robinson, M. (2011). A multistate district-level cluster randomized trial of the impact of data-driven reform on reading and mathematics achievement. *Educational Evaluation and Policy Analysis, 33* (3), 378-398.
- Earl, L.M. & Katz, S. (2006). *Leading schools in a data-rich world: Harnessing data for school improvement*. Thousand Oaks, CA: Corwin Press.
- Gummer, E.S. & Mandinach, E.B. (in press). Building a conceptual framework for data literacy. *Teachers College Record*.
- Hamilton, L., Halverson, R., Jackson, S.S., Mandinach, E., Supovitz, J.A., & Wayman, J.C. (2009). *Using student achievement data to support instructional decision making*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation.
- Konstantopoulos, S., Miller, S., van der Ploeg, A., Li, C.H., & Traynor, A. (2013). The impact of Indiana's system of benchmark assessments on mathematics achievement. *Educational Evaluation and Policy Analysis, 35* (4), 481-499.
- Mandinach, E.B. (2012). A perfect time for data use: Using data-driven decision making to inform practice. *Educational Psychologist, 47* (2), 71-85.
- Shulman, L.S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15* (2), 4-14.

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