

Working Roadmap

Student Privacy in the Cloud Computing Ecosystem

Introduction

On April 3rd, 2013, the Berkman Center for Internet & Society convened an exploratory “Student Privacy in the Cloud Computing Ecosystem” workshop focused on a range of privacy issues that emerge as schools contemplate moving to “the cloud.”

This working meeting, held under [Chatham House Rule](#), took place against the backdrop of important shifts in education and technology. As increasingly powerful and innovative new ICT products and services offer tremendous potential for schools to provide students with new tools and new experiences, cloud computing¹ affords schools the ability to rapidly move to new technologies without the significant upfront investments that on-premise solutions require, which can in turn free up much-needed resources for other initiatives. However, along with these potentially valuable opportunities come a range of *privacy issues*; specifically, in education just as in other sectors, customers moving from on-premise products and services to cloud-computing solutions must grant the cloud provider access to potentially vast amounts of customer data. Significant questions about precisely what information the vendor might access and collect and what the vendor might do with this information are rapidly emerging in a number of areas where cloud services are being deployed, and educational settings tend to illustrate and amplify many of the most critical privacy questions and concerns.

With an eye to these tremendous opportunities and challenges, the exploratory initial conversation aimed to surface, identify, and evaluate central privacy issues that may emerge when considering the adoption of cloud computing technologies in educational settings. This discussion—intended to launch an ongoing dialogue—broached educational, economic, social, regulatory or legal costs, benefits, and trade-offs, as well as critical normative issues and cross-domain considerations. Participants represented diverse stakeholder groups, including government officials, academics, business representatives, school administrators, advocates, and others, as part of an effort to bridge the often-siloed perspectives of educational institutions, students, parents, and administrators as well as cloud service providers and policy makers.

¹ Note that the bulk of the first wave of these technologies consists of Software as a Service (SaaS)-based tools such as cloud-based email. But as in other sectors, it is likely that education institutions will begin to explore and adopt Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) cloud solutions in the coming years.

Building from this conversation, the roadmap that follows offers a variety of key considerations and potential next steps with regard to research, policymaking, outreach, and engagement around student privacy and cloud computing. Along with more specific potential next steps, a number of high-level observations may inform future action. More detail on these critical points is offered in the body of the report:

- **Expanding educational and knowledge sharing efforts** will be integral to engage parents, students, and teachers alongside representatives from a variety of disciplines. These diverse stakeholders may have vastly different baseline knowledge of these issues, and addressing these differences may require a multi-pronged approach. In particular, sharing information about rapidly developing, supply-side education technologies is essential in empowering stakeholders to understand the commercial and regulatory terrain.
- **Developing a shared vocabulary and understanding of privacy and technological terms** will be central to future research, outreach, policy, and educational efforts. Taxonomies and guides can help to cultivate a shared language and bolster communication and collaboration across educational, commercial, and regulatory settings.
- **Good practices and draft standards**, especially around contractual practices and terms of service, represent a fruitful area for attention. Stakeholders should enter this space in close communication with vendors and industry representatives.
- **Ongoing normative analysis and discussion** will be critical in grappling with the many dimensions of the topic and considering how core technologies, opportunities, and behaviors may evolve. In particular, the rapid emergence of data analytics technologies raise important questions about how existing legal frameworks should be interpreted or evolve. This dialogue should be grounded in real-world examples and data, and address open questions such as whether and how cloud technologies support broader educational values and if so, what specific value trade-offs may be involved.

Cross-Cutting Questions and Considerations

Along with the concrete takeaways outlined in the Introduction and further described in the body of this report, a variety of complex, multifaceted questions also surfaced. Many may inform and shape future directions in this space; they also provide useful color regarding the shape of current conversations on these topics. In particular, two categories of questions emerged:

The Role of Norms and Values

- How can we assess available technologies and contracts against potential value tradeoffs?
- How is our evaluation of value tradeoffs and related normative issues shaped by important legal traditions and cultural norms, such as the special protection of children in the US legal system or the role of the educational system in American society?
- Rather than assuming “the cloud” is an inevitability, how can we foster a grounded discussion about what technologies—and which associated policies—would be most useful and appropriate in a particular educational context?
- How can we stimulate discussions that take into account differences in stakeholder knowledge and values, as well as opportunities and challenges in different contexts?

- How can we ensure that our considerations reflect other relevant factors, such as class, race, and socioeconomic inequalities?

The Impact of Change Over Time

- *Technological*: How can decision-makers (at a federal, state, and institutional level) create policies that can account for changes in available technologies as well as changes in how—and in what settings—these tools are used?
- *Environmental*: How can all stakeholders take into account broader environmental trends (e.g., on the business side, increasing data collection and growing commercial power; on the educational side, a growing interest in data-driven outcomes and connected learning models)? How are these developments affecting the role of (public) schools, and how may they impact what schools can offer students?
- *Behavioral*: Particularly in regard to student perspectives on privacy, how can policy decisions and choices about which technologies to adopt in schools—and how best to do so—account for behavioral shifts over time? How can we take into account potential attitudinal differences on different platforms (e.g., a student’s expectations about privacy on her mobile device may differ from her expectations about privacy on her laptop)?

These questions surface in the context of an important recurring theme: education will be a critical component of any proposed activity. To this end, the perspectives, beliefs, and behaviors of students, parents, and educators will be integral to success, as will bi-directional communication with these groups. In this effort, stakeholders might:

- Identify upfront when involved individuals may have varying degrees of expertise;
- Recognize the need to correct misperceptions, address fears, and ensure that members of all groups have access to high quality information;
- Improve how knowledge and research is shared with students, parents, and teachers; and
- Ensure that parent, student, and teacher concerns and perspectives inform particular research tracks and help to shape the development of shared good practices.

Possible Next Steps

Building on the four quadrants proposed during the synthesizing final session of the exploratory workshop—convening and engaging stakeholders, data gathering and research, shared good practices, and education—the following categories of next steps emerge. A given quadrant is not meant to represent a discrete category that does not interact with the other domains; rather, there are many important opportunities for cross-quadrant collaboration and feedback, as well as for communication and coordination among stakeholders focusing on any given quadrant.

(1) Convene and Engage Stakeholders

- 1.1. **Gather a select group of highly active stakeholders** who are committed to working together for sustained periods, and who appreciate the value of cross-disciplinary approaches.

Primary activities might include:

- Create thematic teams to address specific issues over time (e.g., a working group to focus on educational developments; a working group to focus on technological advances; a working group to focus on legal issues, etc.);
- Establish mailing lists, forums, or other modes for asynchronous communication;
- Hold a series of working meetings, either cross-disciplinary (like exploratory workshops) or more focused on “deep dives” into a particular area (e.g., practitioner perspectives, vendor perspectives, policy perspectives, student perspectives, etc.);
- Engage additional industry and policy representatives in future meetings;
- Develop an early warning system to anticipate working issues (e.g., emerging trends in education, changes in relevant statutes, salient business developments, etc.); and
- Cultivate grounded debates about normative issues in an ongoing way.

1.2. Engage and reach out to additional stakeholders, including a more diverse set of invested individuals who may have varying degrees of familiarity of the topic.

Primary activities might include:

- Reach out to educators/students/parents as part of future meetings, with an emphasis on how to gather information about short term educational needs;
- Connect with advocacy groups, marketers, and other stakeholders to learn about data use related to advertising and marketing to children; and
- Create an online hub of research that features work by a core set of stakeholders, and which is open to other scholars, officials, and experts as well as to the public.

1.3. Engage the public, including both directly and via interactions with the media.

Primary Activities might include:

- Consider how to communicate with the press, such as, for example, by inviting three to four trusted journalists to become more closely involved in this work over time;
- Consider diverse outputs for findings, tailored to specific audiences; for example, write and publish “translational research,” including accessible reports and/or popular news pieces (e.g., op-eds) to help provide parents and teachers with information needed to understand available options, overcome misperceptions, and make educated choices; and
- Report out and share research (see (2) below) in more public-facing forums to cultivate and sustain relationships with a wider group of individuals.

(2) Conduct Data Gathering and Research in Targeted Areas

Perhaps one of the clearest takeaways from the working meeting was the need for additional research and data gathering across a number of different areas. Throughout, different types of outputs should be considered, from formal research reports, policy briefs, and peer-reviewed articles to interviews to frequently asked question guides. The same research might be adapted in

different formats for broader consumption as well as geared towards relevant stakeholders by, for example, linking research to outcomes or explaining how it reflects a group's inputs.

2.1. Tools and Technologies

- Create and disseminate clearer definitions of “the cloud,” including taxonomies and decision trees to clarify (a) the array of technological options and (b) the educational environments for which they may (not) be well-suited;²
- Offer a high level categorization of cloud computing organized by functionality;
- Map the differences between cloud-based services and clarify which existing tools fall into different categories (e.g., contracted services vs. click-through services vs. “middle category” that targets schools, but in a “take it or leave it” fashion); and
- Map design considerations against value tradeoffs and normative concerns (e.g., an assessment of whether new data analytics technologies conflict with identified norms on information sharing in school settings (e.g., “PII” and student privacy norms).

2.2. Business Models

- Offer a taxonomy of business models with information about market realities and the roles/incentives of businesses in regard to each model;
- Assess how business models may hint at unresolved regulatory or contractual issues; and
- Create a glossary of contractual terms.

2.3. Legal Considerations

- Draft legal memos to highlight the influence of relevant federal statutes, such as by adding to an existing COPPA/FERPA brief to address the intended purpose of these laws;
- Develop a brief addressing ECPA-related issues that may emerge as schools outsource mail to third party providers;
- Explain how federal laws may interact and evaluate their interoperability;
- Clarify how federal law may intersect with state and local laws, as well as school policy;
- Seek and/or advocate for clarification from regulatory authorities, when appropriate; and
- Conduct specific legal analysis that focuses on a particular type of technology (e.g., a policy brief on data analytics technologies, PII, and student privacy norms that considers whether it is advisable to reconceptualize how the law protects student data).

2.4. Consent Regimes

- Map how parental consent is translated into practice across different contexts; and
- Offer an assessment of how to integrate security concerns, potentially paired with an evaluation of whether existing regimes need to change given data mining trends.

² This guide or set of guiding documents might offer both succinct glossaries and more detailed definitions that elaborate on questions such as:

- What do we mean by “the cloud”? Private vs. public?;
- What are basic tools versus tools for learning?; and
- What does it mean to “insource” vs. “outsource” a technology, and why does this matter?

2.5. Current Educational Practices and Policies

- Gather data on the costs and benefits of “the cloud” in education, including data that permits evaluation at both the micro- (e.g., is a given tool or intervention working?) and macro- (e.g., is this tool or intervention serving broader values?) level;
- Conduct surveys of institutional policies (e.g., those related to data privacy), aiming both to identify best practices and also to create a baseline for understanding how well districts and schools are currently addressing specific issues; and
- Conduct surveys of actual educational practices, including both formal and informal settings and developing trends (e.g., connected learning).

2.6. Parent, Student, and Teacher Perspectives

- Survey parents, students, teachers, with a focus on unpacking the values that underlie existing concerns and on assessing students’ actual behaviors and attitudes over time; and
- Analyze quantitative data on student/teacher/parent attitudes and behaviors to assess value trade-offs, based on what parents and students actually find most important.

(3) Survey, Share, and Support Good Practices

In parallel with ongoing research efforts, participants suggested that cultivating shared good practices could help bridge stakeholders’ diverse interests, concerns, and motivations. An overview of opportunities follows, paired with a selection of potential initial activities for each:

3.1. Assess Vendor Contracts

- Develop a set of issues and questions that any vendor contract must address, including specific concerns that teachers and educational officials should be aware of before they sign a contract³
- Offer a model contractual provision/template that does more than set a floor for privacy concerns beneath which it is important not to fall⁴

³ Key questions to consider in creating such a resource might include:

- What is explicitly stated about the vendor’s privacy policy?
- How does the contract account for data issues and values, such as anonymity, identity, and control?
- What prophylactic provisions are included in the contract?
- What pieces of the contract address legal or policy requirements?

⁴ This model—or set of models created for different educational settings—might include:

- An upfront definition of the value you hope this technology will provide;
- A policy checklist that stipulates what must be included to comply with relevant laws (including FERPA and COPPA at the federal level), and which clarifies when policies are requirements as opposed to recommendations;
- An explanation of underlying principles that support the terms of the contract, such that it is clear how particular elements of the contract reflect (1) the requirements of legal regimes; (2) the institutional policies that influence the educational regime under consideration; and (3) the normative issues that arise for schools and teachers (informed by parent and student inputs); and
- A clear summary of the issues that might face schools when entering a contract, with particular attention to the need for transparency around control of data and the flow of consent detailed in “plain English.”

3.2. Engage Industry Representatives

- Converse and collaborate with industry (especially vendors), with an emphasis on understanding industry perspectives and identifying gaps in understanding;
- Discuss vendor motivations for entering the space, and consider how to create mutually beneficial agreements;
- Create feedback loops so that the development of new technologies drives contracts at the same time that clear contractual language that reflects stakeholder values and objectives drives technical development;
- Encourage major companies to sign onto shared principles;
- Highlight philanthropic opportunities for industry; and
- Stimulate competition among vendors around good practice to create a “race to the top”.

3.3. Communicate and Collaborate with Policymakers

- Provide advice on how to define terms in communications with schools as well as how to clarify to school officials, teachers, parents, and students when particular regulations apply (e.g., ceilings v. floors; rules v. standards, etc.);
- Offer input on FAQs, white papers, and regulatory guidance issued by federal agencies;
- Propose the best ways to approach, from a regulatory perspective, distinctions across private/public schools and K-12/higher ed. contexts; and
- Coordinate to determine which parties are best equipped to address which issues, such as security, data safety, and data retention (this process might also involve school officials).

3.4. Support School Administrators

- Share knowledge with district officials (e.g., CTOs, GCs, etc.), with an eye to developing better organizational practices within schools; and
- Offer conflict resolution mechanisms for educational environments, perhaps drawing from the DNS resolution space model.