DATA ETHICS IN EDUCATION: A THEORETICAL, PRACTICAL, AND POLICY ISSUE

ELLEN B. MANDINACH,
JO BETH JIMERSON

Abstract

Responsible data use has emerged as an important concept in education, especially in the wake of the COVID-19 pandemic, which continues to highlight inequities. The knowledge and skills to use data effectively and appropriately are at the heart of data ethics. Educators must tightly couple data literacy with an ethical approach to using data—that is, they must be thoughtful about what they choose to do with data, how they go about their work, and how they center their work to benefit, rather than to harm, those engaged in the work of schooling, including students, teachers, families, and other educators. In this article, intended to provoke thought around data ethics among educators, researchers, and policymakers, we take a broad view of what data are and assert that data ethics go far beyond protecting the privacy and confidentiality of data. To be an ethical data user means using the right data in the right ways for the right purposes. The article lays out a context for data ethics, demonstrates how ethics are coupled with data literacy, provides examples of data ethics in practice, and recommends steps for strengthening ethical data use in practice.

Keywords

data ethics, data literacy, data-driven decision making

Introduction

Ethics in education, leadership, and decision making have been a core concern for quite some time (Starratt, 2004, 2012). Data-driven decision making (DDDM) is similarly not new, having most pointedly accelerated with the birth of modern accountability movements that foregrounded broad-scale standardized testing regimes seeking to use data in comparative (and sometimes punitive) ways (Beadie, 2004; Darling-Hammond, 2007; Dorn & Ydesen, 2014; Kuhn, 2013; Militello et al., 2013). Despite ethics in data use being at least an implicit thread running through empirical research over the past decades (e.g., Booher-Jennings, 2005; Daly, 2009; DeMatthews & Serafini, 2019; Vasquez Heilig & Darling-Hammond, 2008), the role of ethics in data use has become a more explicit focus as of late. Perhaps because of what new technologies allow educators to do (apart from questions of what they should do), and in part due to crises like the 2020-21 pandemic, which pressed educators into broader and newer forms of technology use (and, for many, introduced questions about privacy, data security, and the degree to which the worlds of school, workplace, and home do or should overlap), ethical data use has emerged as a critical topic.

Long before the pandemic, data use was inextricably bound up with accountability systems, with accompanying pressures to "game the system" and use data inappropriately to performative ends (Aronson et al., 2016; Booher-Jennings, 2005; Nichols, 2021; Nichols & Berliner, 2007). "Gaming the system" in the educational context refers to the manipulation of student performance indices to maximize accountability outcomes, such as focusing only on students who are near passing, to the exclusion of all other students. The result of this myopia is the further marginalization of already challenged students, because accountability measures often fail to accurately reflect the performance of some student groups (Datnow, 2017; Datnow & Park, 2018; Garner et al., 2017). Mandinach and Schildkamp (2021) explored how the persistent linking of data use with accountability systems created misconceptions about data use and a need to shift the dialogue towards data for continuous improvement. Mandinach et al. (2019, 2021) have further asserted that educators need to use diverse data sources to address the whole child, and the fullness of data literacy requires educators to assume an asset and equity mindset.

Starratt (2004) noted that one conundrum facing education is that "… the issues that school leaders face tend to be presented and interpreted primarily as technical, rationalizable problems resolvable by technical, rational solutions" (p. 4). Focusing on the use of data without an ethical lens can also reify thinking that DDDM processes are "successful" when they effect desired changes in high-profile metrics. However, we have seen instance after instance of improvement in (short-term) metrics that derived from unethical acts

(e.g., Daly, 2009; DeMatthews & Serafini, 2019; Vasquez Heilig & Darling-Hammond, 2008). In a later work, Starratt (2012, pp. 8-9) clarified:

> …being ethical refers to behaving in ways consistent with internal, self-appropriate principles that one can articulate and that, at least sometimes, lead persons to go beyond self-interest. […] Ethical persons behave in certain ways because they are convinced that it is the right thing to do, because doing the right thing is tied up with their identity.

Data ethics, in an educational context, mean that leaders not only use data to inform decision making in ways that affect improved academic, social, and behavioral outcomes, but that they also use data in ways that increase awareness of and acknowledge underlying issues such as inequities, political pressures, and barriers to change. Moreover, school leaders work to articulate their professional values, beliefs, and principles, and subsequently use data in ways that align with those values. This also means that ethical data use is not aimed at achieving "quick wins" in terms of improvements in reportable data if these come at the expense of the long-term good of students and communities; data use is purposed toward unearthing and addressing root causes of student underperformance and to centering the long-term good of the students and communities in data-driven dialogues and processes.

Data users too often have fallen into the trap of using narrowly defined data to inform the work of schooling mainly in regard to accelerated gains in metrics related to academic progress—and even then in areas privileged by test-driven accountability policies (Brighouse et al., 2018). Ethical data use can be a part—*should* be a part—of identifying and addressing the full needs of children beyond accountability metrics. To engage in the "profoundly moral work" of education requires an ethics of data use such that data are used to gain a comprehensive understanding of each student based not just on academic performance but also on the student's personal story, contextual factors, interests, and strengths (Mandinach et al., 2019, 2021).

In the United States, regulations such as the Family Educational Rights and Privacy Act (FERPA) protect educational student data in terms of privacy and confidentiality. But data ethics are broader than compliance with legal regulations. Data ethics are about using the right data for the decision at hand, properly analyzing the data and drawing accurate interpretations, outlining potential paths forward for action, articulating and weighing the ethical issues involved with potential actions based on data, and selecting actions that are ethically defensible (Mandinach & Gummer, 2021a). It is important to note, however, that interpretations are not straightforward and there may be no single "right" interpretation of some data. Wrestling with what is ethically defensible requires school leaders to collaborate with others (so they are not

captive to their individual personal or professional desires or fears) in order to see issues and actions from different perspectives (Mandinach & Jimerson, 2021a). This enables leaders to more accurately weigh how both the short- and long-term benefits and burdens of their decisions fall on students, teachers, and others in the school and community. Acting on data without internal and external checks on ethics can lead leaders to engage in cognitive fallacies. Such cognitive fallacies include cherry picking which data to use or reject, using incomplete data, and privileging certain metrics and excluding others to provide a narrowed view of the phenomenon being examined (Geckoboard, n.d.). Such fallacies can lead to inaccurate interpretations and poor decisions; unethical data use centers the good of leader(s) at the expense of students, school culture, and learning—that is, leaders' careers can profit from improvements in highly publicized high-stakes metrics, even if the methods used to attain those improvements include practices that fail to enrich learning and long-term opportunities for the students they ostensibly serve (see Daly, 2009; Vasquez Heilig & Darling-Hammond, 2008).

In cases in which school leaders profit (in terms of prestige and/or promotion) by leveraging high test scores through "drill-and-kill" strategies as opposed to more robust instruction and engagement with rich curricular materials, students are, in effect, positioned as mere means to an end for leaders—as pawns in a larger game. When leaders practice ethical data use, the support and development of students is the goal in and of itself, and benefit to leaders is a mere byproduct of this means-ends positioning. Fundamentally, data ethics are about being data literate and using those skills, knowledge, and dispositions to use data effectively and responsibly first and foremost for the support and development of students.

Theoretical Background

Definitions
Throughout this paper, the terms *data use* and *data-driven decision making* refer to the systematic collection, analysis, and application of data to inform educational decision making. *Data literacy* is a composite of skills, knowledge, and dispositions that educators need to use data effectively and responsibly. It is the ability to use a skill set to make all sorts of educational decisions based on diverse data and actionable information to inform practice (Mandinach & Gummer, 2016).

By *data ethics*, we mean the ability not only to use appropriate data for appropriate purposes, but to apply reasons that prioritize the long-term benefit of students. This aligns with a definition included in the *Data Ethics Framework* provided by the US General Services Administration (2020; p. 9): "the norms

of behavior that promote appropriate judgments and accountability when acquiring, managing, or using data, with the goals of protecting civil liberties, minimizing risks to individuals and society, and maximizing the public good."

We acknowledge that our approach to data ethics is reflective of Kantian ethics (Fieser, 2003) in that we hold that ethical data use requires that leaders refrain from decisions that treat others (e.g., students, teachers) as merely a means to an end; instead, ethical data use should center efforts that reflect a valuing of students as worthy ends in and of themselves. This is in contrast with a utilitarian approach, which would judge the ethics of a decision or act solely upon the outcome of the act (Fieser, 2003). The judgment of the ethical nature of a data-driven decision, then, inheres in the decision itself, rather than in the outcome. Tenets of data ethics therefore include acting with integrity, being accountable, being transparent, and protecting privacy and confidentiality. Finally, we assert that data ethics are inextricably coupled with data literacy and in fact, in the ideal, data ethics are a requisite component of data literacy. But we question whether an educator can make an ethical, data-based decision without sufficient data literacy, and whether an educator can use data literacy skills to make a data-based decision that results in a good outcome but that is unethical. The interplay of skills is complex and requires exploration.

Ties to Data Literacy and Cognition

Mandinach and Gummer (2016) have conducted theoretical studies for over a decade to provide a definition of what it means for educators to be data literate. They identified 53 skills and types of knowledge that teachers need to use data effectively. In addition, they identified several habits of mind or dispositions that are generic to teaching but are essential to data literacy, such as the belief that all students can learn, the importance of collaboration, and communication. We position data ethics as a foundational component of data literacy that works in concert with other key educational dispositions and cognitive skills. According to the *data literacy for teachers* construct (Mandinach & Gummer, 2016), data ethics are seen as both a skill and a disposition that educators need in order to use data responsibly. For our purposes here, we generalize the construct from teachers to leaders, noting that the fourth component, transforming information into an instructional decision, would involve many kinds of administrative decisions for leaders. Data literacy includes the ethical use of data as well as honoring those to whom data belong through protection of data privacy. Mandinach and Nunnaley (2021) argued that, given a continuum of expertise, individuals who exhibit advanced or high-capacity data literacy for teaching (DLFT) skills, are by definition, using data effectively and responsibly. More novice

users may be less likely to know how to invoke appropriate DLFT skills. DLFT skills are not used in isolation but most often are used as a composite (Beck & Nunnaley, 2021), with different subsets of skills being used at various times. This means that of the 53 DLFT skills, educators rarely engage one skill at a time but rather a composite of skills and knowledge.

When we look across the DLFT skills, a major emphasis would be on selecting the right data (more than just student performance indices) to address specific questions, drawing appropriate interpretations, and taking actionable steps. A key source of knowledge is understanding the principles of consequential validity drawn from the interpretation (Cronbach, 1988; Messick, 1989), and avoiding the many cognitive fallacies, such as detecting patterns where none exist, that Kahneman and Tversky (1973, 1984; Tversky & Kahneman, 1971, 1974) outlined in their work, as well as confirmation bias (Nickerson, 1998).

Further, DLFT includes the use of data with integrity. Data literate educators should understand the concept of data quality, meaning that the data they use have relevance, completeness, timeliness, the right granularity, and accuracy (Mandinach & Gummer, 2016). Data literate educators should know how to examine and analyze data appropriately and use data displays to represent their results without distorting or misrepresenting the findings. They should know which assessments to use for what purposes (e.g., Coburn & Talbert, 2006; Militello et al., 2013). They should know how to communicate accurately with data. They should understand that data use is an iterative rather than a finite process, one in which they examine their own findings and question them for accuracy and appropriateness. Educators should use data to interrogate their own implicit biases rather than confirm them, using an asset-based mindset that avoids deficit thinking (Bertrand & Marsh, 2021). Without the guardrails of data ethics, educators can misuse data and end up responding to accountability pressures in dysfunctional ways (Nichols, 2021), gaming the system (Booher-Jennings, 2005), and marginalizing challenged students (Datnow, 2017; Datnow & Park, 2018). Responsible data use is about an equity model, using data responsibly to address the diverse needs of all learners.

Data Ethics in Practice: Focal Scenarios

In this section, we offer six brief scenarios. These are illustrative in nature, composites drawn from both authors' personal and professional experiences working with education and educators, and are constructed to allow readers to consider broadly how data ethics impact educational practice. To help readers consider multiple levels of data ethics application, we provide scenarios situated at the district, school, and classroom levels that highlight data ethics issues pre- and intra-COVID-19. We purposefully do not provide

interpretations of the scenarios, as our goal is to present scenarios that spark reflection and dialogue among readers. We do, however, note core ethical issues at the heart of each scenario. After presenting all six scenarios, we connect the concepts illustrated in each to the broader research literature in the "General Commentary" that concludes this section.

Classroom Decision Making

Third-grade teacher Sarah Shuster collects data on students' reading levels and skills through 1:1 assessments and read-alouds, whole-class assessments, talking with students about their assigned and self-selected reading choices, and via the school's new learning management system (LMS). The LMS has an assessment mode that engages students for 20 to 30 minutes per week; it uses these data to help the system "learn" and to link "recommended learning activities" to students' demonstrated knowledge and skills. Students access activities from school or home, and activities contribute to the overall reading grade.

One of her students, Lola, consistently selects books at the 5th grade and higher reading levels, and Ms. Shuster and Lola have engaging conversations about the material. Lola does well in class-wide assessments, but the LMS consistently reports Lola's performance at the 1.5 to 2.0 grade level range and assigns her tasks that Ms. Shuster thinks are below Lola's ability. The school expects students to use the LMS; teachers are expected to send reports to parents. Lola's reports from the LMS and from Ms. Shuster are consistently in conflict. Lola's parents want to meet with Ms. Shuster and the principal, as they now fear Lola is falling behind in reading and wonder if Ms. Shuster is able to address her needs. Ms. Shuster wants to tell Lola's parents they have nothing to worry about, but she also wonders if that is true. Maybe she is missing something, or worse—maybe she is not looking for evidence of Lola's gaps. After all, what would that indicate about students she had taught prior to this year—students she thought were flourishing?

This scenario highlights the inevitable coupling of data literacy and data ethics. In terms of data literacy, Ms. Shuster has to determine whether she should privilege her own data and observations or that of the LMS. Regarding data ethics, she must interrogate her motives behind which she chooses to privilege. Simply moving forward and assuming her interpretations are accurate centers her own comfort and well-being (e.g., she can avoid conflict, protect her reputation with the principal, and continue with her practice unchanged). Centering the long-term well-being of Lola may require that she seek out more data to determine whether her instruction is part of the problem, and this could require reflection, dedication to professional learning and growth, and substantial changes in practice.

Campus Decision Making

Turing Middle School Principal Eric West wants to find a new way to recognize students for their character, hard work in the classroom, and positive impact on the campus. The school has grade-based honor societies and student government (which often turns on a popular vote). He creates a program called the "Turing Ten"; ten students from each grade who are to be featured on a prominent bulletin board in the school's front hallway. Student pictures and profiles are featured, and students in each month's "Turing Ten" earn coupons to use in the school's cafeteria and athletic event concession stands. Parents receive a bumper sticker and cookies delivered to their home or workplace in recognition of their children.

At first, Mr. West operated the Turing Ten purely by teacher nomination, but he noticed the same students who were typically recognized and were well-liked quickly appeared among the Turing Ten. He knows that many teachers on campus already use an app that communicates merits and demerits, sometimes in real time. If all teachers used the app, he could simply collect those data and run a report to inform the monthly list. In fact, students could already see their own point totals—if they knew what the average point level of a Turing Ten student was and what the school average was, it could help motivate them to improve aspects of what the school identified as good citizenship, such as good attendance, turning work in on time, following the dress code, and moderating behavior.

Here, data ethics would require that Mr. West at least consider potential harmful or unintended consequences of using data to foster a competitive environment in the school—a contest where for some to win, others must inevitably lose. Data ethics would also require consideration of the potential effects of making students' data available to peers; even if masked, the premise that a students could improve their own performance, yet still encounter data outputs that continually show them falling below the school average or even near the bottom of the list could have detrimental effects. Ethics require Mr. West to at least look beyond the anticipated positive outcomes that will be afforded to some students to determine whether potential negative consequences for others outweigh the value of his plan.

District Decision Making

Superintendent Marcia Bales is leading the district through rezoning, as two new elementary schools and a new middle school will open in the next few school years. The school district was recently assessed a "B" overall in the state's school accountability system. Two elementary schools were rated "C"

and one was rated "F"; all other schools were in the "B" or even "A" range. Dr. Bales has been at the forefront of updating curriculum and teacher training. She knows that some of her "wins" in the district have come because the communities that the schools serve have largely seen improvements. Only five years ago, the district was rated a "C" district, with five "C" campuses and two "F" campuses. She has received recognition from local realty companies and the local Chamber of Commerce, because as perceptions of school quality rise, so do property values across much of the district.

Dr. Bales wants to keep pressing for improvement at all schools, but also begins to wonder if the rezoning is an opportunity to combine some programs and schools to maximize performance and cluster lower-performing areas of the district at two main elementary campuses. That would ensure higher ratings for the district (possibly even enable the district to receive an "A" rating) and in the process allow her to target more resources (programs, personnel, facilities) to the two campuses. Maybe they would not remain low performing for long, she thinks, given the additional support.

The data ethics issue here is whether Dr. Bales is indeed aiming to make the targeting of resources more efficient (centering the learning needs of students) or whether she is manipulating the rating system to advantage the district (and possibly to bolster her reputation for effecting improved outcomes). If the latter, she is in effect using students as a means to an end that benefits her by using gaming strategies to obscure struggling schools and students; these strategies could actually put students' long-term achievement in jeopardy.

Classroom Decision Making (Intra-pandemic)[1]

Just prior to the pandemic and the pivot to virtual learning, teacher Mr. Torres had assessed his 1st grade students in-person and via AIMSweb. Brooke came to him not knowing her alphabet; in half a year she had progressed to a mid-kindergarten reading level. The week before the shutdown, Mr. Torres had assessed Brooke at a Developmental Reading Assessment (DRA) level of 4,

---

[1]   To be sure, other forms of crisis can push schools to new applications of technology and data use. Natural disasters have forced schools to close, realign, or find new ways of operation for periods from a few weeks to months or even years. However, we use the COVID-19 crisis as it is unique in pushing so many schools to new ways of operating—and operating at distance—for so long and at the same time. As a pandemic in which so many pushed for normalcy in the midst of a wildly abnormal context, it allows us to uncover and examine some examples pertinent to data ethics.

and she had begun working through the *Biscuit* book series with assistance. Two months into virtual learning, Mr. Torres had students complete an online reading assessment, and Brooke's score came out at the 8th grade level. Brooke was making progress, but not *this* much. Mr. Torres called Brooke's mother, who insisted, "Brooke has been flourishing in virtual learning with us right here to help!"

Trying to give the parent an out for possibly helping Brooke a bit too much, Mr. Torres suggested, "perhaps one of one of her older siblings tried to help her a bit… it's really important to have an accurate assessment so I know how to help Brooke." But Brooke's mother was steadfast. She had watched Brooke take the test—it was just evidence that virtual learning was working well for her! During class, when Brooke read to Mr. Torres, he was pleased with her reading, but also recognized that she was coming closer to being "on level" for a 1st grade student; she was in no way reading on the level suggested by the online assessment. Mr. Torres paused, trying to determine how he would assign a progress grade for Brooke in reading and how he could get data to guide the next steps with Brooke without alienating her family.

Mr. Torres is demonstrating elements of data literacy; he is using multiple measures, collaborating with family, and working to move from interpretation to action. In terms of data ethics, he has a choice to make: he can press the issue of inaccurate data with the family or simply ignore the issue and move forward. Confronting the issue could alienate Brooke's family and result in hassles in terms of meetings with school administrators, but also focuses all collaborators on the importance of capturing accurate data to inform instruction and on the importance of everyone who has a stake in Brooke's progress accepting her current performance so that realistic plans can be made to support her in moving forward. Ignoring the issue is likely to result in less conflict for Mr. Torres, though he may have to develop workarounds for teaching and assessing Brooke, which could involve deceiving her family by allowing them to believe that Brooke is more advanced than she actually is as a reader or that their narrative has been accepted.

Campus Decision Making (Intra-pandemic)

Principal Nat Lawrence is frustrated. The year has been marked by virtual learning, then hybrid learning, then "in-person" learning with long absences as students and teachers move in and out of quarantine. Then the state determined all students still had to take the state-mandated accountability exam, and Mr. Lawrence spent a week trying to figure out how to get students rotated into the building safely to facilitate the test. Then, under pressure, the state decided that students participating in virtual learning would not

have to take the test—only those attending in-person would be tested. Mr. Lawrence thinks of four families in particular—families whose children have already struggled with anxiety due to multiple quarantines and, in each family, more than one death of a loved one. "The last thing those children need to be doing is taking a standardized exam," he thinks. Mr. Lawrence believes that at least three of the five students across those families would do well anyway, but he looks at the phone and considers calling them to tell them that if they opt for virtual learning for a few weeks, they can effectively bypass this year's test. After all, what more could the test reveal that they do not already know about the children, given their internal assessment systems?

Principal Janelle Rogers is frustrated, too. She has seen the same issues Mr. Lawrence has. She was new to her school the year the pandemic hit and had only begun leading much-needed changes and improvement at the campus. She has lost 10 teachers to retirements and resignations this year. She fought for safety protocols to have students in school if they so chose, and she had Wi-Fi routers and laptops delivered to families of students (and to teachers) who needed resources to work from home. "After all we've been through, the state is going to judge us on a standardized test?" she thinks. "Compared to who, exactly, if nobody learning from home takes the exam? Like we aren't assessing with benchmarks and the learning platform every other week?" Ms. Rogers looks at in-person and virtual rosters and compares them to previous years' data. Many of the at-home learners posted high scores in previous years, and now they are out of the testing pool entirely. She wonders how her own performance will be judged this year, with so many students and teachers in and out of attendance. She looks at the phone and wonders if she can talk some of the virtual learners into coming in to take the exam to shore up campus scores and buy her another year to keep moving the campus forward.

Here we see competing scenarios with two principals both considering talking to families to sway them to have their children be tested or to opt out of testing. Apart from the ethical issue of potentially coercing families to make a choice they would otherwise not make, particularly in a situation where the health and safety of children and families may be compromised, these scenarios provide contrasting approaches. Which leader (if either) is centering the good of students? Which is using students as a means to an end? For what reasons would dissuading a family from having their child be tested, or persuading a family to test their child, be ethical? Under what circumstances are such actions unethical? Issues here include gaming accountability systems to ensure that high performing students get tested while others are excluded, with the assumption that a particular sample of students will make campus data look better.

District Decision-Making (Intra-pandemic)

As part of a new emphasis on mental health and well-being in the district, Assistant Superintendent Jac Elliot is considering the introduction of a well-being indicator to district-owned laptops (provided to all secondary students and employees); students and employees could also download an app and log in to the system from personal devices. The system would prompt users periodically to report in with a general indicator of mood via emojis and would also push well-being-oriented recommendations to users. A button in the app would allow users to indicate whether they were feeling particularly stressed or down and would like to be connected to a counselor via chat or phone. Users could also schedule counseling visits (school counselors for students, HR-related counselors for employees) through the app. Though the prompts would be pushed to all district-owned devices and app users daily, the choice of when and how to respond would be wholly up to students and employees.

Jac particularly likes that the district can run risk reports, so if a pattern emerges that is cause for concern, a counselor could, after approval from a risk assessment team, contact the student or employee to offer help. At the same time, Jac is uncertain of how the app stores data, and recognizes that to get participation and honest responses, people need to trust in the security of the system; having the ability to run the backdoor risk reports inherently compromises user trust. Jac wonders how to proceed, given dual concerns for security and privacy on one hand, and on wellness support and crisis prevention on the other. They wonder how they will present the pros and cons of the app and integration into district systems at the next board of trustees meeting.

This scenario suggests that Jac is working to apply data ethics by trying to balance student and employee well-being (and helpful intentions) with personal and data privacy. Another issue highlighted in this scenario is the responsibility of district leaders to ensure they understand how data are collected, stored, and used; if a vendor can access and use (e.g., sell) data, then users of the app should be informed as to when and under what conditions their data may be so used; transparency is key. Compromising confidentiality or brokering privacy—particularly without being transparent to app users so they can make informed decisions about entering their personal data—would be unethical, regardless of whether the app provided benefit to some students and employees.

Commentary on Examples

Though different threads run through the examples, they provide grist for discussing a range of issues pertinent to data ethics. One issue is that in each decision, the educator has to determine whether the data being used are those most appropriate to the articulated goals and whether accessing and using the data in the ways intended abides by privacy regulations. Even if those hurdles are cleared, educators must query whether robust and diverse data sources are being used to answer the questions asked, from "can Lola really read well or is she struggling?" to "does a merit/demerit app really give unbiased data on 'good citizenship'?" to "under what circumstances should students be taking state assessments in a crisis, and how can those data be used?" to "are we helping people by capturing data to provide mental health support?"

The scenario with Ms. Shuster raises questions of how to fit educator judgment and diverse data sources alongside data generated via learning analytics (e.g. Lupton & Williamson, 2017). The scenario at Turing Middle invites questions of the appropriateness of data surveillance in fostering a competitive school culture or forcing routine reporting on what may be minor issues to parents throughout the workday (e.g. Lupton & Williamson, 2017; Manolev et al., 2019). The scenario involving potential rezoning raises questions related to gaming accountability systems in the pursuit of prestige or even in the pursuit of reform (e.g. Aronson et al., 2016). The scenarios dealing with mandated testing during the pandemic raise questions about the influence afforded a single (though state-sanctioned) data point (e.g. Roegman et al., 2021) and the appropriate uses of data in a context of complex and competing pressures on leaders (e.g. DeMatthews & Serafini, 2019).

All scenarios require educators to engage in thoughtful data use—from matching data to driving questions, through collecting and interpreting data, to identifying potential decisions and to determining actions—and to doing so hand-in-hand with the question: Is this process/action/decision ethical?[2]

---

[2]   Though we are tempted to ask if the process/action/decision is "ethical and equitable" to underscore the importance of centering equity within data ethics, our assertion is that if a "data-driven decision" does not move systems and practices towards equity, then it is inherently unethical, as it (in effect) further privileges some students at the expense of others.

Recommended Steps

We have provided a landscape view of why data ethics are important in educational practice, having given background, theoretical grounding, and examples. We conclude with some general, recommended steps that can be taken to bring awareness to and action in practice about the implementation of data ethics. Some of these recommendations are drawn from our prior work (Mandinach & Gummer, 2021b; Mandinach & Jimerson, 2021a). The intent of these recommendations is not only to bring awareness to the importance of data ethics but also to provide some concrete suggestions for actionable steps that can be taken to help educators and educational agencies use data more responsibly.

A first recommendation is to bring *awareness* to the importance of data ethics. Educators work in contexts where the "techno-friendly obsession within education encourages the prolific spread" of tools and strategies educators can use to identify, monitor, surveil, assess, and respond to perceived student needs (Manolev et al., 2019). However, being rooted in data ethics helps educators recognize when they ought to refrain from doing something that is technically do-able and technologically easy, or when they need to push further than is logistically simple to get the data needed to inform problems adequately. Building awareness of data ethics includes changing the messaging, particularly in expanding the notion of what data ethics are; namely, that data ethics are more than just the protection of data privacy and confidentiality; data ethics require appropriate and effective data use. Thus, the messaging includes moving the conversation to responsible data use, with how the data are being used and the validity of interpretation and action being central.

Following from the messaging is the need to build educator capacity to use data responsibility. Capacity building must begin in pre-service and be sustained throughout educators' careers, through professional development and technical assistance. To do this, educator preparation and educational agencies must recognize the importance, take action by requiring educators and candidates to be literate about data ethics, and provide opportunities for knowledge acquisition. Relatedly, this requires support from professional organizations and state education agencies to include data ethics in state and professional standards. Currently, there are limited resources to help educators acquire the needed skill set, so there must be an effort to develop relevant materials beyond those that exist for data privacy (Mandinach et al., 2021; Mandinach & Jimerson, 2021b), broadening the resources to data ethics and responsible data use.

Related to messaging and data literacy, there is a need for educators to confront issues around confirmation bias (Mandinach & Gummer, 2021b), the impact of accountability system pressures on appropriate data use (Nichols,

2021), the need to assume a whole child perspective and an equity mindset (Datnow, 2017; Datnow et al., 2021; Mandinach & Mundry, 2021), and the detrimental effects of deficit thinking/framing (Bertrand & Marsh, 2021).

There is much work to be done around data ethics in terms of both research and implementation in practice. This article provides both grounding in the issues and a springboard to further dialogue and progress in the field. For a more thorough examination of the issues at play related to data ethics, we recommend the book by Mandinach and Gummer (2021a) that examines theories that pertain to data ethics, the landscape of regulations, how accountability impacts data ethics, and use cases of how data ethics are being implemented in educational settings.

References

Aronson, B., Murphy, K. M., & Saultz, A. (2016). Under pressure in Atlanta: School accountability and special education practices during the cheating scandal. *Teachers College Record*, *118*(14), 1–26.

Beadie, N. (2004). Moral errors and strategic mistakes: Lessons from the history of student accountability. In K. A. Sirotnik (Ed.), *Holding accountability accountable: What ought to matter in public education* (pp. 35–50). Teachers College Press.

Beck, J. S., & Nunnaley, D. (2021). A continuum of data literacy for teaching. *Studies in Educational Evaluation*, *69*(2), 100871. https://doi.org/10.1016/j.stueduc.2020.100871

Bertrand, M., & Marsh, J. (2021). How data-driven reform can drive deficit thinking. *Phi Delta Kappan*, *102*(8), 35–39. https://doi.org/10.1177/00317217211013936

Booher-Jennings, J. (2005). Below the bubble: "Educational triage" and the Texas accountability system. *American Educational Research Journal, 42*(2), 231–268. https://doi.org/10.3102/00028312042002231

Brighouse, H., Ladd, H. F., Loeb, S., & Swift, A. (2018). Good education policy making: Data-informed but values-driven. *Phi Delta Kappan*, *100*(4), 36–39. https://doi.org/10.1177/0031721718815671

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. https://doi.org/10.1086/505056

Cronbach, L. J. (1988). Five perspectives on validity argument. In H. Wainer & H. I. Braun (Eds.), *Test validity* (pp. 3–17). Lawrence Erlbaum.

Daly, A. J. (2009). Rigid response in an age of accountability: The potential of leadership and trust. *Educational Administration Quarterly, 45*(2), 168–216. https://doi.org/10.1177%2F0013161X08330499

Darling-Hammond, L. (2007). Standards and accountability movement needs to push, not punish. *Journal of Staff Development*, *28*(4), 47–50.

Datnow, A. (2017). *Opening or closing doors for students? Equity and data-driven decision-making*. https://research.acer.edu.au/cgi/viewcontent.cgi?article=1317&context=research_conference

Datnow, A., Lockton, M., & Weddle, H. (2021). When data use raises equity and ethical dilemmas in schools. In E. B. Mandinach & E. S. Gummer (Eds.), *The ethical use of data in education*: *Promoting responsible policies and practices* (pp. 216–231). Teachers College Press.

Datnow, A., & Park, V. (2018). Opening or closing doors for students? Equity and data use in schools. *Journal of Educational Change*, *19*(5), 131–152. https://doi.org/10.1007/s10833-018-9323-6

DeMatthews, D. E., & Serafini, A. (2019). Do good principals do bad things? Examining the bounds of ethical behavior in the context of high-stakes accountability. *Leadership and Policy in Schools, 20*(3), 1–20. https://doi.org/10.1080/15700763.2019.1668023

Dorn, S., & Ydesen, C. (2014). Towards a comparative and international history of school testing and accountability. *Educational Policy Analysis Archives*, *22*(115), 1–7. http://doi.org/10.14507/epaa.v22.1913

Fieser, J. (2003). *Ethics*. The internet encyclopedia of philosophy. https://iep.utm.edu/ethics/#SH2a 5/27/2021

Garner, B., Thome, J. K., & Horn, I. S. (2017). Teachers interpreting data for instructional decisions: Where does equity come in? *Journal of Educational Administration*, *55*(4), 407–426. https://doi.org/10.1108/JEA-09-2016-0106

Geckoboard. (n.d.). *Data fallacies*. https://www.geckoboard.com/best-practice/statistical-fallacies/

General Services Administration. (2020, September). *Data ethics framework*. Federal Data Strategy. https://resources.data.gov/assets/documents/fds-data-ethics-framework.pdf

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80*(4), 237–251. https://doi.org/10.1037/h0034747

Kahneman, D., & Tversky, A. (1984). Choices, values, and frames. *American Psychologist*, *39*(4), 341–350. https://doi.org/10.1037/0003-066X.39.4.341

Kuhn, K. (2013). *Test and punish: How the Texas education model gave America accountability without equity*. Park Place Publications.

Lupton, D., & Williamson, B. (2017). The datafied child: The dataveillance of children and implications for their rights. *New Media & Society, 19*(5), 780–794. https://doi.org/10.1177/1461444816686328

Mandinach, E. B., Cotto, J., Rastrick, E., Siegl, J., Vance, A., & Wayman, J. C. (2021, October). *Student data privacy and data ethics scenarios*. Washington, DC and San Francisco, CA: Future for Privacy Forum and WestEd. https://studentprivacycompass.org/resource/scenarios-user-guide/

Mandinach, E. B., & Gummer, E. S. (2016). *Data literacy for educators: Making it count in teacher preparation and practice*. Teachers College Press.

Mandinach, E. B., & Gummer, E. S. (Eds.). (2021a). *The ethical use of data in education: Promoting responsible policies and practices*. Teachers College Press.

Mandinach, E. B., & Gummer, E. S. (2021b). The landscape of data ethics in education: What counts as responsible data use. In E. B. Mandinach & E. S. Gummer (Eds.), *The ethical use of data in education: Promoting responsible policies and practices* (pp. 35–55). Teachers College Press.

Mandinach, E. B., & Jimerson, J. B. (2021a). The role of the district, school, and classroom to ensure ethical use of data: It's more than just FERPA. In E. B. Mandinach & E. S. Gummer (Eds.), *The ethical use of data in education: Promoting responsible policies and practices* (pp. 125–143). Teachers College Press.

Mandinach, E. B., & Jimerson, J. B. (2021b). *User's guide for data privacy and data ethics scenarios for leaders*. WestEd.

Mandinach, E. B., & Mundry, S. E. (2021). Data-driven decision making and its alignment with educational psychology: Why data are more than student performance results. In

S. L. Nichols & D. Varier (Eds.), *Teaching on assessment* (pp. 269–291). Information Age Publishing.

Mandinach, E. B., & Nunnaley, D. (2021). The role of professional development providers in training data ethics. In E. B. Mandinach & E. S. Gummer (Eds.), *The ethical use of data in education: Promoting responsible policies and practices* (pp. 144–172). Teachers College Press.

Mandinach, E. B., & Schildkamp, K. (2021). Misconceptions about data-based decision making in education: An exploration of the literature. *Studies in Educational Evaluation*, *69*, 100842. https://doi.org/10.1016/j.stueduc.2020.100842

Mandinach, E. B., Warner, S., & Mundry, S. E. (2019, November 6). *Using data to promote culturally responsive teaching: Session 1* [webinar]. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands, Washington, DC, USA. https://www.youtube.com/watch?v=ltEf8M4RUoQ

Mandinach, E. B., Warner, S., & Mundry, S. E. (2020, June 4). *Using data to promote culturally responsive teaching: Session 2* [webinar]. U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands, Washington, DC, USA. https://www.youtube.com/watch?v=2ZZuyFXpqZM

Manolev, J., Sullivan, A., & Slee, R. (2019). The datafication of discipline: ClassDojo, surveillance and a performative classroom culture. *Learning, Media and Technology*, *44*(1), 36–51. https://doi.org/10.1080/17439884.2018.1558237

Messick, S. J. (1989). Validity. In. R. L. Linn (Ed.), *Educational measurement* (3rd ed., pp. 13–103.). Macmillan.

Militello, M., Bass, L., Jackson, K. T., & Wang, Y. (2013). How data are used and misused in schools: Perceptions from teachers and principals. *Education Sciences*, *3*(2), 98–120. https://doi.org/10.3390/educsci3020098

Nichols, S. L. (2021). Educational policy contexts and the (un)ethical use of data. In E. B. Mandinach & E. S. Gummer (Eds.), *The ethical use of data in education: Promoting responsible policies and practices* (pp. 81–97). Teachers College Press.

Nichols, S. L, & Berliner, D. C. (2007). *Collateral damage: How high-stakes testing corrupts America's schools.* Harvard Education Press.

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of General Psychology*, *2*(2), 175–220. https://doi.org/10.1037/1089-2680.2.2.175

Roegman, R., Kenney, R., Maeda, Y., & Johns, G. (2021). When data-driven decision making becomes data-driven test taking: A case study of a midwestern high school. *Educational Policy, 35*(4), 535–565. https://doi.org/10.1177%2F0895904818823744

Starratt, R. J. (2004). *Ethical leadership* (1st ed.). Jossey-Bass.

Starratt, R. J. (2012). *Cultivating an ethical school* (1st ed.). Routledge.

Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. *Psychological Bulletin, 76*(2), 105–100. https://doi.org/10.1037/h0031322

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131. https://doi.org/10.1126/science.185.4157.1124

Vasquez Heilig, J., & Darling-Hammond, L. (2008). Accountability Texas-style: The progress and learning of urban minority students in a high-stakes testing context. *Educational Evaluation and Policy Analysis*, *30*(2), 75–110. https://doi.org/10.3102%2F0162373708317689

Corresponding authors
Ellen B. Mandinach
WestEd, Arizona, USA
E-mail: emandin@wested.org

Jo Beth Jimerson
Educational Leadership, College of Education, Texas Christian University, Texas, USA
Email: j.jimerson@tcu.edu