The Case for Including Data Privacy and Data Ethics in Educator Preparation Programs

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INTRODUCTION

Teachers interact with large amounts of student data every day to perform their job duties. In these interactions, teachers make decisions that impact which student data is collected or revealed, how the data is stored, and how data is interpreted and used to make decisions about students. With the rise of digital technology, student data has exponentially increased, while teachers' development on the use of educational technology and how to protect student data remains insufficient. A 2019 Common Sense Media survey found that only 25 percent of teachers who received professional development to support their use of educational technology were trained to understand student data privacy requirements and strategies.[1] Although only one-quarter of teachers report having received training on data privacy, a mere 38 percent of teachers say they consult a school or district administrator to determine whether digital products are safe to use with students. Another survey conducted by the Center for Democracy & Technology found that only 35 percent of teachers see themselves playing a large role in keeping students' personal data protected.[2] Educators need to receive training on the federal and state student privacy laws that exist, understand how legal compliance applies to their roles, and use data responsibly and ethically. As most teacher candidates complete postsecondary educator preparation programs (EPPs), these programs should incorporate student data privacy and data ethics into their curricula to better prepare educators before they even step into a classroom.

Families and students expect schools to keep communities' data private and safe. This protection includes using only apps that have been vetted for privacy protections and that comply with the Family Educational Rights and Privacy Act (FERPA), but also moves beyond legal compliance, into equitable and ethical uses of data. Data ethics provide guiding principles for how data should be governed, used, and protected to minimize harm and risk. Data equity, in contrast, focuses on using data to understand structural and systemic educational barriers to students' success and to improve those structures and systems. The transition to remote learning brought unprecedented blurring of public and private life resulting from video classrooms and increased data collection, which has only underscored the need for professional development on technology and equitable and ethical data use. Training teachers to understand and practice data privacy and data ethics allows educators to better protect their students from privacy harms and to build trust and credibility with families through informed communication.

When proper student privacy protections are not in place, potential consequences include harm to students and families, legal consequences such as fines or lawsuits, and public relations disasters. Educators must understand their critical role in protecting their students from potential harm, and professional development is the best way to achieve this understanding. Building a culture of privacy is a district-wide effort, which starts most effectively by educating teacher candidates as soon as they enter postsecondary teacher preparation programs. To do so, those programs need to incorporate data privacy training into their curricula.

To respond to this need, the Future of Privacy Forum (FPF) partnered with WestEd to build a set of freely available materials that postsecondary teachers (professors, instructors, clinical supervisors, and coordinating teachers) can easily adopt and integrate into their teacher preparation courses. Before developing these materials, we needed to understand how training programs currently prepare teacher candidates, identify potential content for privacy and ethics training materials, and determine the appropriate format of the materials. We addressed this component in two ways:

› Interviewed nine professors and educators, representing five educator programs and two schools, to better understand what teachers need to know to protect and use data ethically, and how we might best fit these materials into teacher preparation curricula.

› Scanned online documentation of state preparation standards and national professional organizations, searching for how they reflect data ethics and privacy. These entities influence how teacher preparation programs design their curricula.[3]

This report briefly summarizes the results of these two components.

INTRODUCTION

To inform the creation of these materials, we interviewed professors and K-12 educators to learn their opinions and experiences about what candidates need to know in order to ethically use and protect students' data. This section offers a brief summary of those findings, including descriptions of the interviewees, our findings, and our conclusions.

INTERVIEWEES

We interviewed nine individuals in early 2020, chosen based on their expertise in teacher preparation and/or data use. Six individuals were university educators, and three were K-12 educators. The six university educators included four professors, one dean, and one administrator who oversees teacher candidates. The three K-12 educators included one principal and two teachers; the principal and one teacher had formal relationships with a teacher preparation program.

FINDINGS

There were three primary aims of this investigation: (1) inform potential content for the materials, (2) identify courses and experiences in which the materials could be implemented, and (3) identify possible formats and approaches to building the materials. Only one of our interviewees was familiar with adequate teacher training on how to ethically use and protect student data. The other respondents knew of only sporadic instances in which teacher candidates received this sort of preparation.

Potential content for the materials. To determine potential content for the materials, we asked interviewees what they believed teachers need to know to protect and use students' data.

All interviewees believed that teachers need to know governing laws and policies for how to access and share students' data, along with the consequences of doing so correctly and incorrectly. Interviewees acknowledged that teachers need to be familiar with the primary federal student privacy law, the Family Educational Rights and Privacy Act (FERPA), but some interviewees cautioned against making the content about FERPA too complex. Instead, they recommended identifying relevant, consumable areas of FERPA that would be most relevant to teacher practice. One interviewee discussed the value of defining "data" for teachers: if teachers must know how to protect data, they must know that "data" is a far-reaching term, encompassing test scores, personal information, and even student images, among other categories.

Another area was the use of personal technology. Some interviewees noted that teachers increasingly use mobile and other personal devices and that this use often spills over into the school setting, including interactions with families and students and storing and sharing student information on and through personal devices. The more that teachers rely on personal devices for professional use, the more potential privacy risks arise. The interviewees also mentioned issues regarding the (mis)use of social media, including photos and videos. Teachers are often unaware of the privacy risks involved in social media use, particularly through interacting with students and families on these platforms. Teachers need to know the boundaries for social media and other aspects of personal technology use so they can be effective digital citizens.

A third area was the application of ethical behaviors when using and communicating about data, such as the appropriate and responsible use of data more broadly defined. Using data ethically involves a host of skills, such as using the right data to address a particular issue or educational question, knowing to use diverse data, and making interpretations based on sound data.[4] While professors often cited a general goal of teaching candidates to be ethical users of data, they described it mostly in terms of communication and context. Interviewees spoke of the importance of knowing boundaries regarding appropriate communication of students' data with other teachers, parents, and students—and often had horror stories to share. Some interviewees noted the importance of understanding contextual issues—the home, social, and cultural contexts from which students come and that they bring to the classroom—in working with different communities and populations, especially vulnerable groups.

Some interviewees also noted the challenges and importance of learning to operate within the school culture in general, including learning school norms and processes regarding privacy, which is new for pre-service teachers. Teachers need to have foundational knowledge, yet some of the knowledge acquired in their preparation programs may not fully make sense until they become practicing teachers. Moreover, when teacher candidates graduate and go into practice, school cultures need to reinforce what educators learned during teacher preparation. Otherwise, some candidates who have learned responsible data use in their preparation programs may be placed in schools where there is no data culture, no data team, or an insufficient data governance program.

Possible courses and experiences for implementation of materials. In talking to interviewees about pre-service teacher experiences, we found, not surprisingly, that teacher preparation structures vary widely. The programs' commonalities, however, demonstrated the potential for development of courses and materials that could be implemented.

Interviewees believed that the most promising area to implement training materials on privacy is practical field experiences. These experiences vary widely, including internships, observations, practicums, and student teaching, among others. Interviewees believed these to be good courses for integrating privacy and ethics materials because teacher candidates are embedded in a school experience and can thus easily connect and apply the materials. Such experiences also enable flexibility in teaching the materials to reflect particular contexts or events. In addition, interviewees noted that clinical faculty who are tightly connected to schools (e.g., retired educators) often teach these courses. Interviewees believed that these faculty members' practical experience can uniquely help teacher candidates link the materials we develop to their practice.

Some interviewees also suggested including our privacy materials in assessment courses and introductory foundations courses. Not all programs have assessment courses, but they offer fertile ground because they focus on kinds of data that teachers are most likely to use to inform instruction. Introductory foundations courses were mentioned by a few interviewees who believed it is never too early for candidates to start thinking about data ethics and privacy; in having candidates do so

early, programs could prepare students to think this way in subsequent courses.

In terms of timing, our interviewees believed the material should be iterative, revisited throughout the course and across multiple courses. They strongly recommended that candidates be taught about data ethics and privacy in different courses at different times in their programs, thus enabling them to continually consider ethics and privacy as they gain knowledge and experience. This process would offer multiple exposures throughout programs and into practice.

Finally, interviewees noted that special education courses address data ethics and privacy far more deeply than other teacher preparation programs do. While many teacher candidates may not take these courses, they may be an area for other preparation programs to consult as they decide how to implement future materials.

Possible formats and approaches. Our interviewees had suggestions about the possible format of the materials and approaches to implementing them. Interviewees unanimously believed that candidates would best learn from scenarios because students are familiar with scenarios, and they allow students to engage with authentic problems. Interviewees cited the need for real-world content that might engage candidates and help them think about their own experiences. Furthermore, scenarios would enable professors to set up various learning experiences, groupings, and class discussions. The format of the materials did not matter much to our interviewees; they said that faculty were skilled in bringing material to life and would do just as well with a set of PDFs as they would with something technologically complex.

Interviewees strongly encouraged us to ground the material in candidates' experience, i.e., situations candidates could easily relate to or possibly even ones they have seen. Interviewees also urged us to pay attention to faculty engagement. While faculty rarely have experience in data ethics or privacy, interviewees said that faculty can easily learn through manuals or modules if couched in the larger context of teacher practice.

Interviewees also suggested consideration of some platforms external to postsecondary institutions. Suggestions included scenario-based virtual reality software, state-mandated online courses for

teacher candidates, and one set of simulations that a professional organization is currently piloting. One interviewee also noted that it may be effective to build a moderated, crowdsourced repository of stories and experiences regarding data ethics and privacy. Platforms such as these are interesting to consider as this work continues to build.

CONCLUSION

These interviews and our expertise lead us to believe that teacher candidates need to learn about data privacy in terms of data ethics; that is, they need to learn the laws, policies, and rules in the context of ethical practice. Furthermore, we decided to create scenarios that professors of education preparation programs can adopt into their course materials for teacher candidates or that professional development providers can use for practicing teachers. Each practice-based scenario includes a description of a real-world ethical dilemma, discussion questions, expert guidance on how to mitigate risk and harm, and a discussion of legal obligations and best practices for protecting student data.

LANDSCAPE REVIEW OF STATE AND NATIONAL STANDARDS

INTRODUCTION

Educator preparation programs (EPPs) must align their curricula with state and national standards and regulations. These standards are required for teacher certification and therefore directly impact the curricula in EPPs. So, for example, if data literacy, data ethics, or data privacy are included in the standards, the programs are required to address them in some way. Given this significant influence, we conducted a landscape review of state and national standards to inform the development of our data privacy and data ethics scenarios.[5] First, we reviewed how national professional organizations reflect data ethics in their documentation. Second, we reviewed how state standards reflect data ethics among their regulations.

BACKGROUND AND CAVEATS

Because we have conducted prior reviews of state standards for data literacy,[6] we know that some states have more information publicly available than others regarding the skills, knowledge, and dispositions needed to become a certified teacher. Some states make their documentation readily available, whereas others make it virtually impossible to find. Some states specify only which courses and experiences are needed. Other states provide lengthy documents that lay out the needed skills by specific content and level of educator. Some states have a cursory document, perhaps a few paragraphs long, whereas other states have documents that run hundreds of pages.

An additional caveat relates to the Interstate Teacher Assessment and Support Consortium (InTASC) standards. These standards are "model core teaching standards" that are intended to guide the performances, essential knowledge, and critical dispositions that teachers must develop.[7] As we explain below, the InTASC standards are important because they emphasize data use and data literacy skills, and one standard specifically focuses on ethical practice. As our review shows, it is often unclear whether a state has adopted InTASC. For example, the Arizona Department of Education's website shows no evidence, yet when we dig deeply into the Arizona Board of Education's meeting notes, we find that the board adopted InTASC.

Many state standards refer to a code of ethics. Some defer to the Model Code of Ethics for Educators,[8] developed by the National Association of State Directors of Teacher Education and Certification (NASDTEC). NASDTEC members develop state standards and are, therefore, a key leverage point for this project. Some states simply mention that they have a code of ethics. Again, the documentation is buried in websites, difficult to find, is very general, and fails to directly address data ethics.

It is therefore safe to say that no landscape review will be comprehensive, and resources may be missed. Extrapolating from the lack of transparency, we believe that the education field, and educator preparation specifically, needs clear, explicit statements about data ethics skills and knowledge that can and should be incorporated into all state standards.

NATIONAL PROFESSIONAL DOCUMENTATION

We review documents from two professional organizations relevant to state standards that outline the required skills and knowledge for teachers and, therefore, teacher candidates, and that impact teacher preparation programs.

InTASC Model Core Teaching Standards.[9] The InTASC standards consist of 10 standards with substandards categorized as performances, essential knowledge, and critical dispositions. Several substandards pertain to data ethics.

> **Standard 5 – Application of Content**
>
> 5(k) The teacher understands the demands of accessing and managing information as well as how to evaluate issues of ethics and quality related to information and its use (p. 27).

This substandard is relevant to data ethics but addresses only the access and management of information, failing to include interpretation and

action regarding the information, which are primary components of data literacy.

Standard 9's description is specific to ethics and has nine substandards:

Standard 9 – Professional Learning and Ethical Practice

The teacher engages in ongoing professional learning and uses evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner (p. 41).

Note that the standard really pertains to teachers' self-evaluation but can be extrapolated to the ethical use of data.

Standard 9 Performance substandards

9(c) Independently and in collaboration with colleagues, the teacher uses a variety of data (e.g., systemic observation, information about learners, research) to evaluate the outcomes of teaching and learning and to adapt planning and practice.

9(d) The teacher actively seeks professional, community, and technological resources, within and outside the school, as supports for analysis, reflection, and problem-solving.

9(e) The teacher reflects on his/her personal biases and accesses resources to deepen his/her own understanding of cultural, ethnic, gender, and learning differences to build stronger relationships and create more relevant learning experiences.

9(f) The teacher advocates, models, and teaches safe, legal, and ethical use of information and technology including appropriate documentation of sources and respect for others in the use of social media (p. 41).

The key for 9(c) is to use various data sources, which is a fundamental principle of data literacy. For 9(d), there is a similar emphasis. 9(e) addresses cultural

responsiveness, which is a way of mitigating bias in data analysis. 9(f) directly addresses data ethics.

Standard 9 Essential Knowledge substandards

9(g) The teacher understands and knows how to use a variety of self-assessment and problem-solving strategies to analyze and reflect on his/her practice and to plan for adaptions/adjustments.

9(h) The teacher knows how to use learner data to analyze practice and differentiate instruction accordingly.

9(i) The teacher understands how personal identity, worldview, and prior experience affect perceptions and expectations, and recognizes how they may bias behaviors and interactions with others.

9(j) The teacher understands laws related to learners' rights and teacher responsibilities (e.g. for educational equity, appropriate education for learners with disabilities, confidentiality, privacy, appropriate treatment of learners, reporting in situations related to possible child abuse) (p. 41).

Again, 9(g) addresses the need to use multiple sources of data. 9(h) also pertains to general data literacy, but it speaks to the transformation of data into information and into actionable knowledge. Ethics underlies this transformation process. 9(i) pertains to cultural responsiveness: using data in an equitable manner requires a whole-child perspective and an asset-based approach. All too often, data use is intimately linked to accountability (i.e., test scores), which has been found to further marginalize the most vulnerable students, thereby creating ethical data use issues.[10] This creates a deficit model in contrast to an asset-based model. 9(j) touches on FERPA with the protection of confidentiality and privacy.

Standard 9 Critical Dispositions substandards

9(o) The teacher understands the expectations of the profession including codes of ethics, professional standards of practice, and relevant law and policy (p. 41).

This substandard simply notes a general code of ethics, which sometimes addresses data ethics but more often does not mention the topic.

Additionally, the InTASC definition[11] of data and data use reveals how they think about data-driven decision making:

> Learner data are factual, evidentiary forms of information about individuals or groups of learners that are collected, documented, organized, and analyzed for the purpose of making decisions about teaching and learning. Examples of learner data include, but are not limited to 1) learner demographics and background information, 2) documented information about learning needs and prior performance, 3) learner class work, homework, and other formal and informal works produced by the learner, 4) progress charts, records, and anecdotal teacher notes from formative assessments and/or classroom observations, 5) end-of-unit teacher-developed tests or summative performances and course grades, and 6) external test scores (p. 49).

> Using data in instructional decision making is a continuous, cyclical process of making instructional decisions based on the analysis of learner data. Using data to inform instructional decisions involves key processes—assessing, analyzing, planning, implementing, and reflecting. Data-informed instructional decision making uses data from multiple sources to understand learning strengths and needs in order to suggest classroom and school-wide instructional solutions. This same cyclical process can be applied to larger education decisions affecting school climate and school improvement efforts, with expanded sets of data that may include, for example, teacher evaluation and professional development, parental involvement, and resource allocation (p. 49).

This definition is particularly relevant to data ethics. It promotes the use of facts, evidence, and multiple data sources to inform decision making about various aspects of the educational process.

Summary of InTASC Standards Review.
The InTASC standards peripherally address data privacy and data ethics. In terms of Mandinach and Gummer's analysis[12] of data literacy, these standards do not explicitly address data literacy or issues of data privacy and data ethics. The standards extrapolate from assessment literacy to data literacy, which makes it unclear which concepts educator preparation programs should address. It is imperative to consider data broadly, as more than just assessment data. Thus, the InTASC standards need to focus explicitly on data literacy.

Model Code of Ethics for Educators (MCEE) from NASDTEC.[13] The MCEE lays out five general principles with many subcategories. Data ethics crosses four of the five principles:

> Principle II: Responsibility for Professional Competence

> *B. The professional educator demonstrates responsible use of data, materials, research, and assessment by:*

> 1. Appropriately recognizing others' work by citing data or materials from published, unpublished, or electronic sources when disseminating information;

> 2. Using developmentally appropriate assessments for the purposes for which they are intended and for which they have been validated to guide educational decisions;

> 3. Conducting research in an ethical and responsible manner with appropriate permission and supervision;

> 4. Seeking and using evidence, instructional data, research, and professional knowledge to inform practice;

> 5. Creating, maintaining, disseminating, storing, retaining and disposing of records and data relating to one's research and practice, in accordance with district policy, state and federal laws; and

> 6. Using data, data sources, or findings accurately and reliably (p. 2).

The first bullet is somewhat removed from data ethics as it deals more with the ethics of research and appropriate citations. The second bullet

addresses a foundational concept of assessment literacy, which is the validation of measures used to make decisions. The third bullet is tangential to data ethics. The remaining three bullets are highly relevant to data ethics. They address various aspects of data literacy pertaining to data ethics.

Principle III: Responsibility to Students

C. The professional educator maintains student trust and confidentiality when interacting with students in a developmentally appropriate manner and within appropriate limits by:

1. Respecting the privacy of students and the need to hold in confidence certain forms of student communication, documents, or information obtained in the course of professional practice;

2. Upholding parents'/guardians' legal rights, as well as any legal requirements to reveal information related to legitimate concerns for the well-being of a student; and

3. Protecting the confidentiality of student records and releasing personal data in accordance with prescribed state and federal laws and local policies.

All three of these bullets pertain to data ethics.

Principle IV: Responsibility to the School Community

A. The professional educator promotes effective and appropriate relationships with parents and guardians by:

4. Maintaining appropriate confidentiality with respect to student information disclosed by or to parents/guardians unless required by law.

This bullet pertains to data ethics.

B. The professional educator promotes effective and appropriate relationships with the community and other stakeholders by:

3. Maintaining the highest professional standards of accuracy, honesty, and appropriate disclosure of information when representing the school or district within the community and in public communications.

This bullet also pertains to data ethics.

Principle V: Responsible and Ethical Use of Technology

A. The professional educator uses technology in a responsible manner by:

4. Knowing how to access, document and use proprietary materials and understanding how to recognize and prevent plagiarism by students and educators;

This bullet relates to data ethics.

B. The professional educator ensures students' safety and well-being when using technology by:

1. Being vigilant in identifying, addressing and reporting (when appropriate and in accordance with local district, state, and federal policy) inappropriate and illegal materials/images in electronic or other forms;

2. Respecting the privacy of students' presence on social media unless given consent to view such information or if there is a possibility of evidence of a risk of harm to the student or others; and

3. Monitoring to the extent practical and appropriately reporting information concerning possible cyber bullying incidents and their potential impact on the student learning environment.

C. The professional educator maintains confidentiality in the use of technology by:

1. Taking appropriate and reasonable measures to maintain confidentiality of student information and educational records stored or transmitted through the use of electronic or computer technology;

2. Understanding the intent of Federal[14] Educational Rights to Privacy Act (FERPA) and how it applies to sharing electronic student records; and

3. Ensuring that the rights of third parties, including the right of privacy, are not violated via the use of technologies.

All of the above bullets focus on different aspects of data ethics.

Summary of MCEE Standards Review

Although the MCEE standards make passing reference to data privacy, the coverage is lacking and indirect. Similar to the InTASC standards, if there is an expectation that educator preparation programs include data privacy and data ethics in their curricula, then the MCEE must communicate explicitly that these topics are essential components of educators' knowledge and skills.

STATE STANDARDS

As mentioned, states that have adopted the InTASC standards[15] address data ethics to some degree. Some states have a specified code of ethics, some use MCEE,[16] and for others there is no mention of any general code of ethics. In the table below, we review each state's standards related to data ethics.[17] Specifically, the table documents how each state addresses data ethics, whether there is a code of ethics, and whether the state applies the InTASC standards.

STATE	COVERAGE
AK	Has a code of ethics. Mentions confidentiality and keeping information in confidence.
AL	Includes six points from NASDTEC/MCEE. Has a code of ethics. Mentions confidentiality, secure tests, and properly representing facts.
AR	Uses InTASC. Mentions confidentiality and secure tests.
AZ	Uses InTASC.
CA	Has a code of ethics. Addresses ethical digital citizenship. Mentions disclosure of information.
CO	Uses NASDTEC/MCEE. Mentions confidentiality and presenting facts without distortion.
CT	Possibly uses InTASC. Mentions confidentiality of information and disposal of information.
DC	Unclear if uses InTASC. Ethics standards but not about data.
DE	Uses InTASC. Comments about ethical practice in terms of self-evaluation.
FL	Has a code of ethics. Mentions privacy, data protection, privacy and confidentiality, FERPA, and fraudulent information.
GA	Has a code of ethics. Mentions confidentiality, assessment of educator ethics, technology literacy, and use of information.

STATE	COVERAGE
HI	Uses InTASC. Has a code of ethics. Contains a confidentiality standard.
IA	Has a code of ethics. Discusses multiple measures. Mentions falsifying information.
ID	Uses InTASC. Has a code of ethics. NAEYC. Mentions ethical use of digital information, ethical and effective information management, ethical use of information, and confidentiality.
IL	There is a code but nothing about data. Mentions FERPA. Also mentions confidentiality, legality and appropriate uses of assessments, and accuracy.
IN	Unclear if uses InTASC. Mentions ethics related to equity.
KS	Mirrors InTASC and steeped in relevant items. InTASC's Standards 9. Also part of Standard 4 and others. Has a code of ethics that mentions the following: confidentiality, inclusion, equity, protection of student records, ethical use of information and technology, effective use of student records, multiple assessments, accuracy, accurate records, understanding ethical use of assessments, assessing and managing information, evaluates issues of ethics and equality, adheres to laws, regulations and policies, and rights, access, assess, and manage information and data appropriately, professionally, and ethically, confidentiality and privacy, ethical and responsible assessment, legal and ethical implications of learning assessments, fidelity using ethical testing practices, ethics and cultural responsiveness, ethics for collaboration, maintaining confidentiality, ethics in discussing learners and their data, ethical decision-making, ethical use of information and documentation, and ethical and responsible behavior in the use of data.
KY	Mentions the following: ethical use of data, accurate and appropriate data, multiple sources, analyze appropriately, honesty, integrity, confidentiality, appropriate sharing of information, maintain accurate records, code, confidentiality, and communicate information to parents.
LA	No information found.
MA	Has a code of ethics. Mentions ethical practice, appropriate analysis of data and sharing, and disclosure of information.
MD	Uses InTASC. Nothing specific about data.

STATE	COVERAGE
ME	Uses InTASC. Has a code of ethics. Advocates for student privacy and confidentiality.
MI	Uses InTASC. Has a code of ethics. Mentions the following: accessing and disposing of records, standards on data, seeks and uses data, and use data sources accurately.
MN	Has a code of ethics. Mentions not misrepresenting records or facts.
MO	Has a code of ethics. Mentions disclosure of information and ethical practice.
MS	Unclear if uses InTASC. Has a code of ethics. Mentions disclosure, confidentiality, and security.
MT	Has a code of ethics. Mentions confidentiality.
NC	Has a code of ethics. Confidentiality of information. Mentions use data properly and use data, not opinions or beliefs.
ND	Uses InTASC. Ethics of quality data. Mentions confidentiality.
NE	Uses InTASC. Has a code of ethics. Mentions disclosure and false statements.
NH	Uses InTASC. Mentions the following: confidentiality of information, code communication, and confidentiality.
NJ	Uses InTASC. Has a code of ethics. Mentions the following: ethics around information, quality of data, and disclosure.
NM	Has a code of ethics. Mentions confidentiality.

STATE	COVERAGE
NV	Uses InTASC. Has a code of ethics. Mentions the following: accuracy and reliability, seek evidence and data, and maintain and dispose of records.
NY	Uses InTASC. Mentions the following: appropriate assessments and analyze accurately.
OH	Uses InTASC. Has a code of ethics. Mentions fairness and integrity.
OK	Unclear if uses InTASC. Has a code of ethics. Communicate results accurately and ethically. Mentions disclosure.
OR	Uses InTASC. Mentions ethical information seeking.
PA	Aligned to InTASC. Has a code of ethics.
RI	Aligned to InTASC. Has a data standard and a standard explicitly for EPPs. Has a code of ethics. Mentions the following: use of facts without distortion or bias, confidentiality, provide accurate, truthful, and complete information, security of testing materials, and protection of information, ethical principles, comprehensive and accurate information, understand limitations of the data (assessments), understand context and validity, use multiple assessments, timely, helpful, and accurate feedback to students, and present facts without prejudice.
SC	Uses InTASC. Mentions the following: use appropriate measurement, appropriate feedback, use evidence, and ethical practice.
SD	Uses InTASC. Has a code of ethics.
TN	Has a code of ethics MCEE. Mentions disclosure.
TX	Has a code of ethics. Mentions the following: analyze and review data accurately and appropriately, do not reveal confidentiality unless required by law, confidentiality, falsifying records, and false statements.

STATE	COVERAGE
UT	Uses InTASC. Mentions the following: ethical assessment, confidentiality of student records, code of ethics, appropriate sharing and disclosure, disclosure of information, falsify, improper information in records, wrongfully destroy, record, report, clean information, give out a password, code complete and accurate, provide info for investigations, FERPA, and complete data.
VA	Uses InTASC. Mentions the following: adheres to laws and policies, protects privacy and confidentiality of student information, communicate within confidentiality guidelines, respect privacy of students, understand rules to make educational decisions, has a code of ethics that specifically says to maintain the confidentiality of information, deal with unauthorized disclosure, website specific to FERPA, and code of confidentiality.
VT	Uses InTASC. Has a code of ethics. Mentions the following: falsifying, misrepresenting, omitting information, improper administration of state tests, sharing confidential information with unauthorized entities, and code of confidentiality.
WA	No information found.
WI	Unclear if uses InTASC.
WV	Uses InTASC.
WY	Has a code of ethics. Mentions confidentiality and communication with parents.

The table reveals large variation across the states, from having no standards for data ethics to substantial attention given to the topic, such as in Kansas and Rhode Island.

If we look only at whether a state has a code of ethics, the findings are interesting. Six states have no code that we could find. Ten have a code but nothing about data ethics. One state says they have a code, but we could not access it. Thirty-four states have a code that addresses data ethics to some extent. Among those 34 states, 19 codes mention confidentiality, and nine mention disclosure. Other topics related to data ethics include four mentions of falsification and fraudulent use; three of security; three of proper presentation of facts, misrepresentation, or presentation without bias; three of accuracy or reliability; two of communication (with parents); two of disposal of data or records; two of FERPA; two of the use of evidence and facts; one of data use; and one of equitable data use.

RECOMMENDATIONS

Considering our examination of the landscape and the responses from the targeted interviews, we created several recommendations. The recommendations are for the education field overall but focus on educator preparation, professional organizations, state education agencies, and local education agencies, all of which play essential roles in laying out policies, regulations, and standards, and in implementing them in practice and in teacher preparation. Thus, our recommendations recognize the systemic nature of the landscape and of effecting change.

Work with the leadership of NASDTEC to craft acceptable language that effectively communicates what ethical data use is and its components. Because NASDTEC is the organization responsible for state standards on knowledge and skills that future teachers need for credentialing and licensure, a collaborative effort with both the organization's leadership and its state members is necessary. The state members typically work within state education departments and collaborate with programs to write guidelines and state standards that the programs must follow. When a standard is established, the programs must consider how to modify their curricula accordingly. A future objective for this work is to provide concrete information conveying the need for teachers to understand how to use data responsibly. This effort can easily produce a definition of data ethics, including specific knowledge and skills that programs' curricula should include.

Strive to have the state representatives of NASDTEC adopt the language for inclusion in their state standards. The next step is to work with NASDTEC's state members to craft acceptable language regarding data ethics, draft a standard, and then subject that standard to the appropriate approval process. The approval process might be through a state board of education, the chief state school officer, or some other policymaking group within the state education agency. An additional source of collaboration with NASDTEC is to influence their MCEE so that future versions include explicit statements about data ethics that privacy experts can provide.

Conduct workshops for relevant professional organizations, to disseminate information about the importance of data ethics. There are many targets for dissemination that affect educators' preparation. First are the main professional organizations, which also include NASDTEC. Three essential players in this field include the American Association of Colleges for Teacher Education (AACTE), the Council for the Accreditation of Educator Preparation (CAEP), and the Association of Teacher Educators (ATE). AACTE is a member organization that includes a large proportion of programs across the country. CAEP develops the standards for educators' preparation. ATE is an organization of instructors and professors who prepare teachers. They have

the most direct contact with teacher candidates and would be the recipients and end users of the developed materials.

Other organizations might include the National Board of Professional Teaching Standards, whose process certifies the most-competent teachers. This board sets the best standard for teacher certifications. Several years ago, they developed new assessments that include data literacy. Building awareness among other professional organizations, such as the school boards association and the principals' associations, would be beneficial. Targeting both pre- and in-service audiences would sustain the topic of data ethics across educators' careers, not just during initial training. Other professional organizations and meetings could also serve as dissemination and leverage points, such as the American Educational Research Association and STATS-DC, which is conducted by the National Center for Education Statistics in the US Department of Education, and attracts data professionals from states and districts nationally.

Determine how the components of data ethics fit within the curricula of diverse EPPs. This requires broad and deep work, including additional interviews with a larger sample of programs than that used in this initial work, to deeply explore issues such as media, fit, and granularity in the development of materials. A representative and national survey of programs is necessary to gain a more comprehensive understanding of what EPPs cover in terms of data ethics. Mandinach and colleagues[18] conducted such a survey about data literacy in 2015, which provided evidence of what programs were or were not doing, thereby grounding the need for the development of curricular materials. This work requires exactly the same approach. The survey could also explore the programs' perspectives on the importance of the materials and inform their development. This step is essential because of the diversity across programs. We cannot assume a one-size fits all approach given the different sizes of institutions, numbers of faculty, curricular landscapes, and capacity of faculty, among other factors. Similar to issues that arose in our data literacy work, questions also remain about how best to infuse data ethics, in which courses, at which level of granularity, the willingness of the faculty, and whether faculty can effectively teach the topic.

Work with InTASC to include explicit data ethics items in forthcoming standards. InTASC is a consortium under the auspices of the Council of Chief State School Officers and therefore substantially influences national education issues. InTASC has periodically updated its standards, and many states have already adopted them as their own or as part of their own standards; therefore, the impact of InTASC is significant and important. InTASC would be an essential partner to help effect change.

Have states explicitly include data ethics in their codes of ethics. As noted above in the discussion of state standards, many states have codes of ethics in addition to standards. These codes are broad and general and do not really focus on data ethics. The codes may tangentially refer to some skills and knowledge pertaining to data use, but they are not targeted and specific. Some mention privacy or the disposal of test data but do not go nearly as far as they should and lack specificity. A future goal is for knowledgeable researchers and organizations to work with the states to include data ethics in their codes of ethics.

Operationalize definitions of data ethics so that these definitions inform standards, codes of ethics, curricula, and other relevant documents. Grounding all of the other work is the need to provide a concrete, understandable, and actionable definition that can be broadly disseminated to diverse stakeholder groups. This work includes creating the definition but must also specify skills and knowledge. It should be tied to Mandinach and Gummer's[19] work on laying out the skills, knowledge, and dispositions of the construct of data literacy for teachers.

Determine whether data ethics is more than just the protection of privacy and confidentiality. This requires laying out the various components as well as requisite skills and knowledge that will help EPPs determine how and where to integrate data ethics into their courses. This work also means expanding the notion of data ethics beyond FERPA and other regulations to the responsible use of data in broader terms. This requires changing mindsets among various stakeholder groups through targeted messaging, dissemination, and education.

Other work is possible to enculturate data ethics in pre- and in-service practice. This work would involve a focused research agenda that can then inform an iterative development process that includes piloting and modification. It should be part of the educator preparation programs and extend to in-service venues, which can further support and sustain knowledge of data ethics throughout educators' careers.

Frame data ethics in terms of potential harms resulting from irresponsible data use. When stakeholders use data inappropriately, irresponsibly, or unethically, the resulting actions can lead to harmful consequences for students and teachers. Framing the data ethics discussion in terms of potential harms can concretize the discussion and emphasize the negative consequences that may ensue from poor practice.

CONCLUSION

The introduction of data privacy and data ethics into teacher preparation curricula is a complex task, in part due to the systemic nature of educator preparation and the increasingly diverse demands placed on programs to include more content and respond to evolving educational needs. Change comes slowly in education, and even with good intentions, introducing new topics such as data ethics or data privacy can be a challenge. Using compliance as a lever is one approach; working to include data privacy and data ethics into standards will, we hope, encourage changes in standards and requirements, which will then force change in curricula and course content. Ideally, educator preparation programs will sense the need to include the topics due to landscape changes.

Data ethics and privacy have become more salient in practice, and the need resonates from schools and districts that EPPs serve. Local education agencies need teachers who understand data ethics and privacy, and EPPs hold great responsibility in preparing educators. We are aware of programs that have begun to introduce ethics courses into their curricula. For some programs, the courses seem to be a natural fit, but all programs need to integrate the topics across the curricula so that educators and schools will embrace data privacy and data ethics. Most educational actions require some form of data, formal or informal, quantitative and qualitative, snapshot or long-term, and from diverse sources. Because data is ubiquitous throughout educational practice, it is essential that professors and instructors become aware of ethical issues and address them through an integrated approach to including data privacy and data ethics. We hope that the scenarios we have developed will become resources that are not only integrated into educator preparation courses but also used by professional developers, technical assistance providers, and in-service trainers throughout educators' careers.

ENDNOTES

1   Common Sense Media, *The Common Sense Census: Inside the 21st-Century Classroom*, Common Sense Media, (2019), p. 45-46, Accessed July 22, 2021, https://www.commonsensemedia.org/sites/default/files/uploads/research/2019-educator-census-inside-the-21st-century-classroom_1.pdf.

2   Center for Democracy & Technology, *Teacher, Parent, and Student Views on Education Data, Technology, and Student Privacy*, Center for Democracy & Technology, (October, 2020), Accessed April 1, 2021, https://cdt.org/wp-content/uploads/2020/10/CDT-student-privacy-parents-teachers-students-research-slides.pdf.

3   Ellen Mandinach, Senior Research Scientist at WestEd and Jeff Wayman, Wayman Services, LLC, conducted the interviews and scan of online documentation.

4   Ellen B. Mandinach and Edith S. Gummer, (Eds.), *The Ethical Use of Data in Education: Promoting Responsible Policies and Practices*, (2021), New York, NY: Teachers College Press; Ellen B. Mandinach and Edith S. Gummer, *Data Literacy for Educators: Making It Count in Teacher Preparation and Practice*, (2016), New York, NY: Teachers College Press.

5   Ellen Mandinach, Senior Research Scientist at WestEd, and Jeff Wayman, Wayman Services, LLC conducted this review in December 2019.

6   Ellen B. Mandinach, Jeremy M, Friedman, and Edith S. Gummer, *How Can Schools of Education Help to Build Educators' Capacity to Use Data: A Systemic View of the Issue*, Teachers College Record (2015), 117 (4): 1–50, Accessed January 12, 2021, http://www.tcrecord.org/PrintContent.asp?ContentID=17850; Ellen B. Mandinach, C. Bocala, and H. Perrson, *Findings From the New Review of State Licensure Documents*, (2017), Washington, DC: WestEd.

7   See Interstate Teacher Assessment and Support Consortium, *InTASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0*, Council of Chief State School Officers, (April 2013), Accessed January 12, 2021, https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf.

8   See National Association of State Directors of Teacher Education and Certification, *Model Code of Ethics for Educators,* NASDTEC, (2015), Accessed January 12, 2021, https://www.nasdtec.net/page/MCEE_Doc.

9   Interstate Teacher Assessment and Support Consortium, *InTASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0*, Council of Chief State School Officers, (April 2013), Accessed January 12, 2021, https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf. All text quoted below regarding this standard comes from this source.

10   Amanda Datnow, *Opening or Closing Doors for Students? Equity and Data-Driven Decision-Making,* Research Conference, (2017), Accessed January 12, 2021, https://research.acer.edu.au/cgi/viewcontent.cgi?article=1317&context=research_conference; J. Whitesides and J.S. Beck, "*There Is Subjectivity, There Is Bias": Teacher Candidates' Perceptions of Equity in Data Literacy for Teaching*, The Teacher Educator (February 14, 2020), 55 (3): 1–17, Accessed January 12, 2021, https://www.tandfonline.com/doi/abs/10.1080/08878730.2020.1725792?scroll=top&needAccess=true&journalCode=utte20.

11   See Interstate Teacher Assessment and Support Consortium, *InTASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0*, Council of Chief State School Officers, (April 2013), Accessed January 12, 2021, https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf.

12   Ellen B. Mandinach and Edith S. Gummer, *Data Literacy for Educators: Making It Count in Teacher Preparation and Practice*, (2016), New York, NY: Teachers College Press.

13   National Association of State Directors of Teacher Education and Certification, *Model Code of Ethics for Educators*, NASDTEC, (2015), Accessed January 12, 2021, https://www.nasdtec.net/page/MCEE_Doc. All text quoted below regarding this standard comes from this source.

14   The MCEE states "Federal" rather than the correct term "Family," i.e., Family Educational Rights and Privacy Act.

15   See Interstate Teacher Assessment and Support Consortium, *InTASC Model Core Teaching Standards and Learning Progressions for Teachers 1.0*, Council of Chief State School Officers, (April 2013), Accessed January 12, 2021, https://ccsso.org/sites/default/files/2017-12/2013_INTASC_Learning_Progressions_for_Teachers.pdf.

16   See National Association of State Directors of Teacher Education and Certification, *Model Code of Ethics for Educators*, NASDTEC, (2015), Accessed January 12, 2021, https://www.nasdtec.net/page/MCEE_Doc.

17   This review was conducted in December 2019.

18   Ellen B. Mandinach, Jeremy M. Friedman, and Edith S. Gummer, *How Can Schools of Education Help to Build Educators' Capacity to Use Data: A Systemic View of the Issue,* Teachers College Record (2015), 117 (4): 1–50, Accessed January 12, 2021, https://eric.ed.gov/?id=EJ1056728.

19   Ellen B. Mandinach and Edith S. Gummer, *Data Literacy for Educators: Making It Count in Teacher Preparation and Practice*, (2016), New York and London: Teachers College Press.