Asleep at the Switch: Schoolhouse Commercialism, Student Privacy, and the Failure of Policymaking

Report on Schoolhouse Commercializing Trends Nineteenth Edition (2017)

Faith Boninger, Alex Molnar, and Kevin Murray
University of Colorado Boulder
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KEVIN WELNER
PROJECT DIRECTOR

PATRICIA HINCHEY
ACADEMIC EDITOR

WILLIAM MATHIS
MANAGING DIRECTOR

ALEX MOLNAR
PUBLISHING DIRECTOR

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Executive Summary

As schools continue to integrate technologies into every aspect of school life, those technologies are being harnessed to amplify corporate marketing and profit-making, extending the reach of commercializing activities into every aspect of students' school lives. Although marketers' school-focused efforts are often billed as "innovative" and "out-of-the-box," many of them are little more than repackaged marketing strategies that over the years have been seen again and again. Schools' increasing reliance on education technology has intensified the kind of school-focused marketing we have studied for years: (1) appropriation of space on school property, (2) sponsored programs and activities, (3) exclusive agreements, (4) sponsorship of supplementary educational materials, (5) incentive programs, (6) fundraising, and (7) digital marketing. However, in addition to the traditional goal of providing brand exposure, education technology now engages students in activities that facilitate the collection of valuable personal data and that socializes students to accept such surveillance as normal.

This year's report focuses in particular on how technological advances, the lure of "personalization," and lax regulation foster the collection of personal data and overwhelm efforts to protect children's privacy. For-profit entities are driving increasing reliance on education technology with the goal of transforming education into an ever-larger profit center—by selling technology hardware, software, and services to schools; by using technology to reduce personnel costs; by creating brand-loyal customers; and increasingly, by turning student data into a marketable product. The goal of profit-making, in turn, may often distort and diminish the quality of education children receive. The dominant beliefs currently associated with technology and economic development are leading schools and districts to change their policies, pay huge sums of money to private vendors, and create systems for divulging vast amounts of children's personal information to education technology companies. Education applications, particularly those that attempt to "personalize" student learning, are powered by proprietary algorithms that may harm children as they implement theories of learning without policymakers or teachers being able to examine how they work or how student data are being used. By adopting these applications and encouraging or requiring that students use them, schools effectively funnel children into a "surveillance economy" that harvests their data for profit while encouraging them to adopt an individualist, consumerist worldview. In this context, policymaking to protect children's privacy or to evaluate the quality of

the educational technology they use ranges from inadequate to nonexistent.

Recommendations:

Decision makers should not rely on industry self-regulation to protect children's privacy and the quality of their education. Instead, legislators and policymakers should create clear policies backed by strong, enforceable, sanctions that:

- Prohibit schools from collecting student personal data unless rigorous, easily understood safeguards for the appropriate use, protection, and final disposition of those data are in place.

- Hold schools, districts, and companies with access to student data accountable for violations of student privacy.

- Require algorithms powering education software to be openly available for examination by educators and researchers.

- Prohibit adoption of educational software applications that rely on algorithms unless a disinterested third party has examined the algorithms for bias and error; and valid data have shown that the algorithms produce intended results.

- Require independent third-party assessments of the validity and utility of technologies, and the potential threats they pose to students' well-being, to be conducted and addressed prior to adoption.

In addition, parents, teachers, and administrators—as individuals and through their organizations—should work to publicize both the threats that unregulated educational technologies pose to children and the importance of allowing access to the algorithms powering educational software.

Asleep at the Switch: Schoolhouse Commercialism, Student Privacy, and the Failure of Policymaking

Report on Schoolhouse Commercializing Trends
Nineteenth Edition (2017)

Commercialism in schools is far from new. The first documented example of marketing in schools we could find dates to the 1890s, when a hardware store tried to put materials containing its marketing slogan into schools.[1] By the 1920s, the phenomenon of companies offering branded materials to schools was widespread enough that the National Education Association empanelled a "Committee on Propaganda in the Schools" to examine the issue and offer teachers guidelines for how to evaluate the sponsored materials they received.[2] Commercialism in Education Research Unit (CERU) reports have, since 1998, examined trends in schoolhouse commercialism. This year, we once again find that companies have the same motivations to market to children in school as they ever did, and that many of their school-focused efforts, although billed as "innovative" and "out-of-the-box," are little more than time-worn marketing ploys. However, this does not mean that the marketing landscape is unchanged. As schools continue to integrate digital technologies into every aspect of school life, those technologies are being harnessed to amplify the power and extend the reach of commercialism into every aspect of students' lives. At the same time, policymaking ranges from inadequate to nonexistent.

Why Market to Children in Schools?

Advertisers want access to children in order to establish their influence from an early age, to "brand" children with attitudes that will affect a lifetime of purchases.[3] Ever since companies first began offering their "free" propaganda to schools, marketers have had their eye on the prize of establishing lifelong positive attitudes towards products, brands, and corporate ideology.

Schools offer a particularly desirable marketing environment. Schoolchildren represent a captive audience required to spend hours in surroundings that, from a marketing perspective, is relatively uncluttered. Moreover, schools confer legitimacy on any product or worldview promoted there. Not only are children impressionable, but they also are taught to assume that the adults responsible for them in school have their best interests in mind. As a result, they are less likely to discount commercial messages that appear there than they might in more obviously commercial settings.

In recent years, the ability to collect, warehouse, and analyze massive amounts of data, along with the development of "personalized" or "adaptive" learning platforms and increased requirements for school data gathering and reporting, have opened up new avenues for exploiting children commercially. For example, when schools collect student data and turn it over to a commercial vendor for a legitimate educational purpose such as meeting state reporting requirements or teaching math skills, there is often little to stop the collecting

entity from transferring those data to a business partner, and/or selling it to another entity, particularly in a merger, acquisition, or as an asset in bankruptcy proceedings.[4] As a result, student information collected by schools may be used, without the knowledge of either the students or their families, to target them in subsequent marketing efforts.

Commercialism Overview

Marketing in schools is now seamlessly incorporated into a general effort to fully commercialize and thereby monetize the lives of children. Some definitions are useful here: "Commercialism" is a value system that privileges profit above every other concern.[5] "Marketing" is any type of promotional activity intended to create customers for a product, service, or point of view. "Advertising," a subset of marketing, consists of the creation and delivery of specific messages presented to potential customers via print or other media.[6]

Many commercializing activities in schools advertise particular products; others are designed to promote a "common sense," ideological worldview consistent with and favorable to that of a given company or industry. For example, consider this range of how children might be influenced to hold favorable attitudes toward McDonald's, including adopting the corporation's "calories in-calories out" perspective on nutrition, fitness, and weight.[7] They may: see an ad for McDonald's in their school yearbook (a specific advertising appeal), attend an assembly in which Ronald McDonald teaches them about the importance of exercise (brand marketing), and attend a McTeacher's Night at the local McDonald's, during which everyone, in effect, colludes to set aside lessons about nutrition as children and their families become McDonald's customers to earn a small share of the evening's profits for the school.[8,9]

While some activities, such as McTeacher Nights, commercialize children in the context of promoting a specific brand, others encourage them to adopt a profit-oriented value system without necessarily promoting any particular company or industry.[10] School fundraising efforts do this when they encourage children to capitalize on their relationships with family and friends in order to collect donations from them or convince them to buy things they don't want in order to support the school.[11] Children are also commercialized when they themselves are turned into a product for sale. When, for instance, children are sent off to search the Internet for materials for a research paper, their digital data trail becomes a product to be sold by data brokers and Internet service providers.[12]

Significantly, all marketing promotes the values, stories, and morality of consumer culture. This is the case regardless of how innocuous any particular advertisement may seem.[13] No matter where it appears, marketing to children is intended to shape how children see themselves and how they think about their world, including their families, friendships, romantic relationships, and experiences.[14] Whereas any single advertisement or marketing campaign may not have a decisive impact, in aggregate the countless thousands of ads children experience reinforce the worldview that the path to happiness and personal satisfaction lies through consumption.[15] This belief is all the more effectively taught because it is largely invisible, an *a priori* assumption that is seldom questioned or challenged.[16,17]

Focus of this Report

Today, for-profit entities are driving increases in the digitalization of education. Their goal is to make education increasingly profitable—by selling technology hardware, software, and services to schools, by using technology to reduce personnel costs, by creating brand-loyal customers, and increasingly, by turning student data into a marketable product. In this year's report we continue our updates on the ever-expanding array of school-based marketing ploys but focus in particular on how technological advances, cultural attitudes toward technology and personalization, and lax regulation foster student surveillance and generate growing profit centers for corporations. And, as we have from our earliest reports, we consider the likely effect of recent commercial activity on the socialization of children in schools.

Methods

We gathered information throughout the year, conducting weekly Google searches using the following terms (with and without quotation marks): "marketing in schools," "advertising in schools," "commercialism in schools," "student privacy," and "student data privacy." These search terms allowed us to identify new developments in commercialism, inside and outside of schools, especially those related to digital marketing to children. We explored any relevant entries that appeared in these searches and followed up on them as appropriate to develop further lines of investigation.

In addition, we monitored the websites of key organizations in order to identify commercialism-related issues for follow-up Internet and/or academic research (See Appendix A). Where available, we examined the social media accounts of these organizations. We also reviewed email news alerts from the following organizations: Berkeley Media Studies Group, British Psychological Society, Campaign for a Commercial Free Childhood, Canadian Centre for Policy Alternatives, Data and Society, *Education Week*, Federal Communications Commission, Kidscreen, MedPage Today, Parent Coalition for Student Privacy, and the Rudd Center for Food Policy and Obesity.

Commercializing Activities in Schools Highlights 2015-2017

We organize school commercializing activities into seven categories: (1) appropriation of space on school property, (2) exclusive agreements, (3) sponsored programs and activities, (4) incentive programs, (5) sponsorship of supplementary educational materials, (6) fundraising, and (7) digital marketing.[18]

Appropriation of Space and Sponsored Programs and Activities

Companies "appropriate" school space when they physically take it up, as they do when brands gain naming rights to libraries, gyms, or stadiums. This is the case for Sonic Automotive, a corporation whose EchoPark "stores" sell used vehicles. Sonic bought naming

rights to a stadium near Denver now known as EchoPark Stadium, where it also hosts additional branded programs for students. Jeff Dyke, the executive vice president of operations for Sonic Automotive, cites Apple as his company's model for bringing its marketing into schools. "They were very smart," he noted, "in putting Apple products in schools so that kids got used to them and used those products in running their lives."[19] Nine high schools play football, lacrosse, and soccer in the renamed stadium, and all the tickets say "EchoPark." Marti Eulberg, Sonic's director of brand management, calls the naming right "a great way for us to get exposure."[20]

The company currently hosts a daylong program several times a year in the stadium parking lot to teach teen drivers about distracted driving. It is further expanding its teen marketing by collaborating with state Departments of Motor Vehicle offices and a national insurance organization to develop driver's education courses. The marketing plan is to "work with the school system and pay the teachers and off-duty police officers to be driving instructors," to expand the distracted driving program to Texas and the Carolinas as the company expands in those states, to supply the cars for the teens to learn on, and to offer discounts on cars to students based on their grade-point average. [21]

Exclusive Agreements

A company sometimes signs a contract with a school or district that gives it an exclusive right to provide a particular product or service. A classic example of an exclusive agreement is a "pouring rights" contract, in which a district signs an agreement with a bottling company to sell only that company's products (for example, Pepsi products) in district schools. Sports uniforms, too, long have been subject to exclusive agreements; "all-team contracts" are a modern twist on the phenomenon that, similar to pouring rights contracts, let a single provider take over a whole school by providing for all school teams. "All-team contracts" take advantage of the way that branded uniforms and "spirit wear" appropriate school space and student bodies. The schools targeted for these contracts—those with leading football teams—are especially valuable now that high school games are nationally televised on ESPN and students can be funneled to online team stores to buy their "spirit wear." With so many viewers using digital video recorders to avoid commercials, the value of branded clothing visible in the stands has increased. [22]

In this vein, Russell Athletic signed all-team contracts with several high schools across the country. The brand's integrated marketing campaign includes, in addition to all sports-related clothing, billboards near the schools, sponsored events tied to the billboards, and details of the team's season on the campaign's website and on Russell Athletic social media channels. Students, fans, family, friends and media are all encouraged to follow their favorite teams through these media.[23]

Supplementary Educational Materials

As we will discuss with regard to technological products offered to schools, companies producing products of all kinds are eager to create educational materials (or, as they were more

accurately described in the early 20th century, "propaganda"[24]) to put into the hands of students. Isaac Quiroga, Mattel's senior manager of digital marketing and media, home entertainment and new media distribution, provided insight into Mattel's current efforts to do just that. He told Kidscreen.com that Mattel's Hot Wheels' brand "was really aiming to get credibility within the STEM [science, technology, engineering and mathematics] space, but we couldn't really tell the story because we aren't really a credible STEM voice."[25] So the brand partnered with Derek Muller, who created the science education YouTube channel Veritasium. "He is a physics expert and brought in his knowledge, and we collaborated with him on some Hot Wheels videos," explained Quiroga. And it partnered with researchers from the University of Southern California's Rossier School of Education to create and promote its "Speedometry" program, which uses Hot Wheels cars to teach physics.[26] Despite the partnership with academic collaborators, the program is not subtle in its marketing angle: although theoretically any toy cars could be used to teach the same concepts, the materials (including videos) are explicitly branded with Hot Wheels.[27]

Incentive Programs

In return for students, parents and/or staff engaging in specified activities, corporate-sponsored incentive programs offer various rewards to students, schools or districts. Incentives include money, goods or services. The New Balance Foundation, which partners with Tufts University's Friedman School of Nutrition Science and Policy, was especially clever in the Spring 2016 incarnation of its "Billion Mile Race." In addition to providing elementary and middle schools such incentives as prizes for encouraging students to run and walk (a type of exercise that New Balance is eager to promote among children),[28] it also provided incentives for using social media to promote the sponsors and the race. To be eligible for the grand prize of new New Balance shoes for everyone in the school (up to 1,000 pairs of shoes), participant schools were required to register for the race and tweet or post to Instagram up to 3 photos or videos that promoted the race by showing children in action and articulating the benefits of the race for the school.[29] Since Spring 2016, the Billion Mile Race has run smaller monthly contests. In February 2017, for example, the prize was a "Fun Run Grant" to help support a running event at the school. The winner's package included, among other things, a branded finish line banner and branded race bibs and wristbands for the children. In March 2017, the prize was a portable wireless speaker system worth about $130, and in May 2017 it was a $300 credit for "walk/run equipment" from US Games.[30]

The Billion Mile Race example demonstrates how a corporation can successfully "health-wash" its child-targeted marketing and gain access to children via their schools: (1) The New Balance Foundation effectively conducts a low-cost but very effective marketing campaign for its for-profit counterpart through a non-profit vehicle; (2) it partners with a non-commercial, health-oriented non-profit and presents the marketing activity as purely a health-promotional activity; and (3) it co-opts adults in the school community to serve as marketers to children by offering them incentives to promote the brand and the program together as part of their effort to encourage the children to exercise. Along with the incentive program, the Billion Mile Race also promotes associated running-themed "sponsored educational materials" for grades 2-5. These materials are aligned with Common Core State Standards and are

promoted to teachers as such.[31]

The framing of a local news segment about a participating school in Corpus Christi, TX, points to the way that corporate programs like the Billion Mile Race capitalize on funding shortfalls and the achievement-oriented, technology-focused educational *zeitgeist*. The news anchor comments, "These days it often seems as though technology can make it, well, a little bit tough to get kids out and to get them moving."[32] Under pressure to promote academic achievement and "personalized learning," and to do more with less money, schools force children to sit for long hours at computers, and sometimes cut "nonessential" classes, such as physical education. This provides openings for corporations, in this case in the guise of the New Balance Foundation, to bring those "nonessentials" back—branded.

Another incentive program, Bark, engages schools to market its digital child-surveillance product to parents in exchange for a share of the family membership fees that the school's marketing efforts generate.[33] Parents enter login and password information from their child's social network, text message, and email accounts, and Bark's "watchdog engine" monitors the accounts to detect, via algorithm, indications of potential cyberbullying, sexting, drug-related content, or depression. If the algorithm detects a potential indicator of any of these issues, the system alerts the parents and recommends ways to "handle the situation."[34] To make marketing this surveillance product easier for schools, the company provides all necessary marketing materials (e.g., flyers, web graphics and newsletter copy).[35]

Fundraising

For years, McDonald's has promoted its McTeacher Nights, in which a school is awarded a small percentage of the money community members spend on an evening when teachers work the counters.[36] In 2016, teachers' unions across the United States banded with national organizations (Campaign for a Commercial-Free Childhood and Corporate Accountability International) to denounce the events.[37] In an article explaining the United Teachers Los Angeles's (UTLA) rejection of McTeacher Nights, Cecily Myart-Cruz explained that not only do McTeacher Nights raise little money, but they also exploit both teachers and students by co-opting the trust between the two. As she puts it, "While McDonald's gets free labor and the kind of marketing money can't buy, children are left footing the bill for a lifetime of diet-related disease."[38] In April 2017, the Los Angeles Unified School District (LAUSD) explicitly banned McTeacher Nights. It did that, however, while allowing for other food-related fundraising activities in which teachers presumably would not work in restaurants.[39] Banning fundraisers like this is controversial, despite their abuse of teachers, students, and the relationships between them. According to the *L.A. Times*, one LAUSD school board member reported that he "'must have gotten 40 emails from principals' complaining about the potential loss of their biggest fundraiser and calling him 'crazy'—presumably for his possible support of the ban."[40]

The Transformation of Digital Marketing

The Commercialism in Education Research Unit's first report on trends in schoolhouse com-

mercialism, published in 1998, defined digital, or "electronic," marketing as the provision of electronic programming and/or equipment, or both, in exchange for the right to advertise to students, parents, and others in school or when they contact the school or district.[41] Such marketing efforts, in the form of banner ads on school and district websites, for example, are still sold to districts as "an out-of-the-box way…to generate revenue."[42]

Digital marketing has, however, developed and expanded apace and now encompasses much more than simple banner advertising. In the 1990s, Channel One drew criticism for requiring students to watch a few minutes of advertising with each daily episode of Channel One News.[43] Now, schools and teachers regularly lead students to extensive Internet-based advertising and marketing through such entry points as Facebook, where they post about school events, and the G-Suite for Education (formerly "Google Apps for Education"), which they encourage students to use for their classwork and homework. Although Google claims not to use information associated with G-Suite for Education accounts to target students with advertising, it collects a lot of information (such as hardware models, operating system versions, and unique device identifiers, queries, system activity, and hardware settings) from students for other purposes.[44] Moreover, students can easily surf between G-Suite for Education core services (such as Gmail and Calendar) to other Google services (such as YouTube and Search) as well to as other, non-Google-owned services that do openly track for advertising purposes.[45]

Although a number of bills bearing on education privacy have been introduced in Congress and state legislatures, the legal protections for student privacy to date are extremely limited.

As digital data gathering and data-analysis capabilities have grown, and the prospect of making money in the education technology sector has soared, so too has the variety of digitalized commercializing activities multiplied in schools.[46] Children use many pedagogical software applications that collect vast amounts of information about them. This information is held by the private companies that provide the software. Schools and districts also provide children's data to private companies in order to provide school services or to fulfill state and federal assessment and reporting requirements.

Although a number of bills bearing on education privacy have been introduced in Congress and state legislatures, the legal protections for student privacy to date are extremely limited.[47] Federal law theoretically prohibits the use of data held by private companies for purposes unspecified in their contracts,[48] and over 300 companies have signed onto a self-regulatory pledge that bans "behavioral targeting of advertisements."[49] Companies are, however, unlikely to be held to account for security breaches or for misuse of children's data. The Family Educational Rights and Privacy Act (FERPA) threatens to withhold funding to schools as a result of data misuse, but this punishment has never actually been imposed.[50] Also, citizens can bring complaints to the Federal Trade Commission (FTC) if they believe a company has violated its signing of the Student Privacy Pledge. The FTC, however, seems disinclined to act on complaints. For example, it still has not acted on a 2015 complaint brought against Google by the Electronic Frontier Foundation.[51] Without private right of action and/or a strong regulatory system in place, there is little to dissuade companies from

engaging in profitable practices that violate the privacy of students.

High-Tech Goes to Work on Schools

Schools' and students' use of technology offers a potential treasure trove of data about students that private companies, their partners, and their customers can exploit. Any app or website can incorporate technology to collect IP addresses and other information, including the pages, content or ads children see or click on; what they download; what games they play; what device a child is using, with what operating system and settings, and so on. And, anything that can be collected *is* collected. The privacy policy for Scholastic products, for instance, describes just this sort of data collection.[52] Such comprehensive information is useful in behavioral tracking, in current and potentially future product-related research, and in future uses that are as yet unspecified.

The U.S. Department of Education actively encourages the use of massive data sets (commonly referred to as "big data"[53]) collected from students to facilitate technological "innovation" on the largely unsubstantiated premise that it will lead to "deeper learning" and better assessment and support systems.[54] Schools and districts now routinely collect, store, and report data for state longitudinal data systems on such things as attendance, tardiness, test scores and grades. Teachers record student behavior in classroom management applications and use "personalized" or "adaptive" learning technologies that record student keystrokes, answers, and response times.[55] In 2016, school districts in the U.S. provided 34.9 million students with high-speed Internet access, an increase of 30.9 million since 2013.[56]

While such massive amounts of specific and personal data are being collected about children at school, there is little understanding of how that information may be used in the future, or how it may be used to manipulate children and cultivate them as current and future consumers.[57] Corporations that gather this information may claim to refrain from using it for commercial gain, but there are no guarantees.[58] Security is also a concern: recent high profile breaches and hacks demonstrate that many education technology applications lack adequate data security to protect the student data they collect.[59]

Market forces are currently driving the digitalization of U.S. education, with the goal of recreating public education as a corporate profit center. With respect to device sales, for example, Futuresource notes that continued growth in the education sector, especially in contrast to declines in sales of PCs and tablets more generally, explains why computer manufacturers and operating system providers focus on developing the education market.[60]

Almost every article about education technology mentions the value and growth potential of the industry, which was last reported in 2012-2013 by the Software & Information Industry Association to have been $8.38 billion in the United States alone.[61] EdTechXGlobal values the global education expenditure market—currently only 2% digitized—at $5.2 trillion.[62] To put it in perspective, this value is eight times the size of the software market and three times the size of the media and entertainment industry.[63] And as distribution and platforms scale internationally, EdTechXGlobal projects the international expenditure market to grow to $252 billion by 2020.

Major players include computer manufacturers and operating system providers: Apple, Google, IBM, and Microsoft.[64] Pearson, an education company best known as a testing giant, is also influential.[65] Facebook, besides being the social media platform of choice for school groups and teams, has partnered with Summit Public Schools, a nonprofit charter school network, to produce its Personalized Learning Platform (PLP), used by at least 100 schools throughout the United States.[66]

All kinds of companies, including entertainment and toy companies, are eager to cash in on education technology mania.[67] Aspiring "ed tech" millionaires gather annually at conferences such as SXSWedu in Austin and at EdTechXGlobal conferences in Europe and Asia, where they develop and share their latest ideas for how to "radically disrupt" education.[68] Rachael Stickland, co-founder of the organization Parent Coalition for Student Privacy, reported that at SXSWedu, speakers encouraged entrepreneurs to get in and make their mark in this ripe and loosely regulated market. "The message at SXSWedu is loud and clear," she wrote in March 2017. "To win the game, hurry up and get your fair share before the research, evidence and privacy laws catch up to us!"[69]

Education administrators are now busy revising policies to facilitate the entry of new software applications for teacher use.[70] In the past, schools followed "request for proposal" processes in which they would evaluate proposals from many different companies before they would decide on a purchase—processes that could take six months to two years. To move things along more quickly, some schools have replaced the proposal process with product implementation demonstrations. Municipalities, such as New York and Chicago, now help match schools with education technology companies.[71] These policies are consistent with the technology industry's approach of moving to market without extensive product testing. In other words, they encourage schools to use children as test subjects for product development.

In part, the demand for "ed tech" in schools and districts reflects the recognition that computer programs can process the data administrators now need faster and more efficiently than people can. The need to process large amounts of data is driven, to a large extent, by schools' and districts' obligations to meet expanded federal and state reporting requirements. It is worth noting that these requirements were created at least in part as a result of influence from such technology-friendly organizations as the Bill and Melinda Gates Foundation.[72] The rush to embrace technology is also the result of the carefully cultivated belief that, lack of evidence not withstanding, technology can educate better and faster than people can.[73]

Education stakeholders commonly assume the inherent value of "innovation." Teachers, who are most likely to know and value the impact of their own expertise and their relationships with their students, may be the most skeptical of the miraculous power of technology, but their voices have been muted by criticisms that portray them as part of the problem that technology can fix.[74] All education stakeholders, including teachers, have been subjected now for years to the technology industry's guiding beliefs and relentless propaganda that technology can solve all problems and that technological innovation is desirable for its own sake.[75] Although the money to be made by education technology evangelists may cast doubt on their motivation for promoting a cult of innovation, in large part it is essential to their

worldview: they believe what they sell to policymakers and other stakeholders.[76]

 In a 2016 press release, the Obama Administration epitomized this faith in innovation by releasing a list of 100 examples associating the former president with leadership in "building U.S. capacity in science, technology, and innovation"—including in education—"and bringing that capacity to bear on national goals."[77] In January 2017, Richard Culatta, who moved from the Obama Administration's Office of Educational Technology to become Rhode Island's "Chief Innovation Officer," told *EdSurge* that with the change from Obama to Trump, he does not expect the "innovation energy" that had been evident in the Department of Education's "partnerships with the developer community" and "challenges…to schools" to die, but rather to shift to the states.[78]

The Lure of Personalization and the Danger of Surveillance

In 1994, Carl Sagan predicted what is now happening when he wrote, *"We've arranged a civilization in which most crucial elements…profoundly depend on science and technology. We have also arranged things so that almost no one understands science and technology. This is a prescription for disaster. We might get away with it for a while, but sooner or later this combustible mixture of ignorance and power is going to blow up in our faces."*[79] Technological development has changed both how we live and how we expect to live. And, to a large extent it is being guided by young, white, middle class males whose view of the world tends to be individualist and technology-centric.[80]

The science fiction concepts of "virtual reality" and "artificial intelligence" are no longer fiction; rather, they are hot new products. Smartphone penetration is at 72% of the adult U.S. population, digital assistants have hit the market, and the "Internet of Things" is just over the horizon.[81, 82] Our technology has developed to be both fast and "personal." Think about placing an order from Amazon, for example. When you sign in (if you even do, because you may have agreed to let it "remember" you), the website greets you by name and recommends products for you, based on what you purchased or even just looked at earlier. If you order, the site offers you practically immediate delivery.[83] If you leave the house with your iPhone, the phone thoughtfully tells you how long it will take you to get where you are going and then how to get back home. Its geolocating software "knows" that your home is where it regularly spends the night. Google provides you with "useful" ads "by using data collected from your devices, including your searches and location, websites and apps you have used, videos and ads you have seen, and personal information you have provided, such as your age range, gender, and topics of interest."[84] The convenience of our services knowing who we are and what we want, and providing for our needs immediately—sometimes without our even needing to ask—has been easy to get used to and to expect. Children growing up with such commercialization in the guise of personalization know nothing else.

The ability of corporations to provide personalized services and products comes at the cost of constant surveillance. By necessity, applications must watch and record us in order to efficiently offer us goods and services matched to our habits and dispositions.[85] The *New York Times* reported an "arms race" among the major technology firms (Google, Facebook, Apple, Amazon, Microsoft and the Chinese firm Baidu) to hire the intellectual talent from univer-

sities to develop the next stage in computing, a "pervasive, ambient artificial intelligence."[86] Google's CEO, Sundar Pichai, describes the end-user experience of this artificial intelligence (AI) as "…a personal Google for each and every user. Just as we built a Google for everyone, we want to build each user his or her own Google."[87] Google's virtual personal "Assistant," guided by machine learning and natural language, will enable this innovation.[88] The *New York Times* reports Google's AI project to be well on its way, having already successfully created technology that is programmed to learn on its own.[89]

Google is not alone. IBM is developing a plan for "Smarter Cities" that envisions human brains interacting with learning algorithms and computing devices in new kinds of "brain/ code/spaces."[90] Facebook mines voluntarily supplied information, posts, photos, "likes," and user computer activity (from visits to pages with "like" buttons).[91] Using its vast warehouse of subscriber-uploaded photographs and tags, Facebook's DeepFace facial recognition technology can identify individuals almost as well as a human can.[92] Jennifer Whitson, in her discussion of "gamification," points out that although the public resisted facial recognition when they associated it with militarized antiterrorist tools in airports, people accepted it happily when Facebook reframed it in the context of playful photo-tagging applications.[93]

Algorithms Go to School

Algorithms are procedures for solving a mathematical problem in a finite number of steps.[94] In practical applications they are the formulas used to sort data in ways that can be used to draw meaningful relationships. Although they are commonly thought of as purely mathematical and objective, in practice they are not—as, for example, when they are used to guide decisions about human beings. As such, algorithms are, in effect, theories that reflect which pieces of information the algorithms' authors consider valuable and how their authors believe those pieces of information should be used to draw conclusions. They are thus value-laden and vulnerable to significant and difficult-to-correct error.[95]

The application of algorithms to human behavior and relationships now leads to consequential decisions about individuals and impacts institutions and communities. Decisions such as to whom products and services should be marketed, how to market them, and what prices to offer are now commonly based on algorithmic calculations. People's lives are significantly affected when algorithmic-based analyses are sold to institutions such as schools, colleges, insurance companies, banks, and courts that then use them make decisions about matters as disparate as disciplinary actions, admission to schools, the price of home or car insurance, the rate of interest on a loan, or the sentence handed down for a crime. Currently, most people seem unaware of how much data about them is collected, who collects it, how it is used, or how it affects their lives. In many respects, algorithms now render judgments that are invisible and not subject to appeal.[96]

Even if some people were interested in the algorithms affecting their lives, it would be virtually impossible for them to get the information necessary to determine whether the algorithmic conclusions affecting them were valid.[97] Privately developed algorithms are largely hidden from the public behind the legal veil of "proprietary information." As a consequence, there is no way for either the individuals whose data are used or the institutions making

decisions based on algorithmic results to evaluate or challenge the validity of those results. Institutions that purchase and use algorithm-derived products, such as FICO credit scores, have no ability to evaluate or adjust the algorithms.[98] Currently, any institution or person purchasing an algorithm-based product must trust that the corporation providing the software is doing what it is supposed to be doing in terms of ensuring validity.

"Personalized learning" algorithms, like algorithms in other contexts, are very often a "black box" both to the people who use them and to those, such as students, who are subjected to them. Specifically, an algorithm that assesses a student's level of understanding based on, for example, his or her pattern of responses, response times, and keystrokes generates conclusions based on a theoretical mathematical relationship between those raw data points and the student's psychological state of understanding—the key word here being *theoretical*. Because the algorithms are proprietary, the details and data necessary to allow users to investigate the validity and reliability of the assumed relationship are not publically available.

Whether they think about it at this level of detail or not, teachers who use the software with their classes tacitly accept the theory (algorithm) connecting the raw data to the interpretation as valid. They also assume that the software operationalizes the theory correctly, and they trust the software to decide, based on its programming, what instruction students should receive next.

If the software has limited validity, the teacher would never know. Neither would the children, their families, school administrators, employers or anyone else who later gets access to the software's output. Educational applications observe, quantify, evaluate, and shape children from the earliest days of their education; they encourage the children and the adults around them to accept the unknown relationships between the measurements and the outcomes recorded, and the software-driven interpretations of what the measurements and outcomes mean.

It is more profitable for businesses and more politically expedient for everyone else not to question how any given piece of software actually works.

Scientists who study psychological measurement have a healthy skepticism about the ability to measure such abstract latent variables as "learning," "understanding," or "perseverance"—or to predict such things as the likelihood of a child's dropping out. They understand that any theory of learning or behavior can at best only partially explain or predict students' outcomes, that any dataset is necessarily reductive and incomplete, and that there is always a certain amount of error involved in any model.[99] And finally, built into their scientific process is open debate about how to best measure, explain, and predict. Sellers of "personalized learning" software and policymakers eager to support innovation and the "radical disruption" of education—and district leaders and teachers under pressure both to work with the business community and to adopt the newest, best technology—are much less likely to wander into these weeds. It is more profitable for businesses and more politically expedient for everyone else not to question how any given piece of software actually works. Doing so could raise serious doubts about the ability of that software to do what its creators claim it can do, and could significantly delay, if not prevent altogether, a school from adopting it.

Sara Marie Baker, former research director for a private healthcare consultancy, explains how the proprietary nature of data, and of algorithms and the theories used to construct and interpret them, allows companies to make stronger statements about the validity of the results they report than are necessarily warranted: "The level of confidence with which you [as a business] can make statements or draw conclusions is greater because the data is proprietary and no one will see it. Your standards of scientific rigor are less. Even though the trendy term is 'predictive analytics,' it's not so much causality as a reliable correlation." As is the case with individual students whose studies are directed by a "personalized learning" algorithm, in her field, "every single situation had an intervention—a different, customized intervention. There was no way of knowing what would have happened with a different intervention, or without any intervention at all."[100]

The algorithms built into educational software are not neutral.[101] They reflect the assumptions and biases of their developers and are subject to limitations in what the software can actually sort and measure.[102] Computer algorithms are necessarily reductionist, capable of processing only quantifiable factors, not the highly contextualized, contingent information that confronts teachers in their "real life" interactions with students.[103] The more that teaching and learning are shaped by the collection and use of easily quantifiable data-points, the more narrow and limited the curriculum and definitions of "achievement" will become, because boundaries will be defined by those things that can best be captured and sorted electronically.[104]

As the ability of computers to capture and sort more and different kinds of data increases, the algorithms embedded in learning management systems and student information systems have increasingly important effects. As education blogger Audrey Watters notes, they define how teachers, students, and administrators interact—by defining how they understand what "learning" means, what "counts," and what is important.[105] They also increasingly script the teaching and learning process, crowding out the kind of unanticipated teaching moments that teachers can capitalize on even when they are not in their planbook. Those unplanned opportunities cannot be coded into any software.

Perhaps not surprisingly, then, of the major educators' professional organizations, the National Education Association (NEA) teachers' union is the most cautious about education technology and its implications for teaching, learning, and student privacy. The union's 2013 statement on digital learning, although enthusiastic about the possibilities education technology offers, emphasizes the importance of recognizing technology "as a tool that assists and enhances the learning process... not the driver of the digital learning plan."[106] In its July 2017 annual meeting, the NEA adopted resolutions to research and make policy recommendations regarding such issues as student data privacy, transparency and opt-out rights for data collection, data sharing, and computer-based learning and testing, including "personalized learning."[107]

 Other education professional organizations, although concerned about students' privacy, are also more bullish than the NEA about incorporating technology and appear sanguine about the kinds of concerns raised here. Both the National Association of Elementary School Principals (NAESP) and the School Superintendents Association (AASA) endorsed bills containing language that explicitly shields "the ability of an operator to use information, in-

cluding covered information, for adaptive or personalized student learning purposes."[108] The National School Boards Association (NSBA) endorsed the Student Privacy Pledge, the technology industry's self-regulatory effort, which contains significant loopholes and also contains language like that cited above.[109] In other words, each of these organizations calls for the need for student privacy to be safeguarded while also protecting schools as a site for technological innovation and personalized learning.

Concerns about Tech-Driven "Personalized Learning" in Schools

Education technology's promise of personalization is attractive, even though in this particular context "personalized learning" isn't simply a clever feature but rather something that can and should be carefully evaluated for its validity and its educative value. Among the measurements that schools may now take, in addition to more obvious measurements such as student answers to questions and response times, are such things as children's whereabouts, physical movement, activities, body language, facial expressions, eye movements, skin temperature, and skin electrical conductivity.[110]

Not all schools collect data on all these variables, but many schools collect some of it.[111] What may sound like fringe or extreme examples are actually significant because of the venture capital money behind them and the plans for their expanded use.[112] AltSchool is such an example.[113] At AltSchool, students' movements and conversations are continually recorded by audio and video.[114] Motion-tracking algorithms use the video footage to create "heat maps" of activity.[115] A possible future use of video footage, suggested but not implemented as yet, is to analyze it in conjunction with facial-recognition software to measure student engagement.[116] As of May 2017, AltSchool had raised more than $173 million in funding and was working with a small group of partner schools to develop its personalized technology platform, AltSchool Open. According to *EdSurge*, the company hopes that by 2020 it will have refined the tool enough to sell it widely across the United States.[117]

Much of the measurement conducted by AltSchool, and on a less comprehensive basis by many "à la carte" software applications in use in other schools, is in the service of "personalized learning": the applications use the data they collect to try to understand and predict children's learning progress, their non-cognitive learning experiences and capacities, and their physical safety and well-being.[118]

The claim is that via the algorithmic sorting of these data, computer applications can assess student understanding and engagement better than the teachers can on their own.[119] This is especially true, the argument goes, when teachers have too many students to be able to pay adequate attention to all of them, or when classes are online.[120] The argument begs the questions, of course, of why teachers have too many students or why classes are online.

Importantly, "personalized learning" is thus far poorly defined and poorly assessed.[121] In a 2016 *Data and Society* report, Monica Bulger identified five types of products that market themselves as "personalized": (1) customized learning interfaces that encourage students to select colors and avatars, or that use interest, age or geographic indicators to tailor the interface to the student (e.g., Cloud Math); (2) learning management platforms that auto-

mate various classroom management tasks (e.g., ClassDojo); (3) data-driven learning platforms that provide materials appropriate to a student's determined proficiency level (e.g., PracTutor); (4) adaptive learning platforms that use machine learning to adapt to students' behaviors and competence (e.g., Knewton); and (5) intelligent tutor platforms that interact conversationally and have enough options to move beyond a limited decision tree (e.g., Watson).[122]

Despite confident claims of efficacy from the companies that produce and market such "personalized learning" software, most companies do not field test products before shipping them to schools, nor do they conduct significant research to validate their claims.[123] Most product websites offer anecdotes, testimonials, and perhaps limited or partially reported research.[124] In other words, little is known about the quality of these programs, their efficacy, or their generalizability.[125]

It is also difficult to distinguish between use of these kinds of products and the concept of "blended learning." In his review of research on virtual schools, Michael Barbour points out that they are basically the same: "if students are engaged in both face-to-face and online learning as a part of their formal studies, then they are engaged in some form of blended learning."[126] Regardless of the name used, Barbour notes that although blended learning may have potential in certain circumstances, not only does the current research base not provide any guidance for the field in general, but also teachers likely play a fundamental role in students' success in blended settings.[127]

Computer scientist Roger Schank, a pioneering researcher in artificial intelligence, sharply criticizes commercial claims of efficacy—particularly those of IBM, which is positioning its Watson system and its associated "cognitive computing" for mass adoption in schools.[128] Schank notes, "The AI [artificial intelligence] problem is very very hard. It requires people who work in AI understanding the nature of knowledge; how conversation work [*sic*]; how to have an original thought; how to predict the actions of others; how to understand why people do what they do; and a few thousand things like that. In case no one has noticed, scientists aren't very good at telling you how all that stuff works in people. And until they can there will be no machines that can do any of it."[129]

What we do know is that regardless of how effective they are in actually helping children learn, the algorithms used in "personalized learning" applications, like those used in other contexts, require massive amounts of data to be collected from those children. In one especially colorful example, Jose Ferreira, the former CEO of the "personalized learning" provider Knewton, claimed in a 2012 talk at the White House that his product collects five to ten million actionable data points per student per day: "We literally have more data about our students than any company has about anybody else about anything. And it's not even close."[130]

As we noted earlier, the use of algorithms is not a neutral process; and in the case of the more sophisticated "machine learning" algorithms that are poised to be introduced into schools in the near future, even their developers do not exactly understand nor can they explain how they work, because programs independently adapt as they are exposed to new data, "learning" from their prior computations.[131, 132]

A comparison of "personalized learning" to prisoner sentencing may not be obvious, but it is instructive in that in both cases, powerful institutions rely on proprietary algorithms to make decisions about the lives of people who are not in control of their own fate. And in the case of a risk assessment system used in several states to help courts make sentencing decisions, the algorithm at the base of the system appears to be flawed in a way that its programmers did not intend, so that it is causing irreparable damage to the lives of some of the people subject to its recommendations. *ProPublica* investigated the risk assessment system, and found that although the algorithm's inputs do not even include direct data about race, its use leads to blacks receiving harsher sentences than whites.[133] This appears to be because the inputs do include proxies for race such as poverty, joblessness and social marginalization. Tellingly, even if the judges who use its results were to question how the software comes up with the results it does, its proprietary status would prevent them from accessing the information. The algorithm nevertheless continues to be used, and continues to lead to discriminatory sentencing.[134] It is not outrageous to imagine a "personalized learning" algorithm being used, for example, in decisions of acceptance or rejection into various educational programs. In that kind of situation, students and their families would have no recourse but to accept the decision rendered.

The Secret Life of Data

Once students have mastered the "personalized learning" purpose of a given education technology application, students' data may or may not be used for other purposes, such as software development or other commercial uses.[135] To the extent that the software involves machine learning, the collected data are certainly used for software development. And, although privacy contracts often include provisions that prohibit transferring data, they also specify that data may be transferred upon sale of the company. Professor and expert on information law Frank Pasquale notes that "data is the fuel of the information economy, and the more data a company already has, the better it can monetize it."[136] Data are fungible, and it would be surprising if some companies do not collect and conserve data in order to increase the price of a potential buy-out.

Security of the data may also be at risk. Jamie Winterton, Director of Strategic Research Initiatives in Arizona State University's Global Security Initiative, explained that it is more effective, but more expensive and therefore less common, to incorporate security into technology development from the beginning of a project rather than at its end.[137] She also expressed concerns about programs based in flash technology, which is easy to hack.[138] Recent breaches of student data indicate the validity of such concerns.[139] For example, in May 2017, a vendor on the "dark web" marketplace Hansa listed for sale details, including email accounts and usernames, from 77 million accounts stolen from the popular education platform Edmodo.[140] More generally, when the Electronic Frontier Foundation researched the privacy policies of 152 education technology services identified by respondents to an online survey as being used in schools, they found that only 118 of the 152 had published privacy policies. Especially important with respect to data security, of that 118, only 78 mentioned data retention policies and only 46 reported using encryption (and in the latter case, encryption tended to be mentioned with respect to billing information and not necessarily with respect

to other stored student data).[141]

Some experts are now urging caution in the rush to digitize more and more of human life.[142] Presenting at the 2016 Society for the Advancement of Socio-Economics conference, technology entrepreneur and critic Maciej Cegłowski, for example, described what he called "The Moral Economy of Tech," and pointed out that, "...the surveillance economy is way too dangerous. Even if you trust everyone spying on you right now, the data they're collecting will eventually be stolen or bought by people who scare you. We have no ability to secure large data collections over time."[143] However, the voices of marketers are stronger. Technological advances are mostly portrayed as and assumed to be benevolent until proven otherwise.

Regardless of the actual capabilities of technological products, they are marketed and implemented without users being aware of the full range of consequences that their use may entail.[144] This is partly because consumers enjoy and expect technology to serve them ever more efficiently. Also, collecting ever more data to use and sell to advertisers is extremely lucrative for the companies responsible for creating, implementing, and framing public perceptions of their activity.[145] Finally, we lack a regulatory framework that requires disclosure of how information is collected and used.[146]

Policymakers' ambivalence about protecting student privacy on the one hand and encouraging innovation on the other is reflected in the many bills introduced to address student privacy issues and the relatively few actually signed into law.[147] Additionally, the language of state and federal bills designed to protect student privacy by prohibiting commercial use of student data reveals that "personalized learning" software enjoys special status. Our examination of such bills revealed that operators providing such software are often explicitly exempted from any limitation on using data collected from students "for adaptive or personalized student learning purposes," including using data otherwise covered by the bills.[148] Such language nullifies other clauses of these bills designed to prevent tracking of students, because tracking is an essential aspect of "personalized" student learning.

The Ideology of High-Tech

> *"The Internet may be making us shallow, but it's making us think we're deep."*
> (Nicholas Carr)[149]

Digitized commercializing schemes "improve upon" low-tech variants in their scope and subtlety. The "killer education app" that SXSWedu attendees dream of and the "smart schools" IBM and Pearson envision are intended to influence many more children than most low-tech marketing efforts can reach. Google, Apple, and Facebook already reach and collect data on massive numbers of schoolchildren. If data collected by any of these companies is sold to, licensed to, or shared with others who then market their products, political views, or other perspectives to children, the influence on children is equally significant but channeled indirectly, a step removed from the data collector. Worse, these data can be sold, licensed, or shared many times over.

It becomes "common sense" to children who have been raised under constant surveillance

that such surveillance is normal and natural, and that it is a fair price for getting services they want—especially because they cannot avoid it even if they wanted to. Two corollary tendencies accompany the assumption of ubiquitous surveillance. One is to trust the providers of digital services and not balk at giving away their private information to people or entities they do not know for uses they cannot identify. The other is to conform—to become self-conscious in the presence of recording devices and suppress, rather than give voice to and develop—ideas or viewpoints that they suspect may not be normative.[150] Social psychological research suggests that surveillance makes people less open to new ideas, more anxious, less creative, and generally more conservative.[151] Much of that research was conducted on young adults in relatively transient settings, not on developing children over long periods of time. The prospects of how the effects might multiply in latter settings are chilling.

It is reasonable to argue that students who are provided with career-oriented and/or digital coursework do benefit from them. In fact, it is on the basis of such promises that commercial programs are sold to schools and parents. Parents and educators are told that children will be more engaged, and that they will master "21st century competencies and knowledge" while still in high school, thereby enabling their "social and economic mobility."[152] In other words, the nature of their schooling will be funneled toward methodologies (digital) and content (sponsored educational materials and programs) that help people and organizations they don't know make money from them, either now or in the future.

A powerful but subtle part of this process is the way in which it recruits schools as accomplices in narrowing children's interests to the "common sense" and expectations of commercial culture. Children are now nudged not only at home, with their friends, or through social media but also in their school experiences to assume that the path to happiness and satisfaction lies through consumption. They are also repeatedly prompted to learn and adopt an individualist, Ayn Randian, worldview that supports consumer culture and is popular among technology industry entrepreneurs, "data scientists," and investors."[153] In this view, society is little more than a collection of individuals existing at the same time in the same space, rather than members of a group who depend on each other for their well-being and success. Although students are encouraged to see themselves as independently responsible for what they make of themselves, they are simultaneously told to express their individuality by doing what they are told and what their peers do. For example, many schools now encourage students to adjust their mindsets to encompass "growth" (the currently popular "can-do" mentality promoted by the widely used ClassDojo application), to work through their "personalized playlists" of educational modules to collect the skills and credentials recommended to them by educational software and badging companies, and to apply for jobs consistent with those skills when their schooling is complete.[154]

The values embedded in the educational software children use are those of a young, white, and male technology industry culture[155]—and this "hidden curriculum" propagates the biases of that culture. This is not to say that these young white men are not well-intended, but they do have biases. Among these is "technological hubris"—an assumption that technology can and should solve all problems, and that the personalization, playlist, and other features that mirror social media platforms can and should be exported in order to "disrupt" and thereby revolutionize other domains.[156] In the natural course of things, if all the applications, with all their algorithms, are created by the same kind of people, they will reflect the same kinds

of biases. This will necessarily often not be in the best interests of large numbers of children or their communities.

On the surface, this individualist worldview appears to empower children. They may get "good 21st century jobs" (whatever that means) and be able to afford the material possessions promised by consumer culture. But what will happen to the many students who find they are unfulfilled by the "good job" an education technology application led them to when they were in middle school, or who confront structural limitations on their achievement that neither their growth mentality nor their backpacks full of credentials can overcome? What if troves of material positions leave them neither fulfilled nor happy? What if they follow all the rules and still do not find a place in the consumer culture? The worldview they will have been taught allows for only one explanation: there is something wrong with them.

Funneling Children into the "Surveillance Economy"

Summit Public Schools' Personalized Learning Platform (PLP) demonstrates how software transmits a technology industry worldview to children, while at the same time creating an opportunity for data to be extracted from them. The Summit website says that, "Students build content knowledge by working at their own pace and take assessments on demand," but students' choices are limited to the order in which they tackle the "playlist." As Audrey Watters notes, the platform does not provide students with true personalization, which might allow them—to continue with the playlist metaphor—to choose which "songs" to listen to. Instead, it allows them only to choose the order in which they play the standard songs.[157] Further, the platform is powered by Facebook, and one of Facebook's hallmarks is the ready flow of digital data.[158] PLP collects a wide variety of data: contact information (including full names and email addresses); student identification numbers, usernames and passwords, course curriculum information; "students' scores, grades, standardized test results, course progress information and coursework in audio, video, text images, and other media"; "user feedback, suggestions, questions, and ideas,"; Internet protocol (IP) addresses and other device identifiers, browser types, operating systems, Internet service providers; dates and times of use; links clicked and pages viewed within the PLP; and "other standard information."[159]

Facebook points out that its small group that works on Summit's PLP is independent from the rest of the company, that Summit signed onto the Student Privacy Pledge,[160] and that student information is subject to privacy controls.[161] So, it is possible that parents have nothing to worry about with respect to potential misuse of their children's data. However, the Summit Privacy Policy notes that Summit shares information with Clever, Facebook, and Google to develop and improve the personalized learning plan software; and its Terms of Service give it the right to "use, run, copy, cache, store, publish, publicly perform or display, distribute, modify, translate, and create derivative works of...any content posted on or in connection with the Services in any manner."[162] The Terms of Service also warn schools that their use of the services is entirely at their own risk, that there are no warrantees whatsoever, that schools waive any right to class action suit and agree in advance to binding arbitration, and that Summit can change the Terms at any time (and if they do not agree to the changes,

they should "please stop using the services"—after, of course, they have reorganized their entire educational structure to accommodate it).[163]

Moreover, Facebook may not be a trustworthy source. In May 2017, Facebook reported to one of Australia's top banks that its algorithms can identify when teenagers feel "insecure," "worthless" and "need a confidence boost"; however, the company claimed publicly that such information is not incorporated into any ad targeting tools.[164] And although it also minimized these claims when challenged publicly, it has repeatedly promoted to advertisers its ability to provide personal information that could support their attempts to influence people.[165]

The Summit Personal Learning Platform (PLP) represents an extreme example of a highly digitized learning system. Not all schools are so digitized at this point, and they vary in what they do and how much information they collect. At the most basic level, however, the institution of digital testing requires children to be comfortable with computers before they test. This means that teachers need to encourage children to spend more school-related time working on computers. Some schools have a few computers in the classroom for students to take turns using, some have "technology carts" that teachers can reserve and bring into the classroom for all the students to use at the same time, and some have computer labs to which teachers can bring their classes. More frequently now, schools are introducing "1:1" programs in which they provide each child with a laptop, a tablet, or a "Chromebook."[166] When they do, teachers rework their lessons to accommodate the new platform. It is only common sense to expect teachers and students to make the most of the expensive equipment in which their schools have invested.

When all children are connected, it is easy to adopt and use more "personalized learning" software, and to encourage children to spend more time on the Internet. As one CEO told *Forbes*, "We continue to hear from teachers that technology has shifted from a one-off lesson in the computer lab to a tool that's incorporated seamlessly into the everyday curriculum."[167] Many schools use the free platforms that Google (G-Suite for Education), Microsoft (Microsoft 365), and Apple (Apple Classroom) provide for school and student use.[168] They can invest in purchasing educational software, but when money is tight, teachers can adopt "freemium" versions of costlier products, or other free programs. As students spend more time online, the opportunities grow for them to provide data to the companies that provide the software they use.

As software tracks children, it creates opportunities for companies to develop profiles on them that may be used for targeted marketing.

Some districts, such as Aurora Public Schools (APS) in Colorado, are encouraging students to collect "digital badges." APS has been successful in this effort: in 2015-2016, the district issued nearly 8,500 digital badges to more than 6,000 of its students.[169] These badges are digital image files that are attached to metadata that contains information about the evidence—such as digital presentations or videos—that students upload in order to earn the badge.[170] "Badges" may sound like what Boy Scouts have been sewing onto their uniforms for over a hundred years, but these particular badges are a form of high-tech micro-credential indicating that children have mastered assorted "soft" skills, such as critical thinking, invention, self-direction,

collaboration, and information literacy.[171] And in their metadata, they contain students' uploaded work.

Proponents explain that badging will allow employers and college admissions officers to verify and validate who students are, what they know, and what they can do in a way that unverified descriptions on resumes cannot.[172] One child from Creek Side Elementary explains in an APS video how students can use "evidence" for badging: "In the past I used Google Classroom, Google Docs, PowerPoint, Prezi, all those [*sic*] stuff. And I thought that they were actually really good. But I'm thinking I could be more creative and stretch my mind into using Outworld and Catapult and a bunch of STEM stuff. That's going to help you so much with evidence for digital badging."[173]

As software tracks children, it creates opportunities for companies to develop profiles on them that may be used for targeted marketing. It also accustoms students to take their tracking for granted.[174] Already, some schools and districts claim that children should have no expectation of privacy.[175] For its part, Aurora Public Schools (APS) asks parents to sign a permission slip for the digital badging program that still leads parents to expect some privacy ("My contact information or that of my child's, will not be shared with anyone else, nor used for commercial purposes"). However, it is unclear how long the badges, along with their associated metadata, are to be held by Credly, the private company that provides them, or what the company might do with them. APS signed a nondisclosure agreement with Credly that disallows commercial use. But that agreement also points out that if the district agrees to allow students to share the badges publicly (which is how they are designed to be used, theoretically for employers to view students' qualifications) they would no longer be private. It is also unclear what happens to the privacy of students' badges once they graduate. Credly's general privacy policy for its service and website notes that users give up any expectation of "privacy, confidentiality, or privilege" of any of the information they provide or that is collected about them, and that the information will be used, among other purposes, to target advertising and measure the effectiveness of marketing campaigns.[176]

Corporate Socialization of Children

The APS promotional video on badging cited above features children lauding Google products and parroting corporate marketing materials that emphasize soft skills, such as "growth mindset," popular with education-technology companies.[177] It demonstrates how when schools adopt corporate teaching materials or engage children in corporate-sponsored programs or activities—regardless of whether those materials and programs are low-tech (such as teaching physics with Hot Wheels) or high-tech (such as awarding corporate-produced digital badges)—unless they are scrupulously regulated and controlled they will provide opportunities for corporations to market worldviews to children that are not necessarily in the children's best interests.[178]

Obviously, children come into contact with marketing materials outside of school all the time. This fact does not absolve schools' responsibility to provide children with educative rather than mis-educative experiences. John Dewey defined educative experiences as experiences that increase students' ability to have fruitful, creative, and enjoyable experiences

in the future.[179] Mis-educative experiences, in contrast, are those that arrest or distort the growth of future experience.[180] They may be fun at the time, or even increase some automatic skill, but they narrow the range and richness of possible future experience. When for-profit corporations are involved in schools, irrespective of what the particular surface aspects of a given relationship may be, the heart of the relationship is mis-educative. This is because for-profit corporations must maintain a focus on their bottom line—and what they provide to schools must benefit that bottom line. The tension between the educative mission of schools and the corporate imperative to earn profits means that when corporations enter the schools, there is going to be pressure to create student experiences and shape student attitudes in ways that support, or at least do not undermine, the corporate bottom line. This pressure is inherent in the relationship. For this reason, it is important for there to be independent, third-party review of corporate offerings to schools—to assess the potential value of the offering to students on the one hand, and the threats that it poses to their well-being on the other.[181]

Corporations may portray their activities in schools as socially responsible, or even as educative, but these activities almost always involve an attempt to influence students to buy, either immediately or in the future. Consider the examples described above: Teaching driving safety in a location named for a used-car dealer; teaching physics with branded toy cars; promoting running by offering prizes from New Balance; raising money by selling McDonald's. Each of these sponsorships promotes the products or worldview sold by their sponsors. All corporate commercializing activity in schools is mis-educative because at its core its primary purpose is to provide benefit to the corporation.

By allowing corporate access to children, schools turn over to corporations the opportunity to determine the values those children will hold and to determine what they think of as "common sense." Children are socialized by corporations to adopt an individualistic understanding of accomplishment and success. Advertising more overtly sells, and many education technology products more subtly promote, the individualist understanding that each person is responsible for his own successes and failures and that there are specific, material markers of success.[182] Children who adopt this understanding would find it natural to focus on both achievement and consumption. In other words, they would identify with an ideology of consumption that is inherent in the notion of being "college and career-ready" with "21st century skills." The goal of education for college and career-readiness is not to develop citizens who will contribute to civil society, but rather to develop successful "21st century workers" who, after working their way through a "playlist" of digitally-provided, common-core-aligned lessons, will have accumulated the skills to land a job that will make them enough money to buy all the things—beginning with a college degree—that will serve as markers of their success.[183]

This individualistic understanding of accomplishment does not explicitly point children away from participating in civil society; rather, it subverts the social commitment on which civil society depends by focusing children on their own individual achievement and consumption to the exclusion or diminishment of everything else. To the extent that children learn to focus on collecting the skills and credentials that will attract employers, on moving ahead so that they can get a high-paying job that will allow them to buy the latest gadgets, and on working long hours to pay off their student loans and credit card bills, involvement

in civil society becomes something they have little time for or interest in.

Asleep at the Switch

Although there are a few relatively comprehensive state student privacy laws, neither federal nor state law adequately protects children's privacy.[184] As Frida Alim and her colleagues at the Electronic Frontier Foundation point out, "the ed tech industry has moved faster than legislation aimed at protecting student privacy."[185] And even the most comprehensive state privacy laws enacted in the past several years, in California, Colorado, and Connecticut, contain specific exclusions for data collected for "personalized learning" purposes.[186] As collecting student data is essential to "personalizing," such language allows providers of "personalized learning" software to potentially use those data for software development and other commercial uses. It also creates a fence protecting a type of data collection that is designed not only to harvest a lot of data, but to shape students' educational progress and personal development without allowing real oversight from education professionals. "Personalized learning" software is slipping through the policy framework.

Conclusion

Education Week quoted a Colorado district administrator as saying, "A digital tool that understands what it is the teacher wants all students to know, and knows how each student thinks and learns, and gives the teacher ideas on how to present the material differently would be gigantic."[187] It is tempting not only for policymakers, but also for educators to accept the marketing promises of corporate sponsors and the claims made for educational technology. Before they do so, it would be well worth their while to carefully examine the unsubstantiated claims and inadequate privacy protections that digital platforms bring to schools, as well as the ideology these platforms promote. Our discussion suggests important cautions. Educational technology companies may resist sharing the proprietary algorithms that power their products, and they may find it time-consuming and costly to adequately research their effectiveness and secure collected data. However, schools' priorities must be to protect and educate the students entrusted to their care. For this reason, schools and districts must resist pressure to move quickly in adopting the latest education technology, and they must make education technology providers adapt to their needs, not the other way around.

Before adopting any software application for student use or allowing collection, storage, or transfer of any student information, school leaders must be confident that the software is both effective and safe. This requires: that the software, including the algorithms powering it and any surveillance it enables, be fully open to examination; that it be thoroughly documented so that educators can understand how it works; and, that research evidence be provided to demonstrate its utility, validity, lack of bias or error, and lack of threat to children's well-being—including threats to their privacy. Educators must be able to understand and approve the nature of data collected from children, how those data are used within the application to guide students' learning or satisfy other functions, how they are secured and

eventually disposed of, and what, if any, additional purposes they may serve.

Although education technology providers can and must be responsible for supplying the necessary research findings and other supporting materials, schools need more than providers' assurance. However, they currently have neither the ability nor the bandwidth to evaluate most evidence. If the algorithms powering the software were openly available, rather than proprietary and secret, educators and researchers could enter the conversation about how those algorithms operationalize important variables and, more generally, how they work. Further, a disinterested third-party entity, separately funded and with a directive to verify that any software introduced for use in schools does no harm to students, must be established to assess the software before it is adopted by schools. Such an open assessment and approval process for education technology applications needs to be mandated at the state and federal levels. Additionally, parents, teachers, and administrators—as individuals and through their organizations—can both demand these steps and make clear to policymakers and the public the real need for them. Adopting the latest education technology sounds exciting, and in certain instances it can be, but it also may present threats to children's well-being. Transparency and careful analysis are necessary to sift out these threats as much as possible.

And while these technical considerations are essential, it is important also not to lose sight of the forest while examining the trees. Communities should explicitly consider the larger question of what they want the role of K-12 education to be. The current default goal in many school districts is to mold the next generation of workers and consumers, to provide them with opportunities to develop potentially marketable skills by providing them with early training in skills desired by employers.[188] A different or complementary goal is for schools to strive to develop engaged citizens interested in and capable of participating in civil society.[189]

Stakeholders currently seem prone to being swayed by corporate claims that their sponsorship or platforms will lead to such desirable outcomes as "student engagement," "community," and "personalization." These claims should not be accepted at face value. Before proceeding, there are important questions to be asked and answered. If students will be "engaged," what will they be "engaged" in, and what is the value of that engagement? If a technology promises to build "community," what kind of "community" will be constructed? If it promises "personalization," what does "personalization" mean and what may be the costs, especially with respect to loss of privacy? And, in relation to all such claims, it is essential to critically assess the evidence provided to support them as well as the logic used to promote them. In other words, "Let the buyer beware." Now more than ever, students need community members and decision makers to be well-informed and skeptical as they consider calls for schools to adopt sponsorships and materials, particularly in the forms of education technology applications and platforms.

Recommendations

Decision makers should not rely on industry self-regulation to protect children's privacy and the quality of their education. Instead, legislators and policymakers should create clear

policies backed by strong, enforceable, sanctions that:

- Prohibit schools from collecting student personal data unless rigorous, easily understood safeguards for the appropriate use, protection, and final disposition of those data are in place.

- Hold schools, districts, and companies with access to student data accountable for violations of student privacy.

- Require algorithms powering education software to be openly available for examination by educators and researchers.

- Prohibit adoption of educational software applications that rely on algorithms unless a disinterested third party has examined the algorithms for bias and error; and valid data have shown that the algorithms produce intended results.

- Require independent third-party assessments of the validity and utility of technologies, and the potential threats they pose to students' well-being, to be conducted and addressed prior to adoption.

In addition, parents, teachers, and administrators—as individuals and through their organizations—should work to publicize both the threats that unregulated educational technologies pose to children and the importance of allowing access to the algorithms powering educational software.

Appendix A

The following websites associated with advertising and marketing, health care and nutrition, government policy, education, and academic research were regularly reviewed for material relevant to this report. These sites provide information on industry perspectives, advocacy perspectives, updates about government perspectives and regulatory activity, and information about new activities related to commercialism in schools.

Sources	Website	Relevance
American Advertising Federation	http://www.aaf.org/	Advertising industry organization
American Association of Advertising Agencies	http://www.aaaa.org/	Advertising industry organization
American Beverage Association	http://www.ameribev.org/	Food industry organization
Association of National Advertisers	https://www.ana.net/	Advertising industry organization
British Psychological Society	https://digest.bps.org.uk/	Occasionally reports on research about psychological implications of marketing to children
Campaign for a Commercial-Free Childhood	http://www.commercial-freechildhood.org/	Anti-commercialism child-advocacy organization
Canadian Centre for Policy Alternatives	https://www.policyalternatives.ca/	Canadian research institute concerned with issues of social, economic and environmental justice
Center for Digital Democracy	https://www.democraticmedia.org/	Consumer advocacy organization that focuses on digital technology
Center for Science in the Public Interest	https://cspinet.org/	Consumer advocacy organization that focuses on food marketing (including to children and in schools)
Class Size Matters	http://www.classsizematters.org/	Education advocacy organization that focuses on children and parents, including privacy protection
Code Acts in Education	https://codeactsineducation.wordpress.com/	Website that contains writing by Ben Williamson on technology in education
Consumers International	http://www.consumersinternational.org/	Consumer advocacy organization

Commercial Alert	http://commercialalert.org/	Consumer advocacy organization
Corporate Accountability International	https://www.stopcorporate-abuse.org/	Public advocacy organization
Data & Society	https://datasociety.net	Research institute that focuses on social and cultural issues arising from data-centric technological development
Education Week	http://www.edweek.org/ew/index.html	U.S. newspaper that covers K-12 education
Electronic Frontier Foundation	https://www.eff.org/	Non-profit organization that focuses on digital rights, including privacy
Electronic Privacy Information Center	https://www.epic.org/	Non-profit research center that focuses on privacy, freedom of expression, and democratic values in a digital context
Federal Communications Commission	http://www.fcc.gov/	United States government agency that regulates interstate communications
Federal Trade Commission	https://www.ftc.gov/	United States government agency charged with protecting consumers
Hack Education	http://hackeducation.com/	Website that contains writing by Audrey Watters about technology in education
Healthy Food America	http://www.healthyfoodamerica.org	U.S. nonprofit organization that focuses on food policy and industry practice, including marketing
Idle Words Blog (Maciej Cegłowski)	http://idlewords.com/talks/	Website that contains writing by Maciej Cegłowski about digital technology
Kidscreen	http://kidscreen.com/	Trade publication for children's entertainment professionals, including marketers
MedPage Today	http://www.medpagetoday.com/	Website for health care professionals that occasionally reports on relevant child-health research
National Academy of Medicine	https://nam.edu/	U.S. organization of eminent professionals in medicine and related disciplines that provides resources on child health

Parent Coalition for Student Privacy	http://www.studentprivacy-matters.org/	A project of Class Size Matters that focuses on children's privacy
Rudd Center for Food Policy and Obesity	http://www.uconnruddcenter.org/	Non-profit research and public policy organization that focuses on food policy and children's health
The Lunch Tray	http://www.thelunchtray.com/	Website that contains writing by Bettina Elias Siegel about children and food policy

Notes and References

1   Molnar, Alex (2003, March 9). *The commercial assault on children and the school environment.* Presented at the annual meeting of the Association for Supervision and Curriculum Development, San Francisco, CA.

2   Although now we use the sanitized term "sponsored educational materials," in the past the materials offered by schools were more accurately referred to as "propaganda."

     National Education Association (1929, July). *Report of the Committee on Propaganda in the Schools.* Presented at the meeting of the National Education Association, Atlanta, GA. Retrieved October 21, 2015, from http://catalog.hathitrust.org/Record/006581884

3   *The Economist.* (2006). Trillion-Dollar Kids. Retrieved May 23, 2017, from http://www.economist.com/node/8355035

     For an example, see:

     LaReau, J. (2016, September 19). What EchoPark learned from Apple marketing strategy: Get them while they're young. *Automotive News.* Retrieved January 20, 2016, from http://www.autonews.com/article/20160919/RETAIL03/309199987/what-echopark-learned-from-apple

4   For one particularly egregious case, see:

     Molnar, M. (2014, December 9). Millions of Student Records Sold in Bankruptcy Case. *Education Week.* Retrieved June 14, 2017, from http://www.edweek.org/ew/articles/2014/12/10/millions-of-student-records-sold-in-bankruptcy.html

     For an example of a privacy policy that discusses the transfer of customer information as an asset in a sale, see:

     Bark (2017). Privacy Policy. Author. Retrieved July 6, 2017, from https://www.bark.us/privacy

5   Brown, Lesley, ed. (1993). *The new shorter Oxford English dictionary.* Oxford: Clarendon press, p. 451

     Twitchell, James B. (1999). *Lead us into temptation.* New York, NY: Columbia University Press, p. 30.

     Jacobson, Michael F. & Mazur, Laurie A. (1995). *Marketing madness*, Boulder, CO: Westview Press, p. 12.

6   Dictionary.com (n.d.). *Marketing.* Author. Retrieved February 25, 2014, from http://dictionary.reference.com/browse/Marketing

     Dictionary.com (n.d.). Advertising. Author. Retrieved February 25, 2014, from http://dictionary.reference.com/browse/advertising?s=t The word "advertising" derives from the Latin, "ad-vertere," which means "to turn toward."

     Online Etymology Dictionary (n.d.). Advertise. Author. Retrieved October 28, 2015, from http://www.etymonline.com/index.php?term=advertise

7   Healthy Weight Commitment Foundation (2015). School Toolkit. *Together Counts.* Retrieved December 22, 2015, from http://www.togethercounts.com/school-toolkit

8   Iasevoli, B. (2017, April 20). Los Angeles Unified School District Not Lovin' McTeacher's Nights. *Education Week.* Retrieved May 1, 2017, from http://blogs.edweek.org/edweek/teacherbeat/2017/04/los_angeles_unified_school_dis.html

9   Although McDonald's has claimed not to send Ronald McDonald to schools, its marketing of school visits suggests otherwise. On its website, http://mcdonaldsneo.com/ronald-request/ , McDonald's of Northeast Ohio, for instance, promotes the following: "There are a variety of programs and activities available for almost

any venue including visits to elementary schools, libraries, parades, fairs, fundraisers/charity events, hospital, community events, summer camps, recreation centers, and sporting events. And best of all—his appearances are free of charge!"

10   Sukarieh, M. & Tannock, S. (2009, November 17). Putting school commercialism in context: a global history of Junior Achievement Worldwide. *Journal of Education Policy, 24*(6). Retrieved May 1, 2017, from http://www.tandfonline.com/doi/abs/10.1080/02680930903294636

11   Apex Fun Run (n.d.). How to get a pledge [vimeo video]. Retrieved March 8, 2016, from https://vimeo.com/133144303

Grinberg, E. (2015, August 27). PTA fundraiser lets parents donate cash instead of cupcakes. *CNN.com.* Retrieved March 7, 2016, from http://www.cnn.com/2015/08/27/living/pta-fundraiser-bake-sale-alternative-feat/

12   Englehardt and Narayanan's extensive and detailed mapping of online tracking shows the variety of tracking technologies in regular use.

Englehardt, S., & Narayanan, A. (2016, October). *Online tracking: A 1-million-site measurement and analysis.* Presented at the 23rd ACM Conference on Computer and Communications Security, Vienna, Austria. Retrieved July 6, 2017, from http://randomwalker.info/publications/OpenWPM_1_million_site_tracking_measurement.pdf

13   Jhally, S. (2005). *Advertising as social communication* (online course; part one: Why study advertising?). Retrieved July 22, 2009, from https://vimeo.com/32949613

Kanner, A.D. (2008, November). *Now, class, a word from our sponsors. . .* Boston, MA: Campaign for Commercial Free Childhood. Retrieved January 29, 2013, from http://www.commercialfreechildhood.org/sites/default/files/kanner_nowclassaword.pdf

14   Jhally, S. (1997). *Advertising and the end of the world.* Media Education Foundation. Retrieved April 21, 2016, from http://www.mediaed.org/assets/products/101/transcript_101.pdf

Jhally, S. (2005). *Advertising as social communication* (online course; part one: Why study advertising?). Retrieved April 25, 2016, from https://vimeo.com/32949613

Kanner, A.D. (2008, November). *Now, class, a word from our sponsors. . .* Boston, MA: Campaign for Commercial Free Childhood. Retrieved January 29, 2013, from http://commercialfreechildhood.org/sites/default/files/kanner_nowclassaword.pdf

15   Jhally, S. (2005). *Advertising as social communication* (online course; part one: Why study advertising?). Retrieved April 25, 2016, from https://vimeo.com/32949613

Jhally, S. (1997). *Advertising and the end of the world.* Media Education Foundation. Retrieved April 21, 2016, from http://www.mediaed.org/assets/products/101/transcript_101.pdf

Kanner, A.D. (2006, January/February). The corporatized child. *The California Psychologist, 39*(1). Retrieved April 25, 2016, from http://commercialfreechildhood.org/resource/corporatized-child

16   Cultural observers long have noted that propaganda is most effective when it goes unnoted:

"This is the secret of propaganda: those who are to be persuaded by it should be completely immersed in the ideas of the propaganda, without ever noticing that they are being immersed in it." Attributed to Nazi propagandist Joseph Goebbels, cited in, among many other places,

Pratkanis, Anthony and Elliot Aronson (2001*). Age of propaganda: The everyday use and abuse of persuasion.* New York, NY: Holt Paperbacks (87).

"Individuals are controlled through the power of the norm and this power is effective because it is relatively invisible. In modern society, the behaviour of individuals is regulated not through overt repression, but through a set of standards and values associated with normality which are set into play by a network of ostensibly beneficent and scientific forms of knowledge."

McNay, L. (1994). *Foucault: A critical introduction.* Cambridge, MA: Polity (94-95).

"So the images, the values, the ideas of advertising are lodged inside us because that's the way all culture works. To not be influenced by advertising would be to live outside of culture. No human being lives outside of culture."

Jhally, S. (1997). *Advertising and the end of the world.* Media Education Foundation. Retrieved April 21, 2016, from http://www.mediaed.org/assets/products/101/transcript_101.pdf

17   The "third person effect" refers to the phenomenon that people tend to think that advertising and other such communications influence others more than themselves. See,

Shavitt, S., Lowrey, P., & Haefner, J. (1998, July 1). Public attitudes toward advertising: More favorable than you might think. *Journal of Advertising Research, 38*, 7-22.

Wilson, T.D., & Bar-Anan, Y. (2008). The unseen mind. *Science, 321*, 1046–1047. Retrieved April 25, 2016, from http://www.cs.cornell.edu/courses/cs5846/2008fa/sciencemagarticle.pdf

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19   LaReau, J. (2016, September 19). What EchoPark learned from Apple marketing strategy: Get them while they're young. *Automotive News.* Retrieved January 20, 2016, from http://www.autonews.com/article/20160919/RETAIL03/309199987/what-echopark-learned-from-apple

For more on Apple in classrooms, see:

Singer, N. (2017, March 2). Apple's devices lose luster in American classrooms. *New York Times.* Retrieved March 9, 2017, from
https://www.nytimes.com/2017/03/02/technology/apple-products-schools-education.html

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21   LaReau, J. (2016, September 19). What EchoPark learned from Apple marketing strategy: Get them while they're young. *Automotive News.* Retrieved January 20, 2016, from http://www.autonews.com/article/20160919/RETAIL03/309199987/what-echopark-learned-from-apple

22   Barker, J. (2016, January 28). With university deals, Under Armour aims to fill in US map. *Baltimore Sun.* Retrieved January 30, 2017, from http://www.theolympian.com/sports/article129331094.html

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25   White, A. (2016, December 21). Mattel to double down on influencer campaigns in 2017. *Kidscreen.* Retrieved May 12, 2017, from
http://kidscreen.com/2016/12/21/mattel-to-double-down-on-influencer-campaigns-in-2017/

26 Mattel, Inc. (2016, January 13). Innovative STEM program launched by USC Rossier School of Education and Mattel Children's Foundation indicates positive impact on students. Author. Retrieved January 24, 2017, from http://www.prnewswire.com/news-releases/innovative-stem-program-launched-by-usc-rossier-school-of-education-and-mattel-childrens-foundation-indicates-positive-impact-on-students-300203977.html [press release]

27 Mattel, Inc. (n.d.). Hot Wheels Speedometry. Retrieved January 26, 207, from http://hotwheels.mattel.com/en-us/content/images/speedometry/SpeedometryGrade4_TEKS.pdf

28 The Billion Mile Race rules explicitly reward only walking and running, not other physical activities such as dance, sports, or classroom-based movement programs.

New Balance Foundation and Active Schools Acceleration Project (n.d.). FAQS [website]. Retrieved May 1, 2017, from http://www.billionmilerace.org/faq

29 Helloworld, Inc. (2016). New Balance School Shoe Make-over Contest Official Rules. Author. Retrieved March 7, 2017, from http://www.billionmilerace.org/contestrules

30 New Balance Foundation and Active Schools Acceleration Project (n.d.). May prize: $300 to US Games [website]. Retrieved May 1, 2017, from http://www.billionmilerace.org/prizes

31 Not every aspect of the sponsored materials is this blatant, but this math problem in the second-grade activity on counting by 5s and 10s is worth noting: "Dominick is saving money so that he can buy a new pair of running shoes. He starts with $6. Each week he is able to save $5. How much will he have saved after 8 weeks? Fill in the blanks below. Will Dominick be able to buy a pair of shoes that cost $35? Show your work."

New Balance Foundation and Tufts University Friedman School (n.d.). Grade 2 lesson: Skip counting by 5s and 10s. Author. Retrieved March 8, 2017, from http://billionmilerace.org/sites/default/files/images/BMR_Grade2_Lessons.pdf

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At the time this news segment was created, the sponsors reported that two million children in 7000 schools across the United States were participating in the Billion Mile Race.

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Corporate Accountability International and Campaign for a Commercial-Free Childhood (n.d.). Stop McTeacher Nights [Website]. Retrieved January 26, 2017, from http://www.commercialfreechildhood.org/action/stopmcteachersnights

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Monahan, D. (2017, April 19). Personal communication (e-mail) with Faith Boninger.

40 As evidence of the debate over McTeacher Nights, after extensive discussion at its annual meeting in July 2017, the National Education Association (NEA) decided not to adopt a resolution opposing them. The NEA, along with several state and local teachers unions, however, signed an October 2015 letter to McDonald's CEO Steve Easterbrook urging him to discontinue the fundraisers. For the letter, see:

Corporate Accountability International and Campaign for Commercial-Free Childhood (n.d.). *Letter to Steve Easterbrook*. Author. Retrieved July 19, 2017, from https://www.stopcorporateabuse.org/sites/default/files/resources/openlettertomcdonalds_with_new_signatories_11_12_15.pdf

For reporting of the Los Angeles district policy, see:

Blume, H. (2017, April 18). L.A. school board targets McTeacher's Nights, but not all fast-food fundraisers. *Los Angeles Times*. Retrieved April 28, 2017, from http://www.latimes.com/local/lanow/la-me-edu-los-angeles-schools-ban-mcteachers-20170418-story.html

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Google (n.d.). G Suite for Education Privacy Notice. Author. Retrieved July 6, 2017, from https://gsuite.google.com/terms/education_privacy.html

For an analysis, see:

Gillula, J. & Cope, S. (2016, October 6). G*oogle changes its tune when it comes to tracking students. Electronic Frontier Foundation*. Retrieved July 6, 2017, from https://www.eff.org/deeplinks/2016/10/google-changes-its-tune-when-it-comes-tracking-students

45 For lists of all of Google's services, see:

Google (2017). G Suite for Education Core and Additional services. Author. Retrieved May 8, 2017, from https://support.google.com/a/answer/6356441?hl=en

For discussion of how students may be tracked as they move around on the Internet, see:

Boninger, F. & Molnar, A. (2016). *Learning to be Watched: Surveillance culture at school—The eighteenth annual report on schoolhouse commercializing trends, 2014-2015*. Boulder, CO: National Education Policy Center. Retrieved December 14, 2016, from

http://nepc.colorado.edu/publication/schoolhouse-commercialism-2015

For a transparent explanation of how a user may be tracked at a commonly-used site, see:

Dictionary.com, LLC (2016, January 26). Terms of service and privacy policy. Author. Retrieved July 6, 2017, from http://www.dictionary.com/terms

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Getzler, W.G. (2016, June 15). The entertainer's guide to the multi-billion-dollar classroom. *Kidscreen.com*. Retrieved July 11, 2016, from http://kidscreen.com/2016/06/15/the-entertainers-guide-to-the-multi-billion-dollar-classroom/

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Boninger, F. & Molnar, A. (2016). *Learning to be Watched: Surveillance culture at school—The eighteenth annual report on schoolhouse commercializing trends, 2014-2015.* Boulder, CO: National Education Policy Center. Retrieved December 14, 2016, from http://nepc.colorado.edu/publication/schoolhouse-commercialism-2015

Alim F., Cardozo, N., Gebhart, G., Gullo, K, & Kalia, A. (2017, April 13). *Spying on students: School-issued devices and student privacy*. Electronic Frontier Foundation. Retrieved May 1, 2017, from https://www.eff.org/wp/school-issued-devices-and-student-privacy

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50 For the text of the law, see:

"Family Educational Rights and Privacy Act" (FERPA). 20 U.S.C. § 1232g. Retrieved May 1, 2017, from https://www.law.cornell.edu/uscode/text/20/1232g

51 For extensive discussion of the lack of accountability associated with the Student Privacy Pledge, see:

Boninger, F. & Molnar, A. (2016). *Learning to be Watched: Surveillance culture at school—The eighteenth annual report on schoolhouse commercializing trends, 2014-2015.* Boulder, CO: National Education Policy Center. Retrieved December 14, 2016, from http://nepc.colorado.edu/publication/schoolhouse-commercialism-2015

Frida Alim and her colleagues at the Electronic Frontier Foundation (EFF) report on the Federal Trade Commission's inactivity with respect to EFF's complaint about Google. For EFF's report, see:

Alim F., Cardozo, N., Gebhart, G., Gullo, K, & Kalia, A. (2017, April 13). *Spying on students: School-issued devices and student privacy* (p.25). Electronic Frontier Foundation. Retrieved May 1, 2017, from https://www.eff.org/wp/school-issued-devices-and-student-privacy

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The following privacy policies report similar data collection:

Kidblog (2016). Privacy policy. Author. Retrieved July 29, 2016, from http://kidblog.org/home/privacy-policy/

StudyStack, LLC (2016). Privacy Statement. Retrieved July 29, 2016, from http://www.studystack.com/Privacy

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      Press, G. (2013, June 18). Big data news: A revolution indeed. *Forbes.com*. Retrieved February 21, 2016, from http://www.forbes.com/sites/gilpress/2013/06/18/big-data-news-a-revolution-indeed/#1e6d81397b9f

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