

SECTORS

Education

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Key points

- The COVID-19 pandemic strengthened the links between public educational institutions and large technology companies offering digital services for education, but this has exposed gaps in data governance that require attention.
- Open data can advance and prevent corruption in education, and several projects have emerged over the last few years to develop data literacy in educational settings.
- Using open data as open educational resources can empower learners to become co-producers of knowledge and also to promote civic participation.

Introduction

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It's been a few years since the first iteration of the State of Open Data chapter on education, which argued that open data could help researchers and policymakers understand the education landscape by providing information about learners, education facilities, and their performance. We wrote at the time that open data was vital for creating open

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educational resources that can drive data literacy.

We also argued, and still do, that attention must move beyond the simple availability of educational data to how it is contextualized, presented, and used. This is needed to avoid reinforcing pre-existing biases and social divides in the deployment of data driven technologies, such as artificial intelligence (AI) used in automated decision-making. Efforts should also be made to narrow the gap and the power dynamics between those who are data literate and those who struggle to navigate data.

Recent literature argues that learners and educators need critical data literacies in order to enable them to participate in policy co-creation and that educational strategies need to convey a thorough understanding of data and data capabilities to foster a wide understanding of the education sector.^{1 2 3 4 5 6 7}

In this chapter update, we want to reiterate the importance of open education and open data communities in driving the advancement of critical data literacy. We suggest the use of open data as an open educational resource to explore how data is being created, curated, analyzed, and communicated in order to develop the scientific, policymaking, and civic participation skills needed to thrive in an increasingly datafied society.

A Sector Governed by Numbers

Education has become governed by numbers, according to educational policy researcher „Jenny Ozga⁸ back in 2008. It was a sentiment repeated by Stephen Ball⁹ in his 2015 paper on the “tyranny of numbers” in the sector. However, researchers and scholars critique this data dominance since numbers alone cannot portray the complexities of the education sector without missing elements that are interwoven with sociopolitical and cultural elements in society. Thus, the value of open data becomes the ability to provide transparent information that can drive decisions and strategies to enhance educational practices and opportunities. But this needs to happen while increasing investments and support for educational communities, and while avoiding putting vulnerable groups at further risk.^{10 11}

The education data and open data ecosystems have changed increasingly and steadily over the last few years. The COVID-19 pandemic catalyzed relationships between public educational institutions and large technology companies involving the use of digital services for education¹². Data-driven business models are central to these relationships. And, as most of the public educational institutions acquired services reactively through partnerships instead of through open and public procurement approaches, gaps were left in governance regarding data collection and the privacy of learners.

Nowadays, educational strategies are intended to measure learners and educators in terms of productivity, achievements, attainment, and retention. This is driving data interactions in pedagogy, curriculum, and assessment in new performative accountability regimes.¹³ However, this has also opened up arenas for the unregulated use of learners’ data to perform analytics under the premise that it can help to improve and enhance education through personalisation and data-driven interventions.^{14 15} That, in turn, risks jeopardizing complex and critical student-centered

Open Education. Her research aims at fostering the development of critical data literacy for the HE sector and civil society grounded on the ideas of ethics as a method and promoting the adoption of elements of data agency, data justice, ethics, and privacy in open education and digital education policies and practices.

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pedagogies⁵ and potentially coercing digital participation in order to ensure data is gathered.¹⁶

Education data normally includes information about performance, social background, and educational budgets. These are important elements of education governance because of its social, institutional, political, and economic contexts. Since such data can be sensitive, ethical aspects need to be addressed alongside the opening up of educational data, which can be both instrumental and operational for the development of policies as its technical and social components, including learning analytics, are shaping the way education is perceived.

Open data, including data from public procurement, can advance transparency and prevent corruption in education.¹⁷ It can also protect learners' data and privacy, but educational data has become a lucrative business for the educational technology sector. Businesses may act as data brokers and use the data in ways that may negatively impact people in the future.¹⁸ Thus, national educational policies must include data governance frameworks that allow data to be published and publicly audited and to be used in ways that protect learners' privacy while also promoting the development of critical data literacies that enable learners to audit and interact with such data.¹⁹

An interesting project has been developed by the Brazilian Open Education Initiative called [Observatório Educação Vigiada](#) (Surveillance in Education Observatory). During the Covid-19 pandemic, it mapped the "collection, processing, and commercialization" of user data on digital platforms and services of public educational institutions in Latin America. The project documented how corporations took advantage of precarious educational ecosystems during the pandemic to insert their distance learning platforms in public education, using learners' and educators' data as currency for their services.

Data Literacy

In a "datafied" ecosystem like education, one of the biggest challenges is to enable a critical approach to foster data understanding in society. Educators and learners need to be equipped with skills to become critical data practitioners capable of working with data and questioning the datafied society.²⁰ The skills they need include being able to evaluate and interpret data grounded curriculum design and to adopt a critical data studies perspective that empowers them to question the power structures behind data using a data justice approach.^{21 22 23 24}

It is necessary to take advantage of the opportunities given by open data to engage learners in critically analyzing what Richterich calls "the societal embeddedness and constructedness of data".²⁵ This applies to both public and research data in order to enable learners accessing and working with datasets that are not simply openly available, but that make important truth claims about the real world. Open data represents a nexus of challenge, opportunity, and responsibility as it can be used as open educational resources to support the development of research data literacies, transparent and open scientific practices, as well as citizenship and critical thinking, regardless of the research field.^{26 27 28}

Some interesting projects aiming to develop critical data literacy from different angles that have arisen in the last few years are listed below. They can serve as an inspiration to support fellow educators and educational stakeholders to thrive in the datafied society.

- **Da-Li: Data literacy for citizenship (EU consortium)****:** This EU funded project aims to empower individuals (young adults, adults, or seniors) to acquire the data literacy competencies required to practice responsible citizenship and civic engagement.
- **Building Capacity in Data Literacy for Human Rights Actors (Palestine):** With funding from Canada's International Development Research Centre, the Center for Continuing Education (CCE)

at Birzeit University in Palestine is planning data literacy training programs in a number of domains, including human rights and social justice. The training is designed to empower human rights researchers, workers, and activists to understand, analyze, and use data with confidence to

make data driven decisions for the public good in an ethical and responsible fashion.

- **Catalyzing the Creation of a Data Ecosystem (Palestine):** In this project, Birzeit University's Center for Continuing Education piloted a capacity development approach to build a critical mass of data professionals with the relevant skills and knowledge to understand and work with data, create data products and services, create show-cases, and eventually create and influence data and AI policies (both open and non-open). It created an applied learning journey that aimed to develop capacity in data technologies for people with computer science backgrounds and for professionals from a range of backgrounds, as well as to create data startups and/or to create data for development projects.
- **Understanding Data: Praxis and Politics (UK):** This project aims to design, develop, and pilot an open educational resource to improve educators' critical data literacies. The resource will provide educators with content and analytical tools to think about real-life situations that will connect them with the most recent issues and research in the field.
- **Monithon (EU):** This project was created to promote the civic monitoring of government spending. It combines open government data and citizens' collaborations to control how public projects are progressing and whether they deliver their intended results. This type of participatory monitoring can complement official monitoring by public administrations as well as the evaluation of public policies by academic institutions or research organizations.
- **A Scuola di Open Coesione (Italy):** This is a course that aims to promote and develop the principle of active and conscious citizenship in Italian schools through research activities and civic monitoring of European and national public funding. The project teaches students digital skills, statistics, and civic education using, among other things, journalistic skills to help students identify and communicate their findings.
- **Living with Data (UK):** This project takes public sector data practices that relate to health, welfare, and media use as a starting point for research. Public sector data practices increasingly shape everyday life experiences, yet they have received less research attention than high profile commercial data practices.
- **Data Education in Schools (UK):** This project is part of the Edinburgh and South East Scotland City Region Deal Skills Programme funded by the Scottish Government. It will develop an interdisciplinary data education curriculum for Scotland and a set of engaging real-world data science teaching materials for primary and secondary school teachers.
- **Data Justice Lab (UK):** This is a space for research and collaboration at Cardiff University's School of Journalism, Media, and Culture that seeks to examine the relationship between datafication and social justice, highlighting the politics and impacts of data driven processes and big data.
- **D3 - Developing Digital Data Literacy (EU):** This EU-funded project relates to the need for information literacy for all citizens in Europe. It addresses one of the greatest challenges that Europe faces, namely the rise of populism and misinformation in all its forms.

These projects provide tools, guidance, strategies, and ideas to support and enable educational institutions, educators, and learners, as well as communities of practice and collectives of citizens, to not only enhance their data literacies but to gain skills to actively participate in democratic discussions entwined with data, including policy-making.

Conclusions

Open data can be practically applied across and between disciplines by promoting critical engagement with the same raw data that researchers, governments, civil society, international organizations, and policy-makers generate and use. This supports the development of a wide range

of literacies. Using open data as open educational resources can enable critical data literacy by empowering learners to become co-producers of knowledge and also promote civic participation as learners act as citizen researchers, helping them to frame, ask, and investigate socially pertinent questions, and thereby better exercising their rights as citizens.

In higher education, a perceived need to quantify productivity, including learning, has justified an ever-increasing metricization of student and staff activity. This has re-cast students, educators, and learning activities into new roles as data producers, making it critical to give them a critical understanding of data. Education must enable a citizenry capable of participating in public discussions and critically evaluating information related to social problems, developing skills for the understanding of data to navigate and solve real-life challenges. Open data can support a better educational future by promoting participative arenas that enable quality and inclusive education that will, in turn, foster democracy.

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References

- 1: * Johnson, Jeffrey Alan. 'From Open Data to Information Justice'. *Annual Conference of the Midwest Political Science Association*, 2013, 263–74. <https://doi.org/10.1007/s10676-014-9351-8>. ↵
- 2: * Atenas, Javiera, Leo Havemann, and Ernesto Priego. 'Open Data as Open Educational Resources: Towards Transversal Skills and Global Citizenship'. *Open Praxis* 7, no. 4 (1 October 2015): 377. <https://doi.org/10.5944/openpraxis.7.4.233>. ↵
- 3: * Schäfer, Mirko Tobias, and Karin Es, van, eds. *The Datafied Society. Studying Culture through Data*. Amsterdam University Press, 2017. <https://doi.org/10.5117/9789462981362>. ↵
- 4: * Markham, Annette N, Katrin Tiidenberg, and Andrew Herman. 'Ethics as Methods: Doing Ethics in the Era of Big Data Research—Introduction'. *Social Media + Society* 4, no. 3 (July 2018): 205630511878450. <https://doi.org/10.1177/2056305118784502>. ↵
- 5: * Atenas, Javiera, Leo Havemann, and Cristian Timmermann. 'Critical Literacies for a Datafied Society: Academic Development and Curriculum Design in Higher Education'. *Research in Learning Technology* 28, no. 0 (5 October 2020). <https://doi.org/10.25304/rlt.v28.2468>. ↵
- 6: * Williamson, Ben. 'Digital Education Governance: Data Visualization, Predictive Analytics, and "Real-Time" Policy Instruments'. *Journal of Education Policy* 31, no. 2 (3 March 2016): 123–41. <https://doi.org/10.1080/02680939.2015.1035758>. ↵
- 7: * Williamson, Ben. *Big Data in Education: The Digital Future of Learning, Policy and Practice*. 1st edition. Thousand Oaks, CA: SAGE Publications, 2017. ↵
- 8: * Ozga, Jenny. 'Governing Knowledge: Research Steering and Research Quality'. *European Educational Research Journal* 7, no. 3 (2008): 261–72. <http://dx.doi.org/10.2304/eej.2008.7.3.261>. ↵
- 9: * Ball, Stephen J. 'Education, Governance and the Tyranny of Numbers'. *Journal of Education Policy* 30, no. 3 (4 May 2015): 299–301. <https://doi.org/10.1080/02680939.2015.1013271>. ↵
- 10: * Lupton, Deborah, and Ben Williamson. 'The Datafied Child: The Dataveillance of Children and Implications for Their Rights'. *New Media & Society* 19, no. 5 (May 2017): 780–94. <https://doi.org/10.1177/1461444816686328>. ↵
- 11: * Selwyn, Neil. 'Data Points: Exploring Data-Driven Reforms of Education'. *British Journal of Sociology of Education* 39, no. 5 (4 July 2018): 733–41.

<https://doi.org/10.1080/01425692.2018.1469255>. ↩

12: * Amiel, Tel, Thiago Pezzo, Leonardo Ribeiro Da Cruz, and Luísa Antunes Oliveira. 'Os Modos de Adesão e a Abrangência Do Capitalismo de Vigilância Na Educação Brasileira'. *Perspectiva* 39, no. 3 (29 September 2021): 1–22. <https://doi.org/10.5007/2175-795X.2021.e80582>. ↩

13: * Gulson, Kalervo N, and Sam Sellar. 'Emerging Data Infrastructures and the New Topologies of Education Policy'. *Environment and Planning D: Society and Space* 37, no. 2 (April 2019): 350–66. <https://doi.org/10.1177/0263775818813144>. ↩

14: * Baker, Ryan Shaun, and Paul Salvador Inventado. 'Educational Data Mining and Learning Analytics'. In *Learning Analytics*, edited by Johann Ari Larusson and Brandon White, 61–75. New York, NY: Springer New York, 2014. https://doi.org/10.1007/978-1-4614-3305-7_4. ↩

15: * Schouten, Gina. 'On Meeting Students Where They Are: Teacher Judgment and the Use of Data in Higher Education'. *Theory and Research in Education* 15, no. 3 (November 2017): 321–38. <https://doi.org/10.1177/1477878517734452>. ↩

16: * Barassi, Veronica. 'Datafied Citizens in the Age of Coerced Digital Participation'. *Sociological Research Online* 24, no. 3 (September 2019): 414–29. <https://doi.org/10.1177/1360780419857734>. ↩

17: * Poisson, Muriel. 'Open Government in Education A Conceptual Framework.' *Open Government in Education*, 2021. <https://unesdoc.unesco.org/ark:/48223/pf0000378374>. ↩

18: * Williamson, Ben, Rebecca Eynon, and John Potter. 'Pandemic Politics, Pedagogies and Practices: Digital Technologies and Distance Education during the Coronavirus Emergency'. *Learning, Media and Technology* 45, no. 2 (2 April 2020): 107–14. <https://doi.org/10.1080/17439884.2020.1761641>. ↩

19: * Sander, Ina. 'What Is Critical Big Data Literacy and How Can It Be Implemented?' *Internet Policy Review* 9, no. 2 (28 May 2020). <https://doi.org/10.14763/2020.2.1479>. ↩

20: * Gilliard, Chris. 'Pedagogy and the Logic of Platforms'. *Educause Review* 52, no. 4 (2017). <https://er.educause.edu/-/media/files/articles/2017/7/er...> ↩

21: * Prado, Javier, and Miguel Angel Marzal. 'Incorporating Data Literacy into Information Literacy Programs: Core Competencies and Contents'. *Libri* 63, no. 2 (2013): 123–34. <https://doi.org/10.1515/libri-2013-0010>. ↩

22: * Iliadis, Andrew, and Federica Russo. 'Critical Data Studies: An Introduction'. *Big Data & Society*, no. December (2016): 1–7. <https://doi.org/10.1177/2053951716674238>. ↩

23: * Dencik, Lina, and Javier Sanchez-Monedero. 'Data Justice'. *Internet Policy Review* 11, no. 1 (14 January 2022). <https://doi.org/10.14763/2022.1.1615>. ↩

24: * Lee, Victor R., Daniel R. Pimentel, Rahul Bhargava, and Catherine D'Ignazio. 'Taking Data Feminism to School: A Synthesis and Review of Pre-collegiate Data Science Education Projects'. *British Journal of Educational Technology* 53, no. 5 (September 2022): 1096–1113. <https://doi.org/10.1111/bjet.13251>. ↩

25: * Richterich, Annika. *The big data agenda: Data ethics and critical data studies*. University of Westminster Press, 2018. <https://library.oapen.org/handle/20.500.12657/30155> ↩

26: * D'Ignazio, Catherine, and Rahul Bhargava. 'Approaches to Building Big Data Literacy'. In *Proceedings of the Bloomberg Data for Good Exchange Conference*, 2015. <http://www.kanarinka.com/wp-content/uploads/2021/01...> ↩

27: * Pöttsch, Holger. 'Critical Digital Literacy: Technology in Education Beyond Issues of User Competence and Labour-Market Qualifications'. *TripleC: Communication, Capitalism & Critique. Open Access Journal for a Global Sustainable Information Society* 17, no. 2 (26 August 2019): 221–40. <https://doi.org/10.31269/triplec.v17i2.1093>. ↩

28: * Carmi, Elinor, Simeon J. Yates, Eleanor Lockley, and Alicja Pawluczuk. 'Data Citizenship: Rethinking Data Literacy in the Age of Disinformation, Misinformation, and Malinformation'. *Internet Policy Review* 9, no. 2 (28 May 2020). <https://doi.org/10.14763/2020.2.1481>. ↩

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