Digital Ethics in Times of Crisis: COVID-19 and Access to Education and Learning Spaces

A collaborative contribution by the participants in an "Ethics of Digitalization" Research Sprint

An initiative hosted by

BERKMAN KLEIN CENTER
FOR INTERNET & SOCIETY
AT HARVARD UNIVERSITY

GLOBAL NETWORK OF **INTERNET AND SOCIETY** RESEARCH CENTERS

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At this moment and intersectionality, digital technologies highlight both opportunities and possibly long-lasting challenges that have profound ethical implications for decades to come: At its best, digital technology can be used during COVID-lockdowns to promote and support learning across spheres and barriers. At its worst, digital technologies create new inequalities between digital haves and have-nots and amplify surveillance concerns. Berkman Klein's Fall 2020 Research Sprint — "Digital Ethics in Times of Crisis: COVID-19 and Access to Education and Learning Spaces" — examined the ethical, human rights, and societal aspects of digital transformation with an emphasis on education and learning at a moment of unprecedented crisis when both young people and adult learners around the globe are deeply affected by the COVID-19 pandemic. The Sprint brought together a cohort of approximately 40 student participants from 21 different countries spread over five continents, under a project led by the Global Network of Internet & Society Centers on the Ethics of Digitalization. The project aims to cultivate dialogue and action at the intersection of science, politics, the digital economy, and civil society broadly. The larger initiative is conducted under the patronage of German Federal President Frank-Walter Steinmeier and is supported by Stiftung Mercator.

The goal of the Research Sprint was to engage students and experts from the Global Network of Internet and Society Centers and expert stakeholders to produce an issues map — this resulting document — that outlines relevant issues and corresponding questions that policy-makers around the globe need to address in order to harness the benefits of digital technologies while avoiding some of the possible downsides during the current crisis — and as we collectively need to prepare better for the next crisis.

TABLE OF CONTENTS

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Introduction

During the fall of 2020, the Berkman Klein Center hosted a ten-week "Research Sprint" which convened a global cohort of approximately 40 student participants from 21 different countries spread over five continents, under a project led by the Global Network of Internet & Society Centers (NoC) on the Ethics of Digitalization. The project advances dialogue and action at the intersection of science, politics, the digital economy, and civil society broadly. The Research Sprint explored specific normative questions around the disruption, challenges, and opportunities that the COVID-19 pandemic represents in the realm of education. This Sprint is one in a series that will take place over the next year and follows a first Sprint hosted by Berlin's Humboldt Institute on platform governance. The larger initiative is conducted under the patronage of German Federal President Frank-Walter Steinmeier and is supported by Stiftung Mercator.

Berkman Klein's Fall 2020 Research Sprint examined the ethical, human rights, and societal aspects of digital transformation with an emphasis on education and learning at a moment of unprecedented crisis when both young people and adult learners around the globe are deeply affected by the COVID-19 pandemic. The Sprint focused on access to education — both in terms of educational resources and learning spaces, such as schools, campuses, museums, studios, clubhouses, afterschool settings, and maker-spaces. In this context, the Sprint examined unforeseen economic, social, and political challenges and consequences around COVID-19 and learning and explored opportunities for flourishing and well-being by considering the ethical implications of digital technologies.

The goal of the Research Sprint was to engage students and experts from the Global Network of Internet and Society Centers and expert stakeholders to create a map of the relevant issues and corresponding questions that policy-makers around the globe need to address to harness the benefits of digital technologies while avoiding some of the possible downsides during the current crisis — and as we collectively need to prepare better for the next crisis. As an experimental educational program, our intention was to both explore this topic in depth while also creating a truly "global classroom" where students from all around the world — many of whom, under normal circumstances, may not have been able to participate in such a program — could engage difficult ethical and other questions of digital transformation among one another and with practitioners, scholars, designers, policy-makers, and industry leaders.

This document is the result of an iterative co-creation process among student participants, program staff, and experts. Each of the snapshots found below represents a concise synthesis of each of the program's anchor sessions and associated themes. The program regularly invited active contribution and was designed for all participants to serve as equal contributors.

During the Sprint, the session syntheses served as a living document where each participant generated knowledge and insight through their contributions in anchor sessions, breakout sessions, smaller working groups (reconfigured a number of times through the course of the Sprint to maximize participant exposure to students from other regions and disciplines), and through formal written and oral feedback, comments, amendments, and edits. Many of the sessions, and topics and questions explored, were prompted by session experts ("Sparks"), who spoke to a variety of themes, and, as a result, are more often featured in the descriptions below as a function of representing a general topic of discussion among many Sprint participants. The scoping of each session was supported by external advisors and the Berkman Klein Center's research team.

Given the diversity of contributors, opinions, and disciplines in the program, the synthesis offered below is by no means comprehensive or representative of all the themes discussed or reflective of the group's

common perspectives. Indeed, during the program, participants often spiritedly disagreed or added complex nuance to topics, particularly in domains and regions that require contextual knowledge and lived experience. As a result of the format we've chosen for the synthesis, prioritizing succinct takeaways and a selection of questions and reference materials, we recognize that some nuance may be lost, and descriptions may be more general than the discussions held during the program.

Additionally, the summaries represent only one component of the materials, research, and insight gleaned by our cohort. Through weekly research assignments, student participants created a rich body of knowledge, including literature, case studies, visualizations, images, frameworks, and interactive modules that helped to inform the creation of the summary documents, and a selection of which will be made available on the Sprint website.

Finally, we are deeply grateful to all the students, contributors, and staff for their time and willingness to participate in this experiment. We consider all individuals to be co-authors of this document. Special thanks to Harvard Law School student Sidharth Chauhan and Berkman Klein staff members Alexa Hasse and Amar Ashar for assistance in drafting these summaries.

Some Common Themes

A number of salient themes were present throughout almost every discussion and anchor session of the program. Many of these themes were both overtly related to each session's topic and implicitly present or adjacently related to the discussion at hand. The persistence of these threads across all of our conversations demonstrated how many of the challenges students, teachers, administrators, parents and caregivers, decision-makers, and policy-makers faced even before the COVID-19 pandemic represent persistent problems that educational systems were already struggling with. A selection of cross-cutting topics in our discussions included the following, with further information about the dimensions of these challenges found in individual session summaries.

Nearly every expert and student contribution examined COVID's disruption to education and its ethical implications through the lens of **inequality**, including where inequalities were particularly exacerbated, and which types of groups and communities were impacted. This theme was present across all Sprint sessions. The economic, political, and social challenges to **access** to broadband connectivity, as well as (and as importantly) **access to skills** and environments for general well-being and safety, were addressed across a spectrum of conversations throughout our sessions, notably in our introductory sessions, discussion on inclusion, and in dialogue with governments and technology providers. Our discussions focused on **privacy, surveillance, and safety** explored ethical questions educators and students were already facing that only became thornier during the pandemic. This dialogue prompted questions about **new social relations** and the reconfiguration of **social contracts** between the private sector, civil society, academia, and communities. Relatedly, these new social contracts are under re-negotiation against the backdrop of dramatic shifts in power and responsibility between the public and private sectors across all corners of the globe. We explored this set of issues in depth during a session on supervision and surveillance and in a discussion with government and technology providers. Students and experts alike reiterated the importance of **social and emotional learning** as well as personal **well-being** at a time where threats to physical and mental health are elevated, which we touched on during our introductory discussion, conversation on inclusion, and dialogue on learning everywhere.

In the context of the pervasive theme of inequality, it should be noted that the current global health crisis has made more visible existing **ethnic and racial disparities**, discussed in nearly all sessions of the Sprint. More specifically, COVID-19, and the increased visibility of police brutality against Black individuals, has further exposed anti-Blackness that is far-reaching and endemic to many parts of the world. As elaborated upon in our introductory session, in the U.S., Black Americans are at a disproportionately increased risk of COVID-19 exposure, stemming from factors rooted in systemic racism, such as overrepresentation in essential industries and overcrowded living conditions. Such inequities are mirrored in many regions of the world and raise key questions about how policy interventions can address systemic racism and promote equitable educational opportunities.

The pandemic deepened, transformed, heightened, and even relieved some pressures because of the new and reconfigured dynamics of COVID-19. The Research Sprint program sought to introduce a **series of analytical lenses** throughout these discussions that students could use to scope the range and utility of their contributions. A selection of these lenses included: learning in formal and informal contexts; urban and rural divides; economic, social, and political differences and dynamics; locales and contexts, connecting the regional to the global; social interventions and technical solutions; and lifelong learning. Although these lenses are not comprehensive of the spectrum of perspectives experts and participants brought to bear over the course of our ten-week Sprint, they offered a useful starting point for fruitful engagement within our cohort.

SPOTLIGHT 1: WHAT WE KNOW AND WHAT WE DON'T KNOW

SPOTLIGHT 1: WHAT WE KNOW AND WHAT WE DON'T KNOW

Introduction

COVID-19's disruption to educational spaces, systems, participants, and stakeholders — a disruption still happening very much in real-time — has been swift and dramatic. The many parallel and overlapping tectonic shifts that students, parents and caregivers, administrators, policy-makers, and researchers must adapt to are only beginning to be understood, and there is much still unknown to us as the pandemic continues to unfold. Against this background, and drawing from the perspectives of different domain experts hailing from distinct regions across the globe, this session focused on what we know and what we don't know in terms of the pandemic's disruptive impact on access to education and learning spaces. What types of access to educational resources and environments of personal, social, or institutional learning have been lost? What is the role of digital technologies in creating alternative pathways for education and learning across demographics and geographies? Who benefits and who is left out? What are the current assessments of the near- and longer-term implications of these disruptions?

Key Themes

1. **The pandemic is amplifying existing inequities across many dimensions, including access, skills, and infrastructure.**

> **"My concern goes beyond access and connectivity issues to the challenges of re-skilling, equity, inclusion, and how [these elements] influence one's sense of identity."** – Sakshi Ghai, Research Sprint student participant

Inequalities across regions and locales, demographic groups, learning environments, and among learners themselves existed well before the onset of the pandemic. However, COVID-19's disruption has heightened and exacerbated inequalities in ways both unanticipated and expected. One expert participant described growing disparities in their home region, where many students and teachers in Chile don't have access to personal laptops or desktop computers at a moment where these are critical tools for learning. They further explained that many teachers and students also do not have the requisite skills to engage because the adoption of new (or old) technologies still requires training, understanding, and maintenance. The expert pointed out how many students download educational content for school through, for instance, their mobile phone on the WhatsApp platform, creating new dissemination and usage challenges for students and teachers alike. Similarly, in the Philippines, modular learning approaches, where printed self-learning materials are provided to students, is the primary and most preferred choice for K-12 learners, which may be partially attributed to inequities in Internet connectivity.

One Research Sprint participant pointed out that obstacles in the context of the shift to online learning may be seen across many countries. For instance, they noted that although countries such as Japan and the U.S. are among the most resilient economies, they lacked adequate preparation for significant digital education and learning. And, as one expert noted, preliminary research — in the form of focus groups of youth ages 9-16 from around the world, conducted as

part of a UNESCO initiative — shows that young people are concerned about growing inequalities related to digital technologies and new divides that may emerge as a result of COVID-19.

In addition to access disparities, there are also gaps in access to conducive learning spaces within homes for students, often in low-income areas. While many may have access to digital technologies, using them effectively for learning may be challenging when home living environments do not afford the same tools and support as schools. As Research Sprint participants suggested, unequal access to learning will have greater secondary consequences across societies. For example, parents, particularly women, may be less able to participate in the workforce due to increased familial responsibilities, which may have long-lasting consequences for economies and equality more broadly. Participants also noted that learners with disabilities, including visually or auditorily impaired students, may face even greater participation barriers using rapidly deployed digital platforms.

2. **Given that COVID-19 has particularly deleterious effects on specific underrepresented groups — such as Black children and families — policy interventions should focus on addressing systemic racism and cultivating equitable, high-quality educational opportunities.**

As a Sprint participant explained, data shows us that certain groups of individuals are more vulnerable to COVID-19. In the U.S., for example, the Centers for Disease Control and Prevention has found that Black and Hispanic children are particularly vulnerable to severe forms of COVID-19. Additionally, data from the U.S. indicates that while Black Americans comprise 13% of the population, they represent 34% of COVID-19 deaths. Outside of the U.S., in Brazil's São Paulo state, those of color are 62% more likely to die from the virus than those who are white. In England and Wales, those who are Black or males of Pakistani or Bangladeshi origin are almost twice as likely to die from COVID as white individuals, even when factoring in variables such as class.

As a recent article from the Society for Research in Child Development points out, disproportionate death rates for Black Americans, for example, is rooted in systemic racism that may increase individuals' exposure to the virus. Examples of such systemic racism include crowded housing, overrepresentation in essential industries, and dependence on public transportation. Black Americans are also more likely to have low-quality healthcare and face exposure to environmental toxins, both associated with diseases that may increase the likelihood one contracts COVID.

Additionally, research indicates that Black children are especially susceptible to negative psychological effects of the global pandemic. Nearly three-fourths (71%) of Black adolescents in the U.S. are concerned that a family member or they themselves will be exposed to COVID. Stress connected to the health crisis is further exacerbated by race-related trauma surrounding police violence — or, state-sponsored violence — against Black individuals.

In the context of education, already-existing inequities in Internet connectivity place Black children and youth at a further disadvantage. A Pew Research Center study finds that, in the U.S., the "homework gap" — school children's lack of at-home Internet connectivity needed to complete homework — is especially pronounced for Hispanic, Black, and low-income homes.

Studies also point to the discrimination Black students face in school. A survey in the U.K. found that 95% of Black individuals ages 16-30 have heard and witnessed racist language in school — with 51% of Black males indicating that they encounter this language "all the time." Additionally, about half (49%) indicate that racism is the largest barrier to academic achievement. Other studies around the world suggest that racism in schools is a global concern (e.g., see here and here).

3. **There are growing privacy and safety concerns around the ways students' data — gathered, for instance, by educational technology platforms — is collected, stored, and used.**

Both experts and Research Sprint participants described how, for both short-term crisis response and the long-term well-being of students, there is a need to better understand 1) privacy and surveillance issues surrounding educational technologies and 2) how to teach students to handle privacy issues in the digital world effectively. For instance, educators might consider how to foster conversations with students about data safety, and critically think about the educational technologies they are currently using and mechanisms of student data collection. Questions may range from where data is being stored to if and how such data might be used in the future by educators, administrators, policy-makers, and technology service providers.

Additionally, there are increasing concerns about how to keep students safe online. Based on recent youth focus group study findings, an expert participant suggested many young people are concerned that they are not ready to navigate the challenges of the digital environment, including issues such as cyberbullying. The study indicated that youth are also concerned about issues that may have received less attention in the literature thus far, such as participation in digitally mediated environments where interactions may be monitored and recorded.

4. **Social and emotional elements are key facets of successful learning.**

Socialization, which often takes place organically in formal learning contexts and afterschool activities, may be hampered by online learning spaces. An expert participant explained that learning entails social and emotional communication that is difficult to convey via digital technologies. Another expert's findings from focus groups with teenagers similarly indicate that many young people are concerned about the rise of technology in the context of social relationships. They feel that this may mean fewer opportunities to interact meaningfully with their peers. Many focus group participants also noted that they would prefer to learn in-person versus online.

> **"Learning entails emotional communication, which is hard to convey over technology."**
> – Daniel Bell, Research Sprint expert contributor

5. **It's important to consider students' local and contextual realities in creating meaningful educational spaces and opportunities.**

By way of example, as one expert participant noted, one key observation from youth workshops he led in Chile is that young people[1] (broadly speaking) tend to think of their future in terms of income potential for their family (sometimes in contention with developing an interest-based career). By contrast, based on his study findings, in Uruguay, many youth envision their future around their desired pathways or careers. While these insights can not be generalized across both countries, the findings highlight the importance of shaping educational opportunities around youth's contexts.

Additional questions around different country/regional approaches, educational levels, and pedagogical objectives reinforced the importance of local knowledge and context to inform decision-making. Research Sprint participants noted that definitions of "education" vary across contexts, and clearer definitions are needed to tailor interventions and solutions. Further, technologies themselves are embedded and used within certain contexts and applications and re-

1 Unless otherwise stated, in this document, "young people" or "youth" refer to those who are 12 to 18 years old.

quire implementation suited to students' individual needs. Particularly for traditionally underrepresented, marginalized, or intersectional communities, it is essential that policy-makers take such contextual considerations into account.

Participants also emphasized distinctions between online learning and "emergency" remote learning, where "remote" learning/teaching acknowledges the urgent but transient nature of the situation, allows for creative pedagogical methods beyond the "online," and takes into account students' access limitations.

6. Educational systems require more robust tools for resilience and durability.

> **"Online education is not a new thing, but is widely used on a global level since the pandemic. To some extent, the pandemic did not interrupt education, but pushed us to step into a new phase."** – Jingyi Yu, Research Sprint student participant

COVID-19 has challenged the durability of systems and infrastructure, particularly in formal educational settings, where so much is designed around in-person interaction and physical buildings. The pandemic has highlighted the need for educational systems to build better capacities for crisis response, including and beyond major public health events, given that large-scale disruptions are more likely to increase over the next decade due to forces like climate change. Schools serve not only educational functions for students but also provide environments and services for well-being and the promotion of human rights, and access to basic needs like nutrition. Understanding educational systems and their many functions will help to increase resiliency for the next great disruption.

To build these functions, one intervention suggested by experts is the development of educator communities of practice. As an expert contributor noted, it may be helpful for teachers, school leaders, and other stakeholders, such as policy-makers, to form communities of practice where they can share knowledge around ways to best approach online learning and education. As the expert noted, areas of focus within such communities may include understanding the science of learning (i.e., "how do students learn most effectively?") and best practices in online education, with a view towards considering how to translate those insights into policy.

> **"In the educational setting, COVID-19 has shown that many things that did not seem feasible in the past can now be implemented."** – Annabell Bils, Research Sprint expert contributor

Participants also discussed the importance of leveraging technologies to create and reconfigure social relationships, especially between teachers, students, and parents. For instance, one Sprint participant described the popularity of "virtual deskmates" in China, where digital avatars of real students help to serve as learning partners and use digital co-presence as a means to create accountability and companionship.

Emerging Questions

1. Given youth's concerns around what the rise of digital technologies may mean for how they socialize with their peers, how can we create more meaningful and engaging social experiences within digital environments or in hybrid online/offline spaces?
2. How can teachers and policy-makers create a safe digital space that supports students' mental health and well-being when they are learning online?
3. How can we further take into account students' contexts — particularly students from underrepresented groups, whether in terms of age, ethnicity, race, gender and sexual identity, religion, national origin, location, skill and educational level, and/or socioeconomic status — in the design of emerging educational opportunities?
4. What are the ways we define access to educational spaces and learning, and how are those being redefined during the pandemic?
5. How might enhanced interoperability and coordination between local, national, state, and international systems ensure better learning outcomes? And are there lessons from informal learning contexts that we can apply to formal learning contexts?
6. How can we ensure that the distribution of aid resources is more equitable, both domestically and globally, to increase the accessibility of digital education?
7. What will be the long-term economic impact of the increasing skill gap exacerbated by the pandemic on labor force participation in the future? Will this affect the kind of jobs that youth will pursue?
8. Given that COVID-19 has disproportionately impacted certain underrepresented groups, such as Black children and youth, how can policy efforts more effectively address systemic racism and promote accessible, high-quality educational opportunities?
9. How can we develop communities of practice among educators, school staff, policy-makers, and other stakeholders to share knowledge around ways to approach learning and education in the digital world? How can these insights be translated into policy?
10. How can we facilitate opportunities for educators operating within formal and informal learning spaces to better understand the science of learning?

Suggested Resources

- Policy brief: The impact of COVID-19 on children - United Nations
- Supporting teachers in back-to-school efforts after COVID-19 closures: A toolkit for school leaders - United Nations Educational, Scientific and Cultural Organization (UNESCO)
- Education for the most marginalised post-COVID-19: Guidance for governments on the use of digital technologies in education - Tim Unwin, Azra Naseem, Alicja Pawluczuk, Mohamed Shareef, Paul Spiesberger, Paul West, and Christopher Yoo (UNESCO and EdTech Hub)

- Addressing inequities in education: Considerations for Black children and youth in the era of COVID-19 - Noni Gaylord-Harden, Valerie Adams-Bass, Erin Bogan, Lori Francis, Judith Scott, Eleanor Seaton, and Joanna Williams (Society for Research in Child Development)
- Black and Hispanic children face health care inequality amid COVID-19 - Marion Hart (United Nations Children's Fund)
- Underlying conditions: Global anti-Blackness amid COVID-19 - Jean Beaman (City & Community)

SPOTLIGHT 2: OVERVIEW OF KEY ETHICAL ISSUES

SPOTLIGHT 2: OVERVIEW OF KEY ETHICAL ISSUES

Introduction

At a moment where education and learning increasingly rely on digital platforms and tools, students, parents and caregivers, educators, and decision-makers face both persistent and emerging ethical questions with heightened importance during COVID-19. How can we embrace the opportunities and mitigate the risks associated with the widespread adoption of digital technologies? How do these issues play out for different demographics and in different environments? What are new access barriers, gaps, and inequalities, particularly considering underrepresented or special needs communities? And how might existing and persistent challenges exacerbate harms in COVID-disrupted spaces?

Key Themes

1. **Disparities in access to Internet connectivity and digital devices include but extend beyond the rural-urban divide.**

   One expert from Colombia pointed out the urban-rural divide in access to Internet connectivity across Latin America, where 71% of those in urban areas are connected to the Internet, compared to only about 33% in rural regions. Further, less than 14% of students in Latin America from low-income homes in primary school have an Internet-connected computer at home, versus 80% of primary school students from high-income households. Many people are connected to the Internet via smartphones using prepaid data plans, which does not necessarily imply a stable Internet connection.

   In other regions of the world, such as India, a Sprint participant explained that only about 24% of homes have access to the Internet, with particularly low numbers in rural regions (14.9%), compared to urban areas (42%). Another participant pointed out the gap in access to laptop devices among youth in urban (35%) and rural (19%) areas in China.

   Outside of the rural/urban divide, access levels can vary widely within single cities or towns. In New York City, for instance, according to one expert, a fifth to a quarter of the population does not have quality connectivity at home, and many learners risk their health to sit outside closed libraries to access educational content. Access inequalities also extend beyond regional areas and intersect with age, gender, ethnicity, race, education and skill level, and/or socioeconomic status.

2. **The pandemic amplifies existing inequalities but may help make more visible possible pathways to mitigate inequities.**

   It is important to help bridge the digital divide that COVID-19 has amplified while also rec-

> **"The future in this pandemic isn't looking very bright. We need skilling, re-skilling and help from the telecommunication department. Let's take this crisis as an opportunity for a breakthrough to make the world a better place."**
> – Nagla Rizk, Research Sprint expert contributor

ognizing opportunities the pandemic has presented to mitigate inequalities. Participants pointed out how the shift to online education has exacerbated inequalities in access to education, which may have a long-lasting impact, especially for underrepresented communities. By way of example, one expert participant from Colombia pointed out that a lack of or limited access to education for primary school children in low-resource communities may have a lasting effect on children's abilities to develop the skills needed to thrive in our increasingly digital world — particularly given how formative early schooling is.

At the same time, the current health crisis has made more visible key opportunity areas around mitigating inequities, such as innovative ways to teach digital skills. One expert, for example, contextualized this observation in Egypt and the Arab world, where youth (as the expert defined "youth," those under 25 years old) represent a majority within the population. The large youth population raises the question: how can we think about learning and educational content in a bottom-up manner (e.g., in the context of informal learning spaces) to better level the playing field? And how can we develop inclusive educational policies that bolster youth skill development?

A Research Sprint participant also shared an example of a university in Hong Kong that leveraged the digital environment by creating spaces online for students to collaborate with peers from around the world in co-creating educational content, helping to ensure that the content was relevant and meaningful to students.

3. **Preserving human dignity is important within the educational system — particularly from the lens of certain ethical philosophies — but may be challenged within digitally mediated environments.**

> **"The educational system, historically and today, has been designed to meet the needs of those in power and is associated with certain capitalistic goals and aims."**
> – Sabelo Mhlambi, Research Sprint expert contributor

One expert participant noted that the education system, historically and presently, has been designed to meet the needs of those in power versus society's most vulnerable. Discussing the role of ethics in education, they raised the question, how can we think of ethics within education in a way that promotes human dignity, especially for those from underrepresented communities? Expanding upon the preservation of human dignity, they noted that it may be helpful to explore ethical models from the Global South, such as Sub-Saharan Africa's Ubuntu philosophy. This philosophy emphasizes community belonging and the notion that allowing individuals to flourish and be dignified in society requires that the community play an active role.

In the context of COVID-19, with increased time online, students — particularly those from underrepresented communities — may be more exposed to risks stemming from cyberbullying, surveillance, and opaque decision-making systems, presenting challenges to human dignity. As one Sprint participant explained, a recent study conducted in Poland revealed that for young people from the LGBTQ+ community, for instance, during their experiences with distance learning due to COVID-19, about a third have been called a derogatory name online. Moreover, study participants expressed that they felt less supported by their school via distancing learning, compared to in-person school.

4. **Inadequate or selectively representative data often inconspicuously promotes inequality.**

> **"I am somewhat concerned with the gap between those who have access to data and those that lack such access, which in general could be framed as a 'distributional justice' issue."**
> - Sharu Luo, Research Sprint student participant

As an expert from Egypt noted, access to representative data is a primary precondition for inclusive development planning and mitigating the harms of COVID-19 in the educational sector. She further elaborated that COVID-19 has highlighted the ways national statistics often do not capture those from underrepresented communities. Additionally, a Sprint participant explained that France, for example, does not collect data based on ethnicity or race, implying a lack of the full scope of racial and ethnic disparities in the country, which may impede the development of equity-promoting educational policies and programs. To address inclusive development planning, we need a data lens that captures the realities on the ground. Digital inclusion can only happen when policy-makers develop regulations considering the community at large.

Another Sprint participant explained that there is also a need for greater data transparency and sharing on a global level (e.g., around COVID-relevant educational best practices) to help inform and bolster educational programs and policies.

5. **Privacy issues abound, especially as educational spaces and services undergo digital transformation.**

A virtual learning environment comes with security and privacy concerns, such as issues connected to the collection and potential use of students' personal information. Platforms delivering online education typically collect a great deal of student data. Among participants, there was a sense that there is currently not enough clarity on what data is being collected, where it is being stored, and how such data might be used. Moreover, as one Sprint participant pointed out, underrepresented groups appear to be more likely to be targets of security risks, such as Zoom bombing. Participants raised questions about the lack of national and global leadership on these issues in the face of the emerging domination of a small number of corporations. Others noted that privacy risks might also be heightened in certain geographic contexts (e.g., regions with more restrictive government policies). And other participants explained that academic institutions have a crucial role in helping to protect student privacy (e.g., by opting for less invasive technologies or adopting policies that mitigate privacy concerns).

Beyond top-down regulation, several participants explained that it also may be helpful to think of ways that different stakeholders can work together to develop programs and resources to address online privacy concerns (e.g., through the development of educational content, social contracts, etc.). Such collaboration is particularly important in regions where there is a need for greater awareness around these issues.

Emerging Questions

1. How can we address ethical concerns in countries with low levels of education, where additional barriers may exist (e.g., inequities in access to basic needs, such as food), but where access to digital educational content is critical? Can grassroots approaches be used to identify the needs of economically disadvantaged and otherwise underrepresented communities and populations?

2. Given the formative nature of primary education, limited access to digital technologies that provide education for young children may have a long-lasting impact on their abilities to develop the skills needed to thrive in our society. Are educational systems prepared to address these inequities? Do we have data available to identify such children facing such inequalities? How effective are pandemic-induced digitized alternatives for early childhood development?

3. How can we make sure that the development of educational policies and technologies takes into account the communities they intend to reach? How can we ensure that the data and information used to inform such policies and technologies are made accessible on a global level to individuals from a variety of communities and with different abilities?

4. What can we learn from Global South innovation in educational technologies? How can we foster greater collaboration between the Global North and Global South to help bridge the digital divide?

5. How is "ethics" defined? What are different ethical frameworks (e.g., the Ubuntu philosophy) we can use as a lens to approach pressing issues around COVID-19 and education?

6. How can stakeholders ensure that dignity-preservation is a central value in redefining and reimagining access to digital learning post-pandemic? How can dignity-preserving technologies be developed?

7. How can children and youth — particularly those from underrepresented communities — be taught about managing their online privacy in engaging and accessible ways, connecting to their specific needs, interests, and backgrounds? How can teachers be taught about privacy concerns in clear and engaging ways tailored to their classroom and context?

8. Can we support design-based approaches to create ed-tech software/online educational materials specific to regions and communities?

> **"With regard to ethics, each stakeholder group has different wants and needs that at times might be conflicting. I'm thinking of student interests vs. parental interests vs. institutional interests vs. community interests vs. larger societal interests."** – Maya Malik, Research Sprint student participant

Suggested Resources

- Bias in online classes: Evidence from a field experiment - Rachel Baker, Thomas Dee, Brent Evans, and June John (Stanford Institute for Economic Policy Research)
- Educational ethics during a pandemic - Meira Levinson (Edmond J. Safra Center for Ethics, Harvard University)
- Distance learning strategies in response to COVID-19 school closures - UNESCO
- The latest in school segregation: Private pandemic 'pods' - Clara Totenberg Green (The New York Times)
- Post-COVID-19 education and education technology "solutionism:" A seller's market - Marko Teräs, Juha Suoranta, Hanna Teräs, and Mark Curcher (Postdigital Science and Education)
- Effects of the global Coronavirus disease-2019 pandemic on early childhood development: Short- and long-term risks and mitigating program and policy actions - Hirokazu Yoshikawa, Alice Wuermli, Pia Rebello Britto, Benard Dreyer, James Leckman, Stephen Lye, Liliana Angelica Ponguta, Linda Richter, and Alan Stein (The Journal of Pediatrics)
- Nearly 22 million children in South Asia miss out on early education in critical pre-school year due to COVID-19 - UNICEF
- Protecting student privacy while using online educational services: Requirements and best practices - U.S. Department of Education

SPOTLIGHT 3: SUPERVISION OR SURVEILLANCE?

SPOTLIGHT 3: SUPERVISION OR SURVEILLANCE?

Introduction

One of the key issues surrounding the increased use of digital technologies in educational and learning spaces is the risk of enhanced surveillance. This session explored how surveillance is understood in education and moments where it may shift from beneficial ("education needs supervision") to harmful. How do these risks play out for different populations of learners and in different geographical contexts? What are possible safeguards that must be put into place? How much does COVID-19 serve as an accelerator of good practices and/or inequalities in terms of access and adoption of digital technologies in education? Who benefits and who is harmed by this transition? How can we ensure that students' voices and perspectives are incorporated in the design, development, and deployment of surveillance technologies in the educational setting? The social contract between teachers-students-communities is changing as institutions and broader educational models are becoming increasingly privatized and commercialized. Additional key issues related to data governance and data privacy are also covered in Spotlight 5.

Key Themes

1. **While defining the contours of surveillance and supervision, it is important to consider strategies to balance supervision and surveillance, which have similar connotations, but different undertones.**

As one expert from Switzerland noted, supervision and surveillance both imply the notion of "watching over" someone. Supervision suggests watching over for the purpose of guidance, which includes a component of care, while surveillance connotes continual or continuous watching, usually involving close observation and scrutinization of behavior. A primary feature of surveillance is suspicion. Another expert from the U.S. explained that there is a fine line between supervision and surveillance, and if one looks at the vast array of digital technologies used in schools, the logic of "surveillance as care" is dominant.

> **"There is a fine line between supervision and surveillance and if one looks at all the technologies used in school, the discourse of surveillance as care is dominant and this can be of detriment to a careful understanding of the impact of surveillance technologies in education."** – Veronica Barassi, Research Sprint expert contributor

A number of Research Sprint participants pointed out the harmful effects of surveillance, explaining that youth may change their behaviors as they may fear that those surveilling them may misinterpret their actions or ideas. For instance, some children may feel intimidated in the presence of a camera. As one expert noted, while acknowledging the potentially negative consequences of surveillance, both surveillance ***and*** supervision are important in educational settings. This raises the question: how can we effectively balance these two dynamics?

Building upon this discussion, a Sprint participant mentioned two important concepts: "self-su-

pervision" and "self-surveillance." One can see such concepts at play within, for instance, mobile applications that help track and manage one's time or physical activity. The notion of tracking and monitoring one's performance raises an important question: where does one draw a line with technology when such technology is used for self-learning and self-care?

Additionally, how can educators be supported in balancing the line between practicing care for students and keeping them safe while protecting their privacy? One Sprint participant, for instance, explained that in Australia, surveillance technologies (such as closed-circuit televisions, or CCTVs) in school playgrounds are often installed to detect or deter harmful behaviors, such as bullying, among students. While protection from harm is particularly important for younger children, these technologies raise concerns around the potential of creating a school culture of mistrust and suspicion.

The pandemic is also amplifying the use of surveillance architecture to control and regulate people's lives and freedoms under militarised, conflict-ridden, and authoritarian regimes. One participant noted that such architecture — both digital and physical (e.g., installing CCTV cameras on educational campuses) — has been pervasive in Kashmir. The participant pointed out that, as a result, some students have been subjected to regular demographic and psychographic profiling, leading to disruptions in the most intimate dimensions of people's everyday lives.

2. There are increasing concerns around AI-based educational technologies in the context of privacy, discrimination, and student choice.

> **"Regardless what kind of data it is or amount of data, data does not forgive. We need to think about data in the context of human negotiation. The more data we can remember, the more we may forget about other aspects of human interaction."** – Milan Ismangil, Research Sprint student participant

The collection, storage, and potential use of students' data gathered through educational technologies raise concerns around data protection and privacy, discrimination, and the level of choice and control students have in the classroom. These challenges are particularly salient in the context of AI-based educational technologies, which (like many other AI systems used in different settings) have the capacity to make predictions and draw inferences about individuals and groups of students by algorithmically detecting patterns in large volumes of data. For instance, AI-driven personalized tutoring systems aim to customize instruction based on collecting students' data (including personal data) and adapting content based on individual needs. If AI systems are not trained on data that is representative of the individuals interacting with the system — whether in terms of variables such as age, race and ethnicity, socioeconomic status, or gender, as well as proxy variables — predictions the system makes may result in potential discrimination.

With respect to AI-based technologies in educational settings, one expert noted that 1) it is becoming increasingly evident that these technologies are often biased and inaccurate and may present us with a stereotypical understanding of students, and 2) personalized education may create a culture of pre-emption, which might encourage students to follow prescribed pathways and deter them from exploring other opportunities and interests. Looking ahead, one Research Sprint participant recommended that designers of AI systems should be more transparent around decisions concerning both data sources and the processes by which AI systems make decisions to mitigate students' concerns, such as bias more broadly, and racial profiling in particular.

Another Research Sprint participant noted that many countries use different commercial AI-based online proctoring tools to monitor students. Such tools have come under increasing scrutiny as some do not detect students of color.

3. **In the context of present-day surveillance technologies in the learning setting, it's important to understand the racialized and historical origins of surveillance's practice and theory.**

As a Sprint participant pointed out, there is an association — historically and contemporarily — between surveillance and anti-Blackness, the genealogy of which may be centered around the trans-Atlantic slave trade. In the digital technology context, technology has been used to surveil and analyze those who are Black around the world. In terms of education and learning, as one example, a recent article describes how the data of individuals who shared information under the "#BlackInTheIvory" hashtag on social media — meant to highlight the voices of those at universities discussing experiences with racism — was collected without their consent. As the article notes, such a collection of data could make those individuals targets of harassment. Outside of the educational context, the company Geofeedia, for instance, collaborated with Boston police to employ facial recognition and GPS to identify those who protested using the "#BlackLivesMatter" hashtag.

4. **The use of surveillance technologies in the context of parent-child relationships raises complex dynamics.**

While there are potential upsides of parents monitoring children using digital technologies, such surveillance raises concerns around youth's safety and future opportunities. As an expert from the U.S. pointed out, some parents routinely keep tabs on their children's digital behavior and employ technologies such as smartwatches with geo-fencing and software like Gaggle, which monitors children's school-related work and communication. Outside of the U.S., a Research Sprint participant from South Korea explained that some parents are installing at-home CCTVs to observe children as they learn online.

An expert noted that while there are potential upsides of surveillance technologies in tracking children during times of heightened public threat, there are associated risks if surveillance technologies are used in schools or homes. For example, if such technologies are not fully secure, potential predators may access and track children's whereabouts, jeopardizing their safety. Moreover, the data collected by these technologies may impact students' futures. The expert noted that tech providers could sell information about youth (e.g., the locations they visit, how fast they drive, etc.) to data brokers. This information could ultimately be accessed by potential employers or universities, which could harm students' future opportunities.

Several Research Sprint participants echoed the need to consider the potential harms that parental surveillance may entail, such as cultivating mistrust between children and their parents. Others elaborated on the importance of parents monitoring their children's online activities to help promote children's positive digital footprint.

5. **Surveillance technologies may provide benefits for different student communities, which must be balanced with the risks such technologies may present.**

   The impact of surveillance technologies in the educational context may affect certain student communities in different ways. The current global health crisis has accelerated the process of digital learning, with, in some cases, little consideration of potential privacy implications. Several Sprint participants noted that many educational institutions in Asia, for example, have openly adopted educational technologies without addressing the possible privacy concerns they entail.

   As an expert pointed out, while surveillance technologies that collect and aggregate student data and build profiles of students raise concerns around privacy, discrimination, and student choice, these technologies may offer certain benefits to various communities. As a Sprint participant elaborated, when we think of such benefits for students, it's important to remember that "students" are not a monolithic group. For example, surveillance technologies may be useful for students who have a learning disability to help tailor content to their specific needs. At the same time, as one expert noted, the collection, storage, and use of student data must be overseen, particularly for vulnerable groups.

6. **The design, development, and deployment of educational technologies should incorporate the student voice.**

   The voices and needs of youth in learning environments are often missing. An expert from the U.S. suggested that it is important that a variety of stakeholders (e.g., policy-makers, international organizations, companies, and researchers) work together to incorporate the student voice in the design, development, and implementation of educational technologies. To initiate this dialogue, it may be helpful to encourage students to consider various questions about how their data might be used, such as, "How many data elements do you think are collected about you on a daily basis?," "Who is collecting that data?," and "Why do you think this data is being collected?"

Emerging Questions

1. How is digital surveillance in educational environments the same or different from offline supervision, i.e., control and monitoring in a purely analog educational environment? Does the adoption of digital technologies in educational settings always imply "surveillance"?

2. How do different institutions justify and explain the adoption of surveillance mechanisms and systems in educational settings? How might these vary across a spectrum of public/private and elementary to higher education school systems? How much leeway do educational institutions have to adopt additional surveillance measures in the age of COVID-19?

3. Where are the boundaries of our agreements with technology and with technology companies when we use technology for self-learning and self-improvement?

4. How can teachers be supported to balance keeping students safe (from risks such as privacy and security breaches, cyberbullying, and in-person bullying) while protecting their privacy?

5. How similar is surveillance in education to other forms of surveillance (i.e., at geographic borders, in public spaces, etc.)?

6. What are the current best practices being followed by vendors (if any) in terms of data security?

7. What is the impact of surveillance on the social contract between students and parents, and teachers and schools?

8. How should educational technology companies and other technology providers be incorporated into the social contract that already exists between teachers, students, and parents? How can we build trust among these groups and ensure that students' needs and interests are met?

9. What is the role of technology companies in providing a safe environment for students?

10. How are the technologies that collect students' data impacting communities in different ways, such as those from underrepresented groups — whether in terms of age, ethnicity, race, gender and sexual identity, religion, national origin, location, skill and educational level, and/or socioeconomic status?

11. How can stakeholders make more transparent the historical and racialized origins of surveillance theory and practice?

12. What new models, rules, platforms, and other forms of data ownership can be used to maximize the value of using new data-driven tools while safeguarding student privacy? Might data trusts, for example, be an effective approach?

13. How can we more effectively take into account students' voices in the classroom and other learning spaces around surveillance technologies, and what role should students have in data governance?

Suggested Resources

- Tech companies promised schools an easy way to detect cheaters during the pandemic. Students responded by demanding schools stop policing them like criminals in the first place - Tyler Sonnemaker (Business Insider India)
- COVID-19 strengthens the case for digital ID cards - The Economist
- Student privacy and ed tech (K-12) research briefing - Leah Plunkett and Urs Gasser
- How surveillance has always reinforced racism - Sidney Fussell (Wired)
- Anti-Blackness & technology webinar - Center for Black Studies Research (UC Santa Barbara)
- Dark matters: On the surveillance of Blackness - Simone Browne (Duke University Press)
- List of applications/tools/policies in the ed tech surveillance space - Research Sprint participants
- White surveillance and Black digital publics (video and podcast) - Apryl Williams and Allissa Richardson (Berkman Klein Center)

SPOTLIGHT 4: INCLUSION

SPOTLIGHT 4: INCLUSION

Introduction

The preservation, facilitation, and design of inclusive educational learning spaces and practices remained persistent themes across various discussions held over the course of the Sprint, yet different questions about inclusion apply depending on contexts, communities, and intentions. This discussion examined ethical questions of inclusion sparked from the perspective of Indigenous scholars and students and drew upon Indigenous-centered research as a means of identifying ethical challenges from groups that are often underrepresented and marginalized in formal educational spaces. The participants initiated a dialogue about Indigenous frameworks for innovation that may inform policy-makers and create better knowledge exchange interfaces among marginalized communities and decision-makers, and explored ways to build solidarity among communities globally. Our conversation about Indigenous issues during this session was not meant to be a comprehensive exploration of "inclusion" in education but rather a starting point for students to engage in dialogue with voices centered from communities all too often underrepresented in policy spaces. Finally, students and experts alike noted that terminologies and conceptions of "Indigenous" groups differ across regions and cultures and that variation should be considered for policy-makers, decision-makers, and educators operating within local contexts who draw from these materials.

This session included Indigenous scholars, experts, and community members from groups located in North and South America (Canada and Colombia) and focused on a set of issues they presented in context. The session also served as a starting point for this dialogue and the community we convened, rather than a one-off event, which will be sustained through the Global Network of Internet & Society Centers. The summary reflects both the discussion during the anchor session itself and a "Sharing Stories" follow-up session, where student participants shared stories from their region and context about learning and Indigenous or marginalized populations.

Key Themes

1. **Past and ongoing discrimination against Indigenous communities has exacerbated inequities in education.**

   Indigenous communities face heightened discrimination, often leaving them even more vulnerable to abuse and marginalization in learning environments. One expert offered an example of one Indigenous community who, after settling in a specific region, was accused of unlawfully occupying the land. Teachers from the local public school started treating children from the Indigenous community as "thieves of land," forcing children to leave schools. As a result, members of this community began creating independent schools where they taught their language and cultural values. This model is an example of forces that drive and reflect what education looks like for many Indigenous communities today.

   A number of participants discussed various bottom-up approaches that are helping to bridge divides in the educational space for Indigenous communities and other marginalized populations. One student participant from Colombia, for example, talked about an autonomous Indigenous university in Cauca, Colombia, that works with the institution called "Guardia Indigena" that follows an inclusive approach of including all ages and genders in the development of the university. Another participant also discussed inclusive initiatives that aim to empower Indigenous communities. In Brazil, for exam-

ple, the non-governmental organization Vídeo nas Aldeias works to create videos with Indigenous communities, providing individuals with the tools to develop their own short videos and narratives around them. Thus, the initiative helps create safe spaces for those from Indigenous communities to express their perspectives and dreams through directing, filmmaking, and screenwriting.

2. **There are significant challenges, but also opportunities, digitalization offers to Indigenous communities.**

In the wake of increased use of digital tools for learning during COVID-19, one expert emphasized the need to connect widely-used digital technologies with local approaches in Indigenous communities. An expert from Colombia pointed out that the digital divide, from their perspective, has two facets: 1) infrastructural access to digital technologies; and, just as importantly, 2) the skills to use them. Given that skill and access levels vary within Indigenous communities (as in other communities), there is no "one size fits all" solution to learning. Accordingly, teaching practices must be flexible and center on learners' needs. Decision-makers must also consider the cultural and linguistic gaps that COVID has amplified. Many student participants expressed that Indigenous Peoples, as both stakeholders and rights holders, should be prioritized in policy-making, particularly in countries and regions where COVID-19 has revealed a dramatic disproportionate impact on Indigenous community health and well-being.

Other expert participants noted how digital technologies have enabled better access to formal national educational systems and higher education institutions through online interfaces while also allowing individuals to remain present in their home communities. Further, the scope of educational opportunities in the digital world may be expanded rather than constrained by digital transformation. For instance, online resources can be used by anyone, including Indigenous youth and others, to learn Indigenous languages.

3. **Decolonization of the educational experience requires a deep interrogation of existing systems.**

For Indigenous students, teachers, and educational staff, legacies (and new instantiations) of colonialism persist in formal public educational spaces and systems and create new dynamics within online and digitally mediated spaces. Decolonizing educational experiences will entail revisiting those legacies and revisioning what education is and how such legacies affect both the colonized and the colonizers. Many expert contributors pointed out that there is a dire need to decolonize education, addressing the full spectrum of educational experiences, from educational environments to curriculum to learning modalities and approaches. Many students from Indigenous communities are at a disadvantage in the education system because of structural inequality, historical bias, and a lack of understanding of community practices — a characteristic often shared with other marginalized groups. To begin to address the wounds of colonization, experts discussed the importance of creating Indigenous-focused action plans, facilitating environments for sharing cultural heritage and knowledge, and co-designing bottom-up community-led initiatives.

> **"There is a need to rethink how we are approaching educational issues. We must go to communities and learn about their needs. In the end, communities should be the decision-makers."** – Julio Gaitan, Research Sprint expert contributor

Several Research Sprint participants echoed that learning about Indigenous communities and their history in contexts where Indigenous communities have suffered harm should be the first step towards an inclusive policy-making process. Other participants noted that "decolonization" frameworks still center Western-specific questions and how, for some global audiences, the terminology of decolonization may not be familiar. Additional information about definitions and useful readings may be found under "Suggested Resources."

4. **Indigenous approaches offer creative, effective, and often under-considered pathways for learning.**

Indigenous education focuses on teaching Indigenous knowledge and stories. Indigenous communities greatly value the teaching of language and cultural traditions, helping to promote the longevity and sustainability of traditional knowledge. An expert from Canada shared personal experiences with a particular Indigenous community, discussing how their learning environment at the academy offered large spaces with a ceremonial room and kitchen where students could connect with elders. The learning model relied on community-based learning, the creation of community-focused curricula, and teaching through storytelling.

Many participants pointed out a need to focus on low-tech/no-tech initiatives for marginalized communities, where Indigenous communities could draw knowledge from the natural world and cultural traditions. A Sprint participant from China, for example, explained that the country's rich ethnic and cultural resources must be utilized as assets towards building an inclusive approach towards Indigenous communities and education.

5. **Experts expressed the importance of integrating "heart and mind knowledge" as a foundational value for learning and teaching.**

Expert participants continually emphasized the need to approach learning and education in the context of COVID (as well as generally) not just through book knowledge, but the heart as well — reiterating that learning requires bringing one's full self to this exercise. As one expert noted, the concept of "truth" embodies both mind and heart knowledge and is essential to Indigenous community learning. The expert advised that student participants reflect and look ahead in more personal terms to the questions they have about COVID-19's disruption to their education and what spaces may be created or changed as a result of the pandemic. Another expert echoed how it is useful to approach research from the heart more than the mind and how learning about Indigenous communities and history should be an emotional experience and an exercise in generating knowledge and learning history.

> **"I recommend that you all move on from research with heart more than the mind. Learning about Indigenous nations and history should be an emotional experience."** – Katelynne Herchak, Research Sprint expert contributor

6. **Social and psychological barriers to learning remain just as persistent online as they do offline.**

Gender, age, race, ethnicity, and related characteristics impact online (and offline) learning. Student participants raised questions and examples related to inclusion, prompted by the discussion of Indigenous frameworks. A student participant from India pointed out that women in rural households — who are often marginalized — have even less access to education than men in the same home. If policy-makers assess access at a household level instead of in a more disaggregated form, they may conclude that a particular household has access to the Internet, as well as devices to learn. However, not all living in a single home may have the same level of access.

In a similar vein, in the context of surveillance, another student participant shared insights from the Inverse Surveillance Project, which focuses on reaching the American Muslim community. The project seeks to create a space for those community members targeted and traumatized by surveillance to heal and cultivate power. The initiative leverages artificial intelligence (AI) to reimagine U.S. government accountability and help audiences better understand the impact of government surveillance on those of color.

Emerging Questions

1. How can online learning environments promote or pose challenges to Indigenous methods of learning?
2. In the context of education, how can we balance technological and non-technological solutions for Indigenous communities?
3. What are the structural changes needed to bring the Indigenous ways of learning into more formalized spaces?
4. What websites or services act as knowledge-infrastructures/hubs that work to increase digital access for Indigenous communities?
5. What does equity and access to digital learning spaces look like from a policy and legal perspective in regions with minimal access to infrastructure?
6. How can law and policy be mobilized as an agent of change where there are significant disparities between urban and rural communities?
7. How can we approach research and policy around COVID-19 and education not just from the mind but also from the heart?
8. In times of lockdown and homeschooling, how can new technologies help preserve Indigenous languages and cultures?
9. How can digital tools be leveraged to preserve ethnic minority languages?
10. What responsibilities do educational platforms have regarding the cultural and linguistic inclusion of their users?

"With digitalization comes a chance to revive old languages and make [the languages] more accessible." - Valerie Albrecht, Research Sprint student participant

11. How can digital technologies work as an opportunity to integrate and connect members of Indigenous communities?

12. How do we approach learning in Indigenous communities with a decolonial methodology, and what can we give back to the communities we are studying?

13. How can we support Indigenous communities to create their own digital infrastructures to reduce the dependency on digital colonialism?

Suggested Resources

- Digital differences: The impact of automation on the Indigenous economy in Canada - Canadian Council for Aboriginal Business
- The CARE principles for Indigenous data governance - Carroll et al. (Data Science Journal)
- Building Indigenous learning communities - R.G. Schwab and D. Sutherland (Center for Aboriginal Economic Policy Research)
- What UNESCO is doing to address learning challenges for Indigenous Peoples during the COVID-19 pandemic - UNESCO
- Learning Upper Sorbian. The problems with minority language education for non-native pupils in the Upper Sorbian Grammar School in Bautzen/Budyšin - Nicole Dołowy-Rybińska (International Journal of Bilingual Education and Bilingualism)
- Sociolinguistics: An introduction to language and society, fourth edition - Peter Trudgill (Penguin Random House)
- Exploring the opportunities of social media to build knowledge in learner-centered Indigenous learning spaces - Henk Huijser and Jurg Bronnimann (John Benjamins Publishing)
- Designing learning environments for cultural inclusivity: A case study of Indigenous online learning at tertiary level - Catherine McLoughlin and Ron Oliver (Australian Journal of Educational Technology)
- School on the land: Indigenous teachings get kids outside the classroom - Ariel Fournier (CBC/Radio Canada)
- A digital bundle: Protecting and promoting Indigenous knowledge online - Jennifer Wemigwans (University of Regina Press)
- Indigenous students policy paper - Nadia Bathish, Ryan Deshpande, Piers Kreps, Hannah Martin, Samantha Powless, and Urszula Sitarz (Ontario Undergraduate Student Alliance)
- Decolonization is not a metaphor - Eve Tuck and K. Wayne Yang (Decolonization: Indigeneity, Education & Society)
- Indigenous languages digital archive - National Breath of Life Archival Institute for Indigenous Languages, Miami University

- The complicated decisions that come with digitizing Indigenous languages - Lorraine Boissoneault (Slate)

Reading Lists

- A reading list of technology + racial and Indigenous justice materials: Indigenous Technologies Reading List - compiled by the Indigenous Technologies program, Berkeley Center for New Media

Councils and Initiatives

- Inclusion in Education (UNESCO)
- First Nations Technology Council, and the Council's Indigenous Framework for Innovation and Technology

SPOTLIGHT 5: GOVERNMENTS AND TECHNOLOGY PROVIDERS

SPOTLIGHT 5: GOVERNMENTS AND TECHNOLOGY PROVIDERS

Introduction

Two stakeholder groups have had a tremendous impact on students' learning experiences: governments and technology providers. There is a need to examine how governments' policy decisions impact regional school curriculum and teaching approaches, both before and during COVID. This session explored how the mechanics of the educational technology ecosystem influence teaching and learning, data governance, and data privacy, particularly in K-12 environments. In addition, participants explored what data tells us about students' understanding and engagement currently, how data is used to adapt technologies to student learning needs, and how it might inform teaching and learning in the future.

Key Themes

1. **The emergence of online educational platforms and the evolving face of education suggests shifting roles for both governments and technology service providers and a broadened policy spectrum.**

   The collection of student data is not new to the digital era, but both the scale and ownership of data are. For instance, governmental student testing goes back to the 1800s in the U.S., and standardized testing measures are being increasingly adopted across countries. What ***is*** new is the enormous scale and purpose (or lack thereof) of data collection and questions about provenance, ownership, and use of student data.

   Researchers, both corporate and academic, use data to understand students' interests and knowledge, the design of technological systems, and the effectiveness of the pedagogical approach. This work shows nascent promise in smaller studies, yet such promise has to be realized at scale. The reasons that the work has not yet demonstrated promise are manifold. First, understanding learning using any specific method or metric is profoundly challenging and dependent on how one defines learning (and other measures.) Second, the systems that do this work are often not set up to prioritize learning goals. Data and the research upon it are "owned" by technology providers who may have neither the interest nor capacity to do the work. Governments cannot keep up with the pace of technology and may not prioritize doing so. Learning science in academics is, in many ways, at the margins of the ecosystem and often underfunded. Educators and learners are often recipients of systems rather than designers or considered by the system that designs them, whether intentionally or emergently.

   One expert participant led an insightful discussion on the future of learning analytics in online education. With the emergence of many educational platforms, the expert pointed out that we must think about how data can and cannot be used to improve the student experience and learning, as well as where we need to weigh privacy risks and think about the potential benefits of large-scale accumulation of student data.

   Several Research Sprint participants noted that the emergence of online educational spaces has created a situation where students have little control over their personal data; collection

and sharing of it are either compulsory/unavoidable, or any consent is coerced or relatively ill-informed. They further noted that due to a monopoly and centralization of the data market by major technology companies, there are few (if any) realistic alternatives to using digital platforms and services marketed by these companies (e.g., Zoom, Slack, Facebook, Microsoft) as they have become the dominant tools used in educational settings.

Another expert from the U.S. pointed out that there may be benefits to the centralization of learning experiences, such as offering better insights for the pedagogical design of technologies. However, this centralization may come with high costs, such as lock-in and monopolization. In some instances, potentially controversial or harmful topics may be presented to students without adequate context. Additionally, several Research Sprint participants echoed that educational platforms like Blackboard have tried to learn from student data to provide more effective learning systems, with mixed results. One participant noted that data collection is crucial to improve such systems, but at the same time, transparency in how data is being used is needed.

Another participant noted that the increasing involvement of digital service companies in public education systems amid the pandemic may be the harbinger of increased corporate power over the content and conditions of access to education. With greater dependency on private technology service providers for public education, access is now regulated not just by educational institutions but by the platforms used to facilitate education and their terms of service.

2. The global learning crisis and closure of schools has impacted children in a multitude of expected and unexpected ways.

As noted in Spotlight 1, for many communities across the world, schools are not just centers of learning — they provide critical services, such as meals and sanitation facilities, as well as important opportunities to develop social and emotional skills. Many governments around the world have implemented closure and containment measures at different points during the pandemic, which have severely affected access to such services. An expert from Singapore noted that the closure of schools highlights the important role schools serve for the overall health and well-being of students, especially for those students who lack access to proper nutrition, medicine, and living environments.

> **"For many parts of the world, especially the Global South and Asia, schools are not just the centers of learning; schools also provide meals and sanitation facilities to students. There is a need to think beyond just access-related issues."** - Malavika Jayaram, Research Sprint expert contributor

Further, school closures have understudied secondary effects, such as increased child care pressure on parents, with disproportionate effects within households, often placing additional constraints on women and affecting gender representation in the workplace. By way of example, one Sprint student participant noted that studies conducted during the Ebola outbreak in Sierra Leone demonstrate that a lack of physical learning spaces may put girls at risk of teenage pregnancy and school dropout.

3. **Although online and offline realities may blur in some contexts, public and private sector offline platforms remain important vectors for education.**

> **"The educational system has tried to adapt and implement creative ways to teach, like using radio broadcasting and public national TV to disseminate educational content. Edutainment platforms have also been useful for this purpose."** - Armando Guio Espanol, Research Sprint expert contributor

To more effectively bridge gaps in access to digital technologies and the skills to use them, especially for countries that lack robust digital infrastructure, there is a need to look beyond Internet-based services for learning. Experts from Asia and Latin America noted that countries that do not have strong Internet connectivity have started to explore options beyond Internet-based services. These options include municipal facilities, radio, television, and other communication mediums in community spaces. An expert from Asia pointed out how several villages in the Himalayas are using radios as a medium to learn and tools like storytelling and the use of loudspeakers in villages reading out educational content. Another participant shared that educational TV programs have been launched in Nigeria and Pakistan.

More generally, several participants echoed that there is a need for local governments to invest in low-tech/no-tech initiatives in order to minimize the impact on learning due to COVID-19.

4. **Government continues to play a critical role in facilitating formal and informal learning and helps create the conditions under which populations can adapt and become more resilient to large-scale disruption.**

There is a significant rise in the number of digital platforms providing services for online education. Digital technologies have opened countless windows for learning. However, there are many resource- and data-related challenges service providers and governments face as platforms increase the scope and scale of data collected about learning. Multiple experts raised questions about data sovereignty and data localization. One expert questioned whether the data collected by online platforms will be kept locally and how local regulatory regimes differ across contexts, prompting questions about privacy, surveillance, and student autonomy. Another expert noted there is a high likelihood of data being sold by private platforms and that valuable sources of data for policy-making may be lost as many online platforms often lack sustainable business models. There are increased pressures, responsibilities, and dynamics among both government actors and technology service providers.

A participant explained that it is important to choose platforms that reflect the reality and values of a community. It was further noted that open source platforms, in which there is greater transparency about the processing of students' and educators' data, is the need of the hour.

A few Research Sprint participants from Asia shared that governments need to ensure that important public functions are not delegated to the private sector. When private companies are involved, concerns arise around the potential uses and commodification of data gathered from students.

Against this backdrop, governments need to formulate policies that ensure realistic data governance and preserve data privacy, particularly in K-12 environments, while acknowledging that one size may not fit all.

5. **COVID-19's impact illustrates that building resilient systems — beyond digital systems — that prepare students, educators, and decision-makers for disruption is critical.**

> **"Educational systems need to increase their resilience to offer high-quality education for *all* children and young people, especially those from underrepresented communities."** - Hamdalat Alabi, Research Sprint student participant

Due to the ongoing pandemic, modes of learning have changed dramatically, with a distinctive increase in the use of online learning platforms. With the sudden shift from classroom learning to online learning, particularly in formal educational systems, many around the globe are wondering whether the accelerated adoption of online learning will continue to persist post-pandemic and how such a shift will impact the education sector. A participant noted that as many countries have begun reopening schools in a phased manner, civil society organizations should pause and reflect on key questions around learning, education, and equity, with a commitment to advocate for the right to a free, quality, inclusive public education for all.

In the context of other large-scale global crises, an expert from the U.S. noted that in a climate emergency, for example, there is reason to expect even more societal-level disruptions. As highlighted in Spotlight 1, we need to build systems that prepare for resilient schooling, such as the development of low- and no-tech educational spaces and opportunities.

Emerging Questions

1. How will governments sustainably rethink educational systems (keeping in mind access and digital divides) in the future?
2. How can the government work with technology providers to reduce the gendered impact of online learning?
3. Who owns the data generated by private platforms?
4. With respect to vast data collection by online platforms, what is the government's role in managing both the digitization and the datafication of education? What is the role of a government in providing safety and security measures around student data?
5. What happens to data on platforms that are sold on secondary markets or lost on private platforms? Are there open-source approaches, values, or movements that can help secure this data?
6. In the educational context, what metrics are helpful to teachers, curriculum designers, and students? How should they be shared, and with whom? How should they be protected, and from whom? How can we allocate scarce resources to decrease the gap between the haves and the have-nots? Which divides need to be prioritized?
7. What is the role of behavioral science interventions in online learning? How do we capture cultural variance/characteristics of different contexts in optimizing learning on e-platforms (particularly to include those in the Global South)?

8. In what ways is and is not educational technology about education? How can stakeholders separate what brings value to education from what is created only to achieve profit?

9. How can we think about the integration of technologies in education without such integration becoming essentially quantitative? How can we develop ways to measure students' progress in areas as different as arts and mathematics?

10. How does civil society influence policies that cultivate equitable and inclusive education for all?

11. How can we leverage low- or no-tech teaching methods (e.g., disseminating educational content through national public television, radio broadcasting, storytelling, etc.), particularly in low-resource communities?

12. As education has increasingly become a shared responsibility where families, parents/caregivers, and the community have a crucial role to play, how can educational policies best support these various entities? Looking towards the future and thinking about ways we can collectively prepare better for the next crisis, how can policies bolster these stakeholders' resilience, including students' resilience?

Suggested Resources

- Ed-Tech mania is back - Justin Reich (The Chronicle of Higher Education)
- How 'learning engineering' hopes to speed up education - Jeffrey Young (EdSurge)
- Failure to disrupt: Why technology alone can't transform education - Justin Reich (Harvard University Press)
- Schools during the COVID-19 pandemic: Sites and sources of community resilience - Jacob Fay, Meira Levinson, Allison Stevens, Harry Brighouse, and Tatiana Geron (Edmond J. Safra Center for Ethics, Harvard University)
- Schulschließungen wegen Corona: Regelmäßiger Kontakt zur Schule kann die schulischen Aktivitäten der Jugendlichen erhöhen - Silke Anger, Sarah Bernhard, Hans Dietrich, Adrian Lerche, Alexander Patzina, Malte Sandner, and Carina Toussaint (Institute for Employment Research)
- These 5 charts show the impact COVID-19 is having on children around the world - Kate Whiting (World Economic Forum)
- Building resilient education systems beyond the COVID-19 pandemic: Considerations for education decision-makers at national, local and school levels - UNICEF Europe and Central Asia
- Resilient realities report - The Youth Collective

SPOTLIGHT 6: LEARNING EVERYWHERE

SPOTLIGHT 6: LEARNING EVERYWHERE

Introduction

After focusing on a set of core ethical challenges at the intersection of access, digital technologies, and education, this session explored less traditional learning spaces — such as museums, maker spaces, social media, and educational gaming platforms — and how informal learning experiences might serve as an inspiration for the future of alternative educational environments or might be translated to the formal educational setting. The session also highlighted digital skills, including the breadth of skills youth need to meaningfully engage online and how COVID-19 may have impacted such skills or their relevance.

Although the session primarily focused on youth (i.e., learners age 12-18), many insights from the session can apply to those of various ages and in different learning settings.

Key Themes

1. **The pandemic has encouraged reconsideration of where and with whom we learn.**

   Experiences outside of formal school settings are key sources for learning, and COVID-19 has highlighted the importance of these spaces for socializing, learning, and creativity. One expert from the U.S., for instance, shared insights from Scratch, an online learning community and programming language for youth ages 8-16. On the platform, young people have the opportunity to learn skills around programming in an engaging way, and create and share AI-based animations, games, chatbots, and other creative content. The platform also allows young people to learn from and with others their age from around the world — Scratch reaches young people in over 150 countries. Several Research Sprint participants echoed that creating a supportive learning community outside the classroom (whether online or offline) has a major impact on student engagement.

   Another expert discussed the social media platform TikTok's #EduTok initiative, which encourages users to develop short educational videos around themes such as health and wellness, education (e.g., language learning), and career pathways, creating opportunities for users to share their insights about specific topics and learn from others.

2. **Informal learning environments can help democratize knowledge and skills.**

   Informal learning spaces — some of which may have seen increased engagement since COVID-19 and blur the boundaries between online and offline — have opened pathways to exploring identity, gaining knowledge, and cultivating connections with others. By way of example, one expert elaborated on TikTok's #EduTok Mentorship Program, which is focused on reaching first-time Internet users in India — targeted towards six states in the country with the lowest literacy rates — by providing them with access to high-quality educational content developed by educational organizations and TikTok creators.

   Another expert discussed how the increasingly interconnected nature of public spaces — more specifically, museums — can expand education to different audiences. As they described, through emerging technologies such as virtual reality, learners can explore great works of culture and art, such as the Mona Lisa. In the virtual reality experience *Mona Lisa: Beyond the Glass*, learners from around the world can take a virtual visit to the Louvre, opening new doors to

reach those of different ages, locations, and backgrounds.

And an expert from China shared how makerspaces can shift the dialogue around who can create. These environments can make opportunities for collaboration and innovation more accessible by, for instance, equipping such spaces with tools that allow learners to explore physical/digital boundaries (e.g., 3D printers, laser cutters, etc.) and holding workshops where such tools are used to teach about experimenting with the physical space through digital means, and vice versa. Like the ***Beyond the Glass*** VR experience, such environments also highlight the blurring boundaries between online and offline.

3. The opportunities of informal learning spaces, especially social media, must be balanced with the risks they present, including the potential to reinforce racial prejudices.

As several Sprint participants pointed out, promoting educational opportunities through informal learning spaces — particularly social media platforms — must also come with measures to address the risks these spaces present, such as cyberbullying, the spread of misinformation and disinformation (including racially-targeted disinformation), and the reinforcement of prejudices.

> **"Social media platforms can be challenged by different forms of bias, such as racial bias. When we create knowledge on social media and other online spaces, it's really important to amplify the voices of people from different backgrounds."**
> - Daniel Calarco de Oliveira.
> Research Sprint student participant

Regarding the latter, a Sprint participant explained that many social media companies have been criticized for using algorithms, fueled by artificial intelligence, that target users and show them tailored content that reinforces prejudices. Indeed, research indicates that Black teens in the U.S., on average, experience discrimination five or more times per day, most often online and, thus, potentially mediated via algorithms. In the context of education and learning, further research demonstrates that when young people of color face discrimination, they may experience negative impacts on their academic performance and other variables connected to learning ability, such as sleep.

4. There is a heightened need for digital skills in the pandemic and post-pandemic world.

The COVID-19 pandemic is fast-tracking digital transformation, which has intensified the need for digital skills. One member of the Research Sprint team helped to set the stage for a discussion around digital skills by sharing insights around the skills youth need to meaningfully engage online, spanning from the ability to interact with AI interfaces and engage in ethical issues surrounding these technologies to the capacity to protect one's privacy in the digital world. As the present and future require navigating increasingly digital and hybrid spaces, such skills are of growing importance as stakeholders — such as educators, policy-makers, and companies — consider ways to equip learners with the skills to participate in and shape society. The team member also noted the importance of designing educational content ***with*** young people themselves, helping to ensure that these resources align with youth's interests, needs, and backgrounds.

During the session, experts talked about the importance of cultivating specific skills connected to the digital environment that have become particularly relevant in the context of COVID. One ex-

> **"The users, producers, and consumers on platforms who gain different forms of capital are also developing an economic mindset and this is blurring lines between work and play. They are collaborating and developing social and emotional skills."** – Andres Lombana-Bermudez, Research Sprint expert contributor

pert from the U.S. discussed Facebook's platforms and initiatives (e.g., Digital Literacy Library, Get Digital) that seek to promote skills around engaging positively with others online, protecting one's digital footprint, and participating in civic engagement. The latter is increasingly salient given, as an expert from Colombia pointed out, growing activism efforts around racial equity and justice, public health, and other issues around the world. The same expert from Colombia described how youth — who have the access and skills to use digital technologies — are increasingly producing and consuming content on a variety of online platforms, participating in the digital economy and creating value for cultural goods, brands, and, in some instances, themselves. He pointed to an example of a group of teenagers from Newport Beach, California, who, in the wake of COVID-19, created the non-profit mask-making company Read My Lips. The company sells masks with a clear, plastic window on the mouth area for those who depend on visual cues to understand what others say. Leveraging the Instagram platform, they have been taking client orders, building their brand, and promoting their product online.

More broadly, several Research Sprint participants emphasized the need for youth to cultivate an array of 21st-century skills, including but beyond digital skills, such as creativity, critical thinking, problem-solving, collaboration, and communication.

5. **Inequities persist beyond physical access to digital technologies and play out when students and stakeholders lack adequate skills and training.**

While COVID-19 has heightened the need for digital skills, not all young people have access to digital technologies, and just as importantly, the skills to effectively use them. As a Research Sprint team member noted, in terms of access, a report from the OECD indicates that across 36 OECD countries, more than one in ten 15-year-olds who attend socio-economically disadvantaged schools do not have an Internet connection. As the team member pointed out, such inequities in access may not only impact young people's ability to engage in school, but to develop digital skills, such as evaluating information online, protecting one's privacy and security, and building connections with others.

To take one concrete example, in terms of artificial intelligence — one skill area highlighted by an expert from Chile — limited connectivity and access to devices may entail, for instance, limited functionality (e.g., restricted to using voice-based AI systems, like Siri, on a mobile phone) and content availability (e.g., with restricted Internet and device access, individuals may only be able to use AI-based applications that draw information and data from a few sources). With limited technological functionality and content, youth may not develop the full set of skills to use AI. For example, it may be more difficult for young people to critically consider how the algorithms shape the content they see on AI-powered systems if such content is drawn from limited sources.

A student participant noted that as efforts are made to bridge digital divides and inequalities, policy-makers and school administrators should account for and subsidize the potential costs associated with increased digital access. That is, as hardware and software rapidly evolve, learners can easily

lose their newly gained access if they cannot afford to pay for maintenance or newer devices. Some learners may also feel uncomfortable asking for help with using the device or solving technical issues.

6. **COVID-19 has brought increased attention to learning digital skills as a lifelong learning process.**

The current global pandemic has highlighted the importance of learning digital skills as part of lifelong learning. As a Sprint team member explained, in the formal educational context, it's helpful to consider that schools have different expectations and content areas that need to be addressed within specific time frames — these requirements and restrictions are likely now exacerbated by COVID-19. Given that schools may not be equipped to teach the breadth and depth of digital skills that learners need to thrive in our society, it may be helpful to consider the development of these skills as part of a lifelong learning process — also highlighting the importance of informal learning spaces in cultivating such skills over time.

7. **COVID calls for increased efforts to cultivate youth's well-being and explore how the digital environment impacts well-being.**

The global pandemic has drawn increased attention to the importance of young people's well-being and how the digital environment interfaces with well-being. A Research Sprint team member shared how it may be useful to conceptualize well-being and how learners are coping with COVID-19 in a manner that spans beyond just physical or mental health. This conceptualization may entail, for instance, the quality of one's educational experiences (in formal or informal spaces), social relationships, and environmental conditions. This lens raises the question: How might engagement with the digital world interface with young people's well-being? For example, can interacting with others from around the world on Scratch promote well-being by helping youth build a sense of community and connection with others? Or, to what extent do youth use TikTok and other social media platforms to learn about information related to COVID-19 and its prevention?

8. **Policy-makers should consider the opportunities and deficits of a connected ecosystem.**

Learning is happening in many different spaces, and technology plays an important role in connecting different learning experiences, platforms, and tools. Looking ahead, as a Sprint team member pointed out, how will we bring together various spheres of learning, such as maker spaces, social media, and gaming platforms? An expert from Colombia explained that many instructional designers of formal and informal learning spaces are developing educational content that brings together both online and offline elements (e.g., receiving a physical certificate upon course completion).

> **"How can we develop models that expand learning beyond the formal school setting to connected networks that bring different learning opportunities together in an integrated experience, while balancing the risks such an experience may present?"** – Alexa Hasse, Research Sprint team member

Many Sprint participants noted that a connected learning ecosystem can promote a sustainable model of learning. However, connected ecosystems captured by one or two entities, particularly private sector groups, may increase centralization, which may create unanticipated consequences for learning, especially in environments where education is highly contextual.

Emerging Questions

1. How has accelerated digitization in the context of COVID-19 changed where and with whom individuals learn (e.g., via social media, educational gaming platforms, with peers and mentors)?

2. What are the skills that learners may gain from informal learning spaces? What are the possible pathways (e.g., careers, mentorship, educational opportunities) these environments might open up?

3. How can we support and empower educators in leveraging informal learning spaces, such as educational gaming spaces or social media platforms?

4. As the global pandemic has heightened the need for digital skills, how can educators, policy-makers, and other stakeholders promote the skills learners need to fully participate academically, socially, politically, and economically in our increasingly digital world, particularly for those from underrepresented communities?

5. In the formal educational context, should curricula place as much emphasis on the development of digital skills as numeracy and literacy?

6. As efforts are made to bridge digital divides and inequities in the public and private sectors, how can stakeholders, such as policy-makers and school administrators, explicitly account for the benefits and costs of learners' newly gained digital access? How can stakeholders subsidize these costs?

7. How can we ensure that the skills youth develop on specific online platforms and spaces (e.g., social media) can extend to other online environments and the offline world (e.g., leveraging the skills to engage in activism online to participate in civic and political activities offline)?

8. How can we empower youth to engage with informal learning spaces, such as social media, while teaching them to approach such environments in a critical manner (e.g., with an awareness of misinformation and disinformation; how such platforms may reinforce racial prejudices; and how these spaces pose privacy risks)?

9. How can we make sure that the implementation of informal learning spaces is aligned with different communities' — particularly underrepresented communities' — understanding of how individuals most effectively learn?

10. Given that COVID-19 has highlighted the importance of learning digital skills as a lifelong learning process, how can educational initiatives and spaces cultivate learning opportunities over time?

11. COVID-19 has drawn increased attention to youth's well-being and how they are coping with the pandemic. To what extent is young people's well-being impacted by their engagement with the digital landscape? How can we use digital and non-digital tools and spaces to promote youth's well-being?

12. How can we develop models that expand learning beyond school to connected networks that bring different learning opportunities together through an integrated experience, while taking into account the risks that may come with such an experience?

Suggested Resources

Informal Learning Spaces

- Scratch 2019 annual report - Scratch team
- TikTok EduTok videos - TikTok EduTok
- Mona Lisa: Beyond the glass virtual reality experience - The Louvre and HTC Vive Arts
- Extended reality: The potential of augmented, virtual, and mixed reality experiences for remote teaching and learning - Melyssa Eigen, Sandra Cortesi, and Alexa Hasse (Medium)
- Surge of virus misinformation stumps Facebook and Twitter - Sheera Frenkel, Davey Alba, and Raymond Zhong (The New York Times)
- How the racism baked into technology hurts teens - Avriel Epps-Darling (The Atlantic)
- Disinformation creep: ADOS and the strategic weaponization of breaking news - Mutale Nkonde, Maria Y. Rodriguez, Leonard Cortana, Joan Mukogosi, Shakira King, Ray Serrato, Natalie Martinez, Mary Drummer, Ann Lewis, and Momin Malik (Harvard Kennedy School Misinformation Review)

Digital Skills

- Youth and digital citizenship+ (plus): Understanding skills for a digital world - Sandra Cortesi, Alexa Hasse, Andres Lombana-Bermudez, Sonia Kim, and Urs Gasser (Youth and Media, Berkman Klein Center for Internet & Society)
- Digital Citizenship+ (Plus) Resource Platform - Berkman Klein's Youth and Media team
- Challenges and opportunities of co-designing playlists with youth - Andres Lombana-Bermudez (HASTAC)
- The Artificial Intelligence, Society, Information and Communication (IA+SIC) Nucleus - Institute of Communications and Image of the University of Chile
- How youth are contributing to the digital economy and why their participation is more important than ever - Andres Lombana-Bermudez, Sandra Cortesi, Christian Fieseler, Urs Gasser, Alexa Hasse, Gemma Newlands, and Sarah Wu (Medium)
- Educational resource platforms: Digital Literacy Library, and Get Digital - Facebook