



# Educational Technologies and Student Data

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## Briefing for Libraries (31.07.2019)

Education technology, or Edtech, can refer broadly to the development and use of technology to assist education. The precise definitions and boundaries of the concept vary – it can range from technologies used in classroom interactions to related management systems like security or administration.

Advocates of Edtech argue that it can make education processes more easy, efficient or accessible, and allow students to learn in a more interactive and tailored way. Others caution that many of these technologies raise privacy and equity concerns, and development of some skills and competencies is not well suited for digital learning.

In particular, the debate around Edtech has escalated as a class of technologies has emerged that relies on tracking and analysing vast amounts of student behavioural data. Such technologies use cameras, sensors, audio recordings and trackers to measure the activity, participation or wellbeing of students.

Some monitor student performance in class: for example, by using cameras to track eye movements as students read, or facial expression analysis software to gauge levels of student interest and engagement.

Others go beyond classroom performance and claim to offer ways to monitor broader student behaviour or wellbeing. This includes, for example, assessing the overall emotional state of a student – either by having educators log their observations, or by analysing a number of physical indicators such as heart rates.

In both cases, these technologies are often associated with building student profiles, based on potentially vast quantities of data collected over time.

The position of libraries in educational ecosystems means that they may well, both directly and indirectly, come across these trends. University and school libraries will be affected by the Edtech their institutions use, with pressure to contribute library use data. Both public and academic libraries can face pressure to use more performance tracking and learning analytics tools to benchmark their users' progress and demonstrate performance.

As the adoption of Edtech grows, in the United States and Europe, China, India, and beyond, there are several ethical and safety concerns to be considered. Edtech's target audience – children and adolescents – are inherently vulnerable, and it is crucial to address those concerns in the age of datafication of education.

The most commonly raised concern is **privacy**. The quantities of data generated by increasingly sophisticated education technologies can be unprecedented. Much of the data could be considered **sensitive**: for example students' keystrokes and eye movements, their browsing history and facial expressions.

**How long the data will be stored** is another important consideration; many parents express concern over the long lifespan or possible permanence of such a digital footprint. They fear that their children's future employment and human potential could be harmed by negative school records or evaluations.<sup>1</sup>

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<sup>1</sup> The US National Association of State Boards of Education 2016 report "[School Surveillance: The Consequences for Equity and Privacy](#)" discusses the concerns over a longstanding digital footprint.



Moreover, it can be hard to **control the spread of information** in this digital footprint. Ed-tech can generate and store both raw data and the algorithm-based assessments, sending it out to parents, making backup copies or sharing it with third parties. Each act increases the risk of leakage.

A related issue is **who can access the student data**. The data is often not confined to the educational institution – instead, it is stored and/or analysed by the vendor or a third party. CommonSenseEducation, a US non-profit which aims to promote digital citizenship and rate and advise educators on Edtech choices, issued a [2018 State of Edtech Privacy Report](#) analysing the privacy policies of many widely used applications and services.

Critically, the report concluded that about 90% of policy statements allow collected data (including personal information) to be shared with third parties. This can make it difficult to have comprehensive oversight over who can access a given dataset (and sometimes, for what purposes). Even where sharing is only permitted for certain purposes, these may be broadly defined.

In addition, the report found that the majority of platforms and services are “not transparent or explicitly allow” third-party tracking and marketing, which adds to the amount of student data third parties can collect. While some commit to anonymising data, there are concerns about how effective any anonymisation procedure is.

**The security** of the collected data is another major concern. Security breaches in education institutions do occur, and with the growing adoption of data-intensive education technology they risk leading to the escape of ever larger amounts of sensitive information. This can range from students’ location data to ethnic background and emotional state assessments. Not every Edtech vendor follows best practices on data encryption.

Linked to the issue of privacy is **the right to freedom of expression**. It is often pointed out that the video and audio recordings used in ed tech, as well as automated records of students’ works (for instance, copies made by plagiarism scanners) lead students to self-censor and inhibit their self-expression.

More broadly, extensive surveillance in schools and universities can change students’ expectations of privacy in everyday life.<sup>2</sup> The self-censorship effect can spill over to areas outside of education, inhibiting their self-expression and creativity in many other settings.

**A lack of transparency** can be a serious concern in applications aiming to assess or predict overall student performance or wellbeing. The algorithms behind most Edtech programs and applications are often proprietary, and therefore not fully disclosed to users. Moreover, the operation of algorithms may not be fully understood by the individuals or companies that made them.

This can mean that teachers would not always have full insight into how exactly a program assigns student to such categories as underperforming, doing well, or at risk of depression. An uncritical uptake of such recommendations or assessments could lead to important factors being overlooked, or more weight being assigned to indicators to which the teacher would otherwise pay less attention.

**Equity** is also an important concern for multicultural classrooms. Many Edtech software models take a behaviourist approach, aiming to reward and reinforce “good” behaviour and discourage “bad” behaviour.<sup>3</sup> However, in many cases the concept of “good” behaviour is built into an

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<sup>2</sup> This potential effect is discussed further in the introduction of the 2017 report on [School-Issued Devices and Student Privacy](#) by the Electronic Frontier Foundation, an NGO focused on digital civil liberties and rights such as privacy and freedom of expression.

<sup>3</sup> A 2018 study by Manolev, Sullivan and Slee ([“The Datafication of Discipline: ClassDojo surveillance and a Performative Classroom Culture”](#)) explains the relationship between behaviourist principles and monitoring of students on the example of one educational platform.

assessment algorithm. This creates a risk that a model is geared towards a particular cultural understanding of “good” behaviour, disadvantaging students from different cultural backgrounds.<sup>4</sup>

**Effectiveness.** In some cases, the various types of collected information are not perfect indicators for what schools would like to measure. One example is [a test of an audio-based aggression detector carried out by ProPublica](#), a non-profit dedicated to investigative journalism. The detector could at times be activated by mundane situations and produce false positives, while sometimes missing sounds which the testers expected to trigger the alarm.

Similarly, emotions are not easily reduced to a narrow set of physical indicators. For instance, a [2019 academic review by Barrett et al.](#) cautions that there is currently insufficient reliability and specificity in inferring emotions through a limited set of facial movement measures. As such, measuring cognitive states of students is complex, and reliance on a small number of variables may lead to mistaken conclusions. This raises the fundamental question of whether it is reasonable to collect vast quantities of personal – and at times highly sensitive – information if the outcomes can be less than precise.

One final remark has to do with Edtech **surveillance outside of classrooms**. Making use of educational software often requires personal devices – laptops or tablets – and some schools lend devices to let students complete schoolwork at home. However, those devices can come with an array of privacy and security issues – collecting and storing vast amounts of student data, often without adequate protection and privacy guidelines.<sup>5</sup>

This raises two issues: one, that such lending programs can be mandatory, or difficult to opt out of, leaving students and their families with no privacy-friendly alternatives. Second, even in cases where opting out is permitted, privacy and security become a luxury for families which have access to their own devices, while families with less income have no choice but to rely fully on insecure devices.

### What libraries can do

As outlined by the [IFLA Statement on Libraries and Intellectual Freedom](#), libraries have a number of duties: assisting the development and maintenance of intellectual freedom, as well as safeguarding basic democratic values and human rights. In addition, libraries must grant users privacy and anonymity, and not disclose user identity or use of library materials to third parties without consent. Above all, the duties of libraries towards their users must take precedence.

In the particular case of engagement with Edtech, libraries should safeguard the interests of students, and maintain the position that adopting such educational technology which would collect sensitive data requires both safeguards and major critical considerations. When they are providing advice or engaging in advocacy, libraries can also work to promote responsible and ethical use of Edtech, as well as to shape its future development.

Some practical principles to uphold when seeking to influence decisions around how Edtech is used would include the following:

- The design and adoption of data-intensive educational technologies should be subject to user and community feedback, and reflect high standards of data privacy and protection. Similarly, the adoption and continued use of such technology should at all times be mindful of the ethical and safety consideration discussed above.

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<sup>4</sup> This concern has been brought up in [a news piece by EdSurge](#), a news organization aiming to connect education technology entrepreneurs and educators, covering a panel discussion at the 2019 South By Southwest Education conference.

<sup>5</sup> The privacy and security issues are further discussed in the [“School-Issued Devices and Student Privacy”](#) report by the Electronic Frontier Foundation.



- Any collection of user data should be subject to informed consent and ethical guidelines, and strictly limited to the purpose defined. Adoption of data-intensive educational technologies needs a clear and narrow goal definition to avoid intrusive collection of user data where it is not strictly necessary. It may not be the case that a data-intensive technological solution is the best way to achieve this goal.
- A meaningful choice not to engage should always be available to users; participation should be on an opt-in basis.
- The security of collected data must be ensured, and data not shared with third parties without explicit consent.

Libraries can sometimes have a more direct impact. The [2019 Mozilla Health report](#) points out that public procurement choices can shape technological development to be more sensitive to ethics and equity considerations. The technologies libraries purchase can send a strong signal to tech developers.

For instance, [an Electronic Frontier Foundation case study](#) offers an example of a school librarian advocating for privacy in the school's technology purchasing decisions and asking critical questions about their impact on students.

Overall, it is worth libraries being conscious of the growing role of Edtech in the schools, colleges and universities that they serve. It is a question where libraries and librarians, through their values and their understanding of the importance of information and how it is used, have an important contribution to make.