

Governance processes for a robust educational data ecosystem



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About the Data4Learning webinar series

This webinar series focuses on the meaningful and ethical use of digitally processed data for student learning. The webinar series is planned to take place between October 2022 and June 2023.

The webinar series addresses a range of topics around trust and safety aspects, ownership of data, interpretation and usability of data, exchange of data and ethical use of data, as well as aspects around inclusion and equity, and implications for ecosystem governance, technical infrastructure, and continuous professional development.

The focus of the webinars is to facilitate an open exchange between relevant actors in education on what works and what does not – and most importantly on how to move forward together. The webinars are run for European Schoolnet's steering committee members and a closed community of stakeholders. Although participation to the webinars remains upon invitation only, their summaries are shared publicly through European Schoolnet's channels.

Governance processes for a robust educational data ecosystem

Speakers June 2023



Melanie Ehren, Professor in Educational Governance at the Vrije Universiteit Amsterdam, director of research institute LEARN! and honorary professor at University College, Institute of Education.



Kruakae Pothong (PhD), visiting research fellow in the Department of Media and Communications at the London School of Economics and Political Science.



Barbara Wasson, full Professor of Information Science at the Department of Information Science and Media Studies, University of Bergen, Norway, and Director of the Centre for the Science of Learning & Technology (SLATE), the national competence centre for learning analytics funded by the Norwegian Ministry of Education.

Webinar Summary

How can we ensure that a robust ecosystem is set in place to oversee the increasing use of data in education?

Opening the discussion, **Melanie Ehren** addressed the first question by exploring the meaning of the word ecosystem when discussed in the field of education data. She used a “broader conceptual framework” to break down its structure into a micro, meso, and macro level with each focusing on specific elements related to the ecosystem. On a micro level, **Melanie Ehren** identified “teachers using data to inform their teaching and instruction”, on a meso level she included “schools who aggregated student achievement data and other types of data to think about ways to develop and improve the school”, and on a macro level she added “data used by inspection agencies, for example, or ministries of education to inform their evidence, informed policy making”. To talk about a robust ecosystem, **Melanie Ehren** considers important that one looks on all the different levels and check the “accuracy of data, but also the extent to which data represents different types of student groups, including those who are vulnerable or [part of] minority groups within the education system, [as well as] how data is used to benefit student learning”.

Kruakae Pothong, coming from a more child-rights perspective, focused on the need for effective regulation and market incentives to a robust ecosystem that processes data lawfully, respecting the rights of the children, and is of benefit to their learning. She also raised the lack of transparency that often surrounds companies' privacy terms and conditions and the complexity this adds to the ecosystem. This complexity is further heightened with the particular role that schools play as “intermediaries between EdTech providers and children”. In this situation, **Kruakae Pothong** identified a “power imbalance between EdTech, who have the technical control over the data being processed and the schools with the responsibility to ensure that the EdTech tools they use only process the data strictly according to [schools' defined purposes]”.

*“It is almost impossible for schools to discover what data are collected by EdTech and evidence also shows that existing regulations in the UK, give schools the responsibility, but not the power, to control how EdTech process the data.” – **Kruakae Pothong***

Barbara Wasson, from her side, identified the ecosystem as a set of different actors and structures that include students, teachers, and parents, technology providers, the current laws and regulations, and institutions like schools and universities. This “complex system” of actors brings about, according to **Barbara Wasson**, different technical, regulatory, and competence issues that need to be addressed.

When asked about the role of the EdTech providers specifically in the ecosystem, **Melanie Ehren** mentioned that “where EdTech is positioned in that ecosystem kind of depends on their specific role”. Many of the companies operating in this field enter in negotiations and agreements directly with schools. It is therefore important, **Melanie Ehren** argued, to “capacitate schools and teachers to think about what kind of agreements they need to enter into to ensure that these data are stored in ways that are beneficial [and

complying with] children's rights" and to "capacitate schools and teachers to ensure that data is used properly". For **Kruakae Pothong**, there is a disconnection between the "actual purposes" a school wants a tool to serve and the purposes it serves in reality. Moreover, the push that schools feel to integrate technology, and the large number of options, often confuses schools. The shortage of independent evidence of technology benefits makes it difficult for schools to make fully informed decision and undermines opportunities for businesses to build trust with schools. That is why **Kruakae Pothong** advocated for a "standardised framework for assessing EdTech" which would be based on evidence and cover elements such as the purpose of use, respect for children's rights, compliance with data protection and privacy, as well as accessibility. **Barbara Wasson** also underlined that "EdTech companies really oversell their products" and that, up until today, any "pedagogical benefits we know from [independent] research are very, very limited". **Tony Weir, Senior Inspector at the Irish Department of Education** raised the importance of "hidden data" and the question around transparency. In his view it would be potentially beneficial to consider the creation of a European Centre, similar to the [European Centre for Algorithmic Transparency \(ECAT\)](#), that would be tasked to "prevent the spurious collection of data whereby data is just being collected because it's useful to companies, doesn't serve any educational purpose for the child or for the teacher or for the institution, but it's good for these companies". Related to this idea, **Melanie Ehren** mentioned that in the Netherlands, the Data Protection Authority is tasked with overseeing "the development and use of algorithms". However, she added that ensuring transparency is very complex and that even these new actors "do not have the capacity to oversee every single use of data by EdTech companies". That is why, **Melanie Ehren** said, it is important to empower those who use data in schools, through data literacy programmes, to be able to "understand some of these issues, ask those questions, be provided with tools to check the use of data". On the other hand, and although agreeing with the need to upskill those using and collecting data in schools, **Kruakae Pothong** mentioned the limitations that the speed with which technology changes brings to training teachers and schools. That is why, **Kruakae Pothong** argued for the central role that education authorities should play in creating the structures to filter EdTech and setting the criteria for that. These criteria include the pedagogical value of the product, children's rights, data protection, privacy, and data minimisation, all of which should be in place by design.

Why is it important to ensure the exchange and interoperability of data in education systems?

Responding to the question about the importance of ensuring the exchange and interoperability of data, **Barbara Wasson** argued that in Norway students are given a secure single sign-on which corresponds to their unique identity and allows their anonymised data to be sharable. In this way, the Directorate for Education can conduct analysis and research on aggregated data coming from all students in the country. A similar process is also followed in the Netherlands. **Melanie Ehren** mentioned that the national bureau for statistics with the research council have developed a platform where data are combined to enable those with access to the data, to "see how students develop over their school career, look at wider patterns in the system over time and connect that to some other indicators around deprivation for example, or parental income, parental jobs, etcetera". It is important to ensure the interoperability of education data as this allows authorities to "monitor indicators about quality, performance and other types

of educational outcomes, and to understand differences between schools, between regions, to explain drop out, [and] early school leaving overtime, [...] better projection and required capacity in the system and resources, number of student places required, [and] prediction of teacher shortages". Moreover, **Melanie Ehren** adds that such capabilities can "be used to measure effects of interventions and new policies, both at the school level where schools, develop new programmes and want to know how effective these are to address students' learning outcomes, but also at the national level, when we introduce new reform programmes to really understand the effects of those and how they play out, perhaps differently across different types of schools".

"To have that kind of platform and infrastructure to connect those data in a very secure environment allows for analysis on trends in the education system beyond the pedagogical purposes of the classroom." – **Melanie Ehren**

The experience in the UK is different, as **Kruakae Pothong** mentioned that there is no such national platform currently in the country. What is often reported is individual schools "manually entering the data into the different systems and configuring their own data analysis to get these benefits of the insights from the data set". However, as **Kruakae Pothong** argued, in this situation "the lack of interoperability means that there are a lot of missed opportunities and added administrative burden for schools and teachers [which] somehow goes against the several claims from EdTech providers that they ease the burden of vast administrative tasks".

How can we design suitable governance processes for such an ecosystem?

Melanie Ehren argued that to design suitable governance processes, one should think of the various checks and balances that should be in place, as well as the regulatory incentives. These checks and balances should ensure that "the data is accurate, that rights are secured, but also, increasingly important with the use of algorithms, that diversity of data is properly safeguarded". When designing such processes, she claimed, one need to not only consider the actors but also the parts of the process involved such as "collecting data, analysing data, comparing data, making it accessible to users and the decisions that we make on the data". These represent different elements of the micro, meso, and macro levels mentioned earlier. **Melanie Ehren** conceded that thinking of the right checks and balances is a difficult task, but at least raising awareness of their need is important.

Adding to the elements that need to be checked, **Kruakae Pothong**, mentioned that is important to take into consideration the "impact of data processing" and the "business models of technology providers" as these can show the types of data being collected and the ways in which data is processed, shared, and used. She underlined that in most cases, it is the "hidden data" that is being processed and used from companies which are also those that schools and students are least aware of when it is happening. **Kruakae Pothong** also argued that some of these "hidden data" are arguably beyond the scope of data protection laws, making it, as mentioned by Melanie, difficult to check. Therefore, it is important to "ensure

accountability throughout the product and service life cycle starting from the design and development stage”.

“People like the data protection officers [often] haven't worked with educational data which is [a] special [category] because of the human rights and the democracy issues.” – Barbara Wasson

Barbara Wasson argued that it is important to train individuals in government positions dealing with educational data so that they can identify risks and be able to support schools, parents, and students about their rights and obligations. She also shared that in Norway it is reported a growing number of parents being more concerned about their children's data and students not wanting to share their educational data, especially with their parents.

How do we best define the infrastructure to be put in place and what are the actors involved?

According to **Barbara Wasson** the infrastructure relates to the regulation, quality processes, as well as the competences of the people that participate in it. She sees infrastructure as part of the wider ecosystem discussed earlier. Moreover, **Barbara Wasson** mentioned that the infrastructure depends also on the education system of a particular country. For example, in Scandinavian countries like Norway, teacher autonomy is quite high and thus it is difficult to regulate certain things on a national level. However, she argued that areas such as data protection and impact analysis can be centralised in order to avoid overloading schools, municipalities, and regions which would be tasked to evaluate individually EdTech tools for their schools. **Barbara Wasson** added that it should not be the responsibility of the individual teacher to have the competence to properly evaluate such tools and technology. She argued that the infrastructure should maintain the right balance between autonomy of teachers and support from the state.

For **Melanie Ehren** the infrastructure is defined around the actors involved, the technology used, the oversight and safeguards in place, maintenance processes, as well as organisation and regulation elements to be considered. She also marked the importance of distinguishing between highly centralised and decentralised systems when defining the infrastructure as the two would look somehow different when in place. Assessing how “marketised” the system is, is another factor that **Melanie Ehren** considers in the infrastructure as this would show the place and influence of private actors such as EdTech companies. She also shared that in the Netherlands, although the education system is very decentralised, the infrastructure around data use is centrally coordinated. This coordination is incentivised and financially supported by the government but parts of it are executed by “middle tier” organisations like the Councils for Primary and Secondary Education. These organisations coordinate the work of the schools and allow for exchange and discussion around data comparability, use of platforms, etc. **Melanie Ehren** also mentioned that this coordination is possible due to the relatively small size of the country as well as the collaborative culture element that allows it.

Kruakae Pothong defined the infrastructure based on three elements. The first is “infrastructure for access” and refers to access to products, services, and data, the second is “regulatory infrastructure” which means “clear and comprehensive sets of rules and assessment criteria”, and the third is “infrastructure for safe and secure sharing”, making sure that data subject's rights are respected across the interoperable data ecosystem. **Kruakae Pothong** claimed that when it comes to access, in the UK there are students that still do not have access to devices or the connection to broadband in schools is not stable. On the other hand, related to the third element of data sharing, **Kruakae Pothong** shared some initiatives that establish “data stewardships” which allow for safe exchange of data. A model of data stewardship acts like “a box” or a pool where all data is managed and shared on behalf of data subjects by a trusted intermediary for specific reasons (in the interests of data subjects and/or the public) with appropriate actors that request them. This could bring value to, for example, assessing connection and comparisons between data from the education and health sectors to benefit students. However, frictionless data sharing systems can pose risks related to commercial exploitation when not properly safeguarded and have not proven their value for data use.

Who should own the data and what are the actors to be involved in such process?

Addressing this question, **Barbara Wasson** underlined that it is important to clarify what the types of this data are. Although it is important when a school is signing a data agreement to consider information such as students' responses to questions and final marks, it is even more important to consider other hidden types of data. Such data could include, for example, time stamps and the time a student takes to respond to a question.

Adding to that, **Kruakae Pothong** supported the idea that “students should own the data”. However, she argued that the concept of ownership is problematic when talking about minors as “ownership entails control” and that is hard in the context of education. Instead, **Kruakae Pothong** believes that proper literacy programmes should be in place and schools, teachers, parents, and children should engage in conversations “to enable children to exercise [some] control over their data”. Citing the Digital Futures Commission's research, surveying 1014 students aged 7-16 in the UK, she noted that “50% of children did not get a chance to talk about any of the types of data, why schools are using different types of technologies in the school, what data are being collected [for], [or which] processes stand for what purposes”. Moreover, **Kruakae Pothong** shared that the same study found that “only 29% of the children surveyed said that their schools talked to them about why [the] school use technology for teaching and learning, and only 15% [of those] surveyed said that their school told them about their rights to opt out”. That, she argued raises the question of “if you don't even know that you have the right to opt out, how could you exercise that right?”

Melanie Ehren argued that “we need to think about ownership in terms of different levels of data use and what that entails in terms of ownership”. In her view, different levels carry different implications for ownership as well as purposes for use.

Commenting to the discussion, **Tony Weir** stressed “how difficult it is now to retrofit a governance system onto processes that are already in place”. In his view, is “it’s not fair to allow the responsibility for this up to individual schools”. **Tony Weir** argued that schools do not have the technical capacity, the expertise, or the time for that as “they’re engaged in the really important business of teaching and learning”. He therefore agreed with Kruakae that clear procedures need to be in place from central education authorities that would be tasked to assess and filter the types of technology and specific tools allowed in classrooms. On the other hand, however, **Tony Weir** also emphasised the need to be careful about over-regulating in this area as this could pose the “risk that we will stifle innovation and stifle the interest of companies to become involved in this area”. In his mind, it is a very a delicate balance that need to be carefully kept and maintained by central education authorities and not left up to individual schools or teachers. Adding to this, **Patricia Wastiau, Principal Advisor for Research and Innovation at European Schoolnet**, brought up the issue of the growing amount of data collected and processed in education. In her view, “this could negatively impact students to be autonomous learners and teachers to be reflexive professionals”. **Melanie Ehren** agreed to that remark and added that it is important that we “acknowledge that [collected] data is what is easily measurable and that also skews sometimes our vision to what we find important in education, whereas much of it cannot be captured in data”. That means, she continued, that it is paramount that we ensure “that what we cannot measure is not left out of our thinking around quality and quality issues”.

Further reading suggested by the speakers:

Ehren, M., & Baxter, J. (2021). Trust, accountability and capacity in education system reform: Global perspectives in comparative education. Routledge. <https://www.routledge.com/Trust-Accountability-and-Capacity-in-Education-System-Reform-Global-Perspectives/Ehren-Baxter/p/book/9780367362492>

Digital Futures Commission. (2023, March). A Blueprint for Education Data: Realising children’s best interests in digitised education. Digital Futures Commission. Author. Retrieved from <https://digitalfuturescommission.org.uk/wp-content/uploads/2023/03/A-Blueprint-for-Education-Data-FINAL-Online.pdf>

Hooper, L., Livingstone, S., and Pothong, K. (2022). Problems with data governance in UK schools: the cases of Google Classroom and ClassDojo. Digital Futures Commission, 5Rights Foundation. <https://digitalfuturescommission.org.uk/wp-content/uploads/2022/08/Problems-with-data-governance-in-UK-schools.pdf>

Turner, S., Pothong, K., & Livingstone, S. (2022). Education data reality: The challenges for schools in managing children’s education data. Digital Futures Commission, 5Rights Foundation. <https://digitalfuturescommission.org.uk/wp-content/uploads/2022/06/Education-data-reality-report.pdf>

Samuelsen, J., Chen, W. & Wasson, B. Integrating multiple data sources for learning analytics—review of literature. RPTL 14, 11 (2019). <https://doi.org/10.1186/s41039-019-0105-4>

Holmes, W., Persson, J., Chounta, I-A, Wasson, B. & Dimitrova, V. (2022). Artificial Intelligence and Education. A critical view through the lens of human rights, democracy and the rule of law. *Council of Europe*. ISBN 978-92-871- 9236-3. <https://www.coe.int/en/web/education/-/new-isbn-publication-artificial-intelligence-and-education>

Misiejuk K., Ness I.J., Gray R. & Wasson, B. (2023) Changes in online course designs: Before, during, and after the pandemic. *Frontiers in Education*, 7, 96006.

<https://www.frontiersin.org/articles/10.3389/feduc.2022.996006/full>

Resources suggested by participants during the webinar for future reflection:

[AVT - sluttrapport | Datatilsynet](#)

[Child Rights by Design - 5Rights Foundation & DFC \(digitalfuturescommission.org.uk\)](#)

[A Blueprint for Education Data \(digitalfuturescommission.org.uk\)](#)

[What do children think of EdTech or know of its data sharing? Read our survey findings – 5Rights | Digital Futures Commission](#)



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