

Cross-country Report Country Dialogue Lab 1

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Introduction

This Cross-Country Dialogue Lab Report provides a brief introduction to the Country Dialogue Approach before bringing together and summarising the main points arising from the stakeholder dialogue in the first Country Dialogue Labs which took place in each of the Agile EDU partner countries: Denmark, Norway, Portugal, Spain and Sweden between September and November 2023.

In the [Agile EDU project](#) a series of 4 Country Dialogue Labs (CDLs) are designed to enable participant dialogue and activity - providing time and opportunities for collaboration, knowledge sharing and co-creation between multiple stakeholders (e.g., teachers, school leaders, policy makers, education leaders, students, parents, teacher educators, researchers, EdTech developers and publishers), about the purposeful and ethical use of data in student learning and assessment to establish high quality inclusive digital education in schools. The design of the CDLs is informed by Guidelines (Livingston, 2023) written for each CDL (provided to the country partners of Agile EDU), which suggest structured opportunities for participants from different contexts and perspectives to come together at country level to share and explore views, experiences and thinking through face-to-face or online dialogue. The aim is for the stakeholders participating to have opportunities to interact and communicate with as many CDL participants as possible. This provides structured opportunities to not only to learn about experiences of digital education in schools and learn from multiple stakeholder perspectives and expertise, but to develop a multi-stakeholder learning community that contributes to and informs the main aims of the Agile EDU Project which are:

- Identification of conditions, criteria, and success factors for a responsible, purposeful and inclusive use of data at school, local/regional, and central system levels.
- Support the capacity to use and govern data at organisational and individual level through guidance for practitioners (teachers and other school staff).
- Offer views and examples to inform recommendations – including governance mechanisms to improve strategies (school, local and central levels) for a responsible, purposeful, inclusive use of data.

Focus of Country Dialogue Lab 1 (CDL1)

Each of the four CDLs in the series of dialogue labs in the Agile EDU Project has a different focus related to the project phase. The dialogue topics proposed for CDL1 are related to Phase 1 of the project and were framed by a [Literature Review](#), the outcomes of a pre-validation workshop and the project's analytical framework. The aim of the CDL1 was to provide opportunities to engaged

in structured dialogue focusing on implications of data use for equity/inclusion, professional development and ecosystem governance. Overall, the CDL1s related to Phase 1 of the Agile EDU Project, with each country identifying a specific focus relevant to the priorities in their own context and their role in the project.

Across the 5 partner countries the specific topics discussed in CDL1 included:

- Meaning and understanding of datafication in the school sector
- Handling of data in digital platforms, resources and tools within municipalities and schools
- Possibilities and challenges in using digital systems and applications for teachers and schools, including ethical challenges
- Using data to improve learning and teaching and equity and inclusion
- Challenges and ways different levels (schools, municipalities) in the school system use data to improve learning and teaching
- Developing and supporting students' and teachers' competence in data and data understanding
- Challenges and ways to address gaps in digital literacy among teachers, school leaders and teacher educators

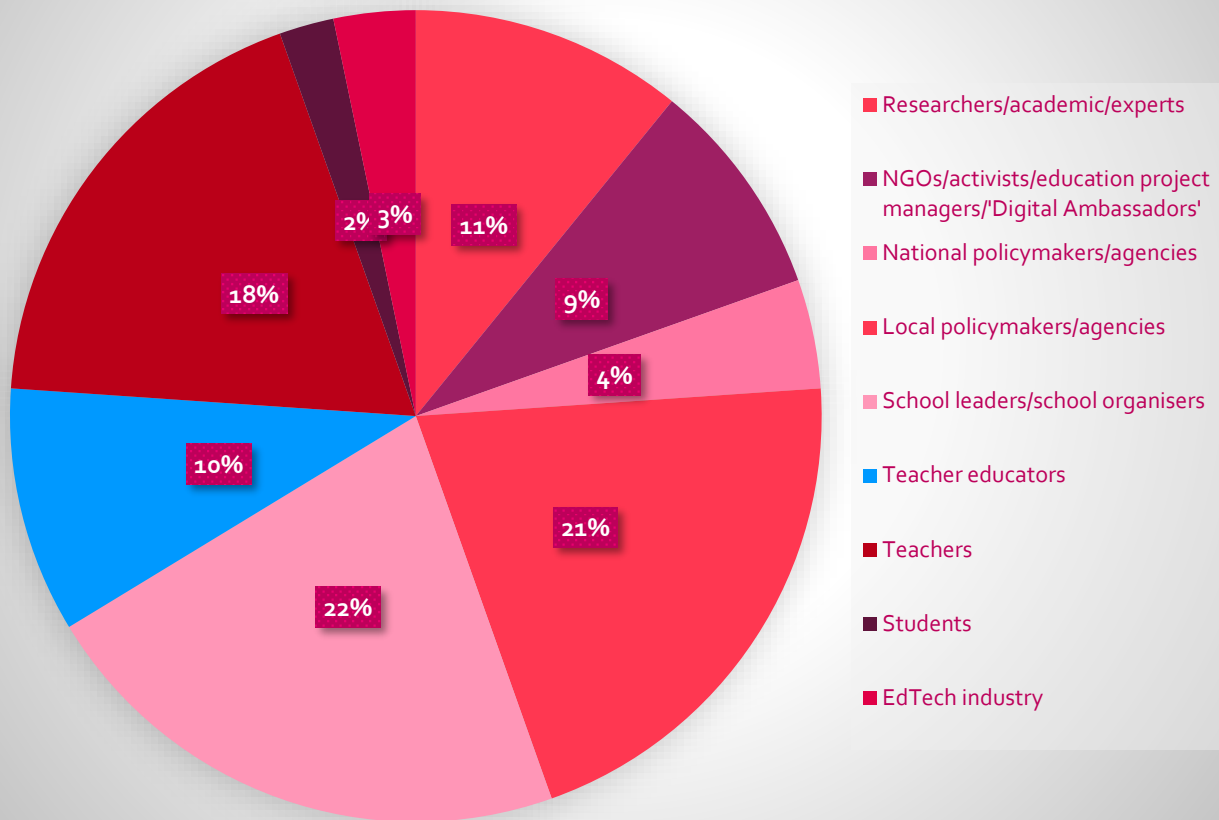
Participants of Country Dialogue Lab 1

Across the 5 partner countries a diverse group of stakeholders who have experience and/or an interest in digital education were invited to attend CDL1 to enable multiple perspectives about the topics identified to be shared and explored through dialogue. Participation in the CDL1 was voluntary and each country was responsible for providing information to the participants about the CDL approach and how data would be gathered, stored and used. They were also responsible for gaining each stakeholder's consent regarding their participation in CDL1.

A total of 92 participants attended the CDL1 across the five partner countries. The stakeholders attending differed from country to country according to each country context priorities and their specific focus for their CDL1. For example, in one country the participants were mainly stakeholders at municipality level, as this was relevant to their particular focus for CDL1. In another country the participants were predominantly teachers, in line with their focus for the first Dialogue Lab. In the other three countries there was more variety in the stakeholder type. Figure 1 below provides the breakdown of the type of stakeholders attending, totalled across the five countries.

The number of participants attending CDL1 varied across the five partner countries. The highest number of participants at CDL1 was 30 and the lowest was 12.

Figure 1: CDL 1 participants by type of stakeholder



Structure of Country Dialogue Lab 1

In four out of five countries the participants engaged in a one-day face-to-face CDL1, which included: a short welcome and introduction to the Agile Project and the Dialogue Lab approach (approximately 15 minutes); four dialogue sessions lasting 1 hour each to focus on a topic and provide feedback in a plenary session; and a conclusion, reminder to the reporting approach and an evaluation of CDL1 (approximately 15 minutes). An example structure is provided below in Figure 2:

Figure 2: Example structure of Country Dialogue Lab 1 (CDL1)

Welcome and brief introduction to Agile EDU Project and to Dialogue Lab approach and aims (15 mins)
Session 1: Dialogue theme 1 (1 hour)
Break (15 mins)
Session 2: Dialogue theme 2 (1 hour)
Lunch (1 hour)
Session 3: Dialogue theme 3 (1 hour)
Break (15 mins)
Session 4: Dialogue theme 4 (1 hour)
Conclusion of CDL 1: Explanation of reporting of CDLs and Evaluation (15 mins)

In one country the participants engaged in a half-day CDL1 online, which followed a similar structure as above with 3 dialogue sessions rather than four.

The participants were typically arranged in groups of 4 – 6 people for each dialogue session during CDL1. The participant groupings at a table (or online break-out room) changed for each dialogue session, which provided the opportunity to engage in dialogue with different stakeholders during CDL1. Following each dialogue session there was a plenary feedback session. The aim of plenary session was to enable the stakeholders to hear the views of the stakeholders at other tables about the topic identified for the dialogue session. Feedback could be shared using digital approach, but the emphasis remained on enabling dialogue between stakeholders in the plenary session, so all the stakeholders could hear the feedback from other table groups and could ask questions or add to the feedback given as far as time allowed.

Reporting of participant comments and views during Country Dialogue Lab 1

Each partner country provided a CDL1 Report. The Guidelines for CDL1, provided for the partner countries, set out how feedback from the dialogue sessions should be gathered and recorded. A template was provided to enable a consistent approach for reporting across the five countries. The country partners were responsible for recording the main points shared by rapporteurs identified

from each table group/break-out room and any dialogue between stakeholders during the Plenary Section of each of the Dialogue Sessions. These recordings and notes from each dialogue session formed each country's CDL1 Report. The feedback could be audio-recorded to assist facilitators in reporting the main points from each table (if the stakeholders had consented to audio-recording). The country partners were also encouraged in the CDL1 Guidelines to offer the participants other opportunities to provide feedback beyond the Plenary Sections of each Dialogue Session; particularly, if the participants were unable to share all the points they wished to make in the time allocated to each group in the Plenary Section. It was suggested in the Guidelines that additional feedback could for example, be added via a Padlet page set up for 'Additional views, thoughts, ideas and questions' or via post-it notes (labelled for the particular dialogue session) placed on a poster on a wall in the CDL1 room. These additional points could be added to CDL1 Report.

For the Cross-country Report a thematic analysis of each country's CDL1 Report was carried out to identify the main themes arising during the dialogue sessions across the 5 partner countries. Common themes evident in the CDL1 Reports (e.g., in three or more country reports) were identified. Some differences (e.g., identified in only one or two country report) were noted during the analysis of the CDL1 Reports, for example, the number of comments made about specific topics. This was due to the differences in the focus of dialogue sessions across the five countries framed by their particular reflective questions or the differences in the experiences and expertise of the invited stakeholders. For example, in some of the country CDL1s, the participants' comments were more focused on inclusion, equity and ethical issues. In others countries the CDL there were more comments on governance issues or data use for teaching and learning for example.

In identifying the common themes and differences arising it is important to note that the views reported in the CDL1 Reports were made by particular types of stakeholders invited to attend in each country and may have been different with different participants. To encourage views to be expressed, the stakeholder comments were recorded anonymously in the CDL1 Reports. In this Cross-country CDL1 Reports the comments are used anonymously to illustrate and give insight into the themes, without any attribution to a country or a participant.

Cross-country themes emerging from Country Dialogue Lab 1

The CDL1s generated rich discussion which covered a lot of topics (see p.5 for list of topics). This report focuses on providing a cross-country summary of the most common themes evident in the country reports of the CDL1s. The Dialogue Labs were designed to enable multiple stakeholders to share their views. The themes identified are purposefully supported by a selection of the participant comments and views from across the country CDL1 Reports to bring the stakeholders'

'voice' to this Cross-country Report. Some of the differences in the focus of the themes identified in the country CDL Reports are also included. These differences may be due to the specific topics that were selected by the partner country to discuss at their CDL1 and/or the differences in the roles/experiences/expertise of the stakeholders participating in each of the partner countries and/or the stage of development of digital education and use of data within the country/municipalities/schools.

Summary of common themes

The main themes emerging from the cross-country analysis of the CDL1 Reports are:

- Variation in conceptual understanding
- Challenges to the development of a digital ecosystem
- Lack of strategic digital planning, implementation, evaluation
- Need for more research to identify how use of data improves learning and teaching
- Challenges and opportunities of using data to improve learning and teaching and inclusion
- Lack of professional development to enable the use of data in school and improve learning and teaching

These themes are discussed separately below but they were often interlinked in the participants' comments. Examples of the interlinking of these themes are highlighted in the participant comments that are presented.

Variation in conceptual understanding

A wide variety of concepts were discussed in the CDLs across the 5 countries. For example, 'datafication'; 'data' 'digital literacy'; 'digital competence', and 'learning analytics'. There was general recognition of the challenges of different understandings of these concepts within and across different levels of the education system (individual teacher, school, municipality, region and nationally). For example,

Learning analytics is a 'big' concept, which can be (and is) interpreted in different ways, on different levels.

The participants have a broad data concept. They understand that data is many things, and that there are qualitative and quantitative data.

The challenge of differences in understanding was expressed as concepts were described as ambiguous and often used without criteria or indicators to provide clarity of meaning. For example, the challenge of understanding what digital literacy means for school leaders, teachers and students was highlighted. Also, it was recognised that the focus of the discussion of concepts

such as digital competency or data was often too general and not related specifically to understanding their meaning or application in teaching and learning. For example,

Currently, digital competency is a cross-cutting skill without specific exit profiles or indicators, leading to different interpretations among teachers regarding digital competence.

Discussions about data, are usually associated with the General Data Protection Regulation, forgetting the dimension of data in the use of teaching and learning platforms.

Defining the indicators was thought to be necessary by some participants so that data could be comparable between classes and schools. Some of the CDL1 participants had share their views and discussed some of the concepts relevant to the Agile EDU Project and offered their understandings. Examples of participants' explanation of datafication and digital literacy are:

Datafication in the school sector refers to the collection, analysis and use of data as a basis for decision making on different levels in the school system. Teachers can for example use data to develop their daily praxis and teaching, this can for example include data about performance, socioeconomics, background, student health, students with special needs etc.

Digital literacy involves: Use of tools; Information analysis; Ability to communicate with machines (computational thinking); Programming; Safe use of these tools; Digital responsibility and citizenship; Critical thinking.

However, there was general recognition across all five countries that these concepts needed to be discussed and understood more and in greater depth in their own organisations, as well as at other educational levels and with other relevant stakeholders.

The variation in understandings of the concepts identified in the CDLs is in line with broader views internationally as stated in the [Literature Review](#) carried out as part of the Agile EDU Project:

The terminology that has evolved on the implementation of data-driven technologies in primary and secondary schools is complex and difficult to clearly define. There is a wide variety of terms being used, all of them coined in specific discourses across a variety of domains and theories." (Erstad et al., 2023, p.4).

To add to the complexity of variation of terminology used in relation to data-driven technologies, the participants in some of the CDLs discussed datafication in relation to inclusion, equality and ethical issues. They noted the challenges of variation in understanding the concepts of 'inclusion' and 'equity' and differences in understanding ethical implications of datafication in schools. One discussion that was reported as occurring several times during one country's CDL1 concerned "What is inclusion – for whom, when and how?". Given that the Agile EDU Project has an emphasis on identification of conditions, criteria, and success factors for *responsible, purposeful and inclusive use of data* at school, local/regional, and central system levels, understandings of 'inclusion' need

further discussion across and between all stakeholders involved in enabling and supporting inclusive and high-quality digital education.

Challenges to the development of a digital ecosystem

From the analysis of the CDL Reports it is clear there are multiple challenges which hinder the development of a connected educational digital ecosystem. The comments about the challenges were wide ranging across all five countries including challenges and/or lack of connections/communication between platforms/levels/education phases; differences in opportunities for cross-level, cross-school learning in platforms and tools used, in data collected, in the purpose of data analysis, and in support systems. These were expressed by challenges arising at municipality, school and/or national levels, as well as challenges arising from technology developers/companies directly (e.g., licensing, ethical issues) or indirectly (e.g., accessibility/reliability/flexibility of the commercial product for all students). Many of these challenges were seen to be connected and cumulatively contributing to the fragmentation of the implementation of digital education and were limiting possibilities for development of a digital ecosystem and the use of data to improve learning and teaching.

It was acknowledged that some of the challenges were caused or significantly exacerbated by the implications of the COVID-19 pandemic, which required a rapid shift in the use of technology in schools. In two of the CDL1 Reports the term *wild west*¹ was used to characterise the technology implementation approach during the pandemic, which continues to be relevant in some contexts:

In terms of license and data management, it created in some municipalities a sort of a 'wild west' use of apps and programs, with many different solutions and products. During the pandemic, this solution helped teachers and schools to conduct some kind of digital school ...

Current free-for-all (wild west) implementation of private tools by individual teachers (...). In the XXX¹ education system, there is no economic ecosystem that allows users, educational institutions, and universities to collaborate through open-source software. Each entity purchases its private applications.

It was noted that since the pandemic there has been some improvements. For example, "After periods of lockdown, many municipalities have put an effort to reduce the number of apps and different solutions available for teachers ..." and "The 'digital ecology' is getting more transparent and choices are becoming more coordinated". However, variation between municipalities (e.g., between large and small municipalities) and schools remain. Some large municipalities require complex systems that can handle data from pre-school up to adult education, involving a specialised unit of staff, while small municipalities may only have one member of staff overseeing

¹ Country name removed from comment

handling of data across all schools in the area. Further, a recurring comment in the CDL1 Reports was the use of different systems and platforms that do not always communicate with each other which causes access problems, as well as challenges in using data across the different platforms. These different systems and platforms can be within schools (such as business systems, storage systems and systems related to learning and teaching for students and teachers) and across the different levels of education (such as school, municipality and nationally). This impact on possibilities to link data from different sources, cross-reference data and connect data across stages of education (e.g., linking students' data from primary to secondary schools).

The financial challenges of schools working with diverse systems, platforms and tools was also emphasised, particularly in two of the CDL1 Reports. The economic challenges identified highlighted the differences in costs associated with using different platforms and tools. They were also linked to equality issues as some schools (e.g., independent schools) were able to afford more reliable and accessible technology (devices, platforms and tools).

All of the municipalities have user licenses for their students in one or several systems (...). These 'school-products' are different from the general license that an individual is agreeing on. For instance, the municipalities pay a fee for each student for using XXX², while XXX³ is free to use.

Different standards of digitalization depending on each school, creating huge disparities. Some learning Platforms are free (...), others are only part-free (...) and private schools develop their own Platforms that include the best functionality possibilities.

These economic challenges at school or municipality levels could exacerbate digital divides, if access to devices/platforms/tools is limited for some students.

Emphasising the need for a process to bring multiple stakeholders together to resolve these challenges a recommendation was expressed by stakeholders in one CDL1 Report:

If the educational administration were to lead a process that securely connected various stakeholders (companies, institutions, developers, civil society), it could create an economic cycle that would develop tools for schools, knowledge, and economic activity.

This particular comment concerning bringing together stakeholders was linked to economic coordination to support digital education however, further comments in the CDL1 Reports were linked to calls for stakeholder coordination to address issues of: data governance; data regulation, rights and privacy; and data use for learning and teaching. The comments made by the CDL1 participants (discussed further below and in the next sections) reinforce the relevance of the Agile

² Commercial name removed from comment

³ Commercial name removed from comment

EDU Project's [analytical framework](#), which visualises these three topics and align with critical issues identified in research literature.

Comments regarding wide variation in use of data, tools and platforms were echoed across the CDL1 Reports, suggesting significant challenges arising from a general lack of coordination in the implementation of digital education. Many comments were made about variation in data handling, data quality, data analysis capability and the differences in the purposes of data use. Finding solutions to any one of these problems is challenging for those responsible for implementing digital education in schools, however the multiple complex challenges identified and the way they are interlinked heighten the difficulty in finding solutions. This is particularly challenging when there are different purposes and needs to be accommodated, as well as differences in data collection approaches, access, data use and storage.

The comments below offer an insight into some of the challenges identified in the country reports:

There are different systems for different purposes within schools. One system for administrating school routines ... and systems targeting classroom activities. Each system has possibilities and challenges, but none are fulfilling all needs.

Some of the challenges related to access and use of data include the delay in national data, lack of compliance with standards and interoperability. Another challenge ... different motivations for collecting and analyzing data among different levels and actors in the school system. Additionally, there are challenges related to access to quality assured data and how different tools can handle large amounts of data.

In busy schools these challenges may seem overwhelming and school leaders and teachers may need to invest significant time to find solutions. The comments made by the participants also highlight the need for greater clarity about the purpose and objectives of systems and platforms and how they relate and connect to other systems. In the [Literature review](#), Erstad et al. (2023, p.29) provide Diaz-Gibson et al.'s (2020) definition of the concept of an ecosystem, which they suggest is a "social infrastructure formed by diverse actors that share a purpose, and engage in collaboration to co-design and co-implement innovative responses to existing social and educational challenges". Creating such an infrastructure with an understanding of the complexities of different purposes of the use and analysis of data at different levels of education and within different school and classroom contexts, requires coordination and collaboration, as well as creation and building of multiple stakeholder relationships. While participant responses indicated there was growing awareness of the need for greater collaboration and coordination for effective digital education, a common theme was a lack of clear strategies to guide and support implementation.

Lack of strategic digital planning, implementation, evaluation

Participant comments across the CDL1 Reports about the significant variation identified in understanding of concepts and in the implementation and use of platforms and digital tools were linked to comments about the lack of clear objectives and strategies for digitalisation. Responsibility for 'digital transformation' appeared to mainly rest with individual municipalities and/or schools without sufficient support from national authorities or agencies.

Lack of clear direction and strategy in terms of digitalization. There is a perception of a significant monetary investment in digitalization at the national level, but without purpose or organization. It is necessary for the educational system to take on the responsibility of digital education in a contextualized, dynamic manner, with processes for measuring and evaluating the impact of educational policies.

All the stakeholders from the municipalities called for stronger national guidelines for making risk and security analysis of data handling in the digital resources they buy from tech companies and publishing houses. For a great number of the municipalities, many struggle with understanding and making sense of the terms and conditions. A lot of resources are used within municipalities on these issues, which would be better to coordinate from a national level.

There was recognition that in some schools and municipalities there is an increasing awareness and understanding of the handling and using data within systems. For example,

There are some schools that already process this metadata exhaustively, with the aim of improving their school results and, at the same time, creating policies that take these results into account.

However, there are schools and municipalities which are "immature" in their digital development. Participant comments emphasised the need to consider differences in the stage of digital development in municipalities and schools in the provision of support and guidance. This highlights the need to identify and understand more about the different starting points for strategic planning and the importance of enabling flexibility according to specific contextual needs.

Participant comments about a lack of strategy and guidance covered a wide range of topics. However, when expressing views on one topic, the participants showed awareness of interconnections with for example, data governance; data regulation, rights and privacy; data use for learning and teaching; and with inclusion. These interconnections identified by the participants provide an insight into the multiple strategic needs and complexities, as well as the areas where guidance is thought to be needed.

There were general concerns about ethical issues expressed in the CDL Reports, including risk/security issues in data handling and storage and agreements with EdTech companies and publishing houses. These expressed concerns were linked for example, to calls for national

strategies to coordinate licensing agreements with EdTech providers and to provide clear guidance for municipalities and schools regarding ethical issues (particularly for data handling, access and storage). Some anxiety was expressed regarding “fear of corporations and Edtech entering classrooms” without understanding the implications of agreements made. Participants emphasised the need to establish a “framework that ensures safety and governance in agreements” at national level. In one CDL1 Report a “negotiated legal framework” was suggested by participants to avoid “unconditionally giving away data” and to reduce “the bureaucratic burden associated with data management”. In another CDL1 Report concern was expressed that “most of the large tech companies demand that the data is stored on their own platforms”. The participants’ view about this was that the handling of data “should not be left to external companies” and that more systemic approaches should be put in place to safeguard and guide data handling, storage and use in schools.

Clearer national digital strategies and guidance were also called for regarding the use of data to improve learning and teaching and the inclusion of students. There was recognition that data is not being used effectively to improve learning and teaching for a number of reasons. Challenges were identified for school leaders and teachers in dealing with the huge amounts of “big and “small data” within education systems held across different digital systems and platforms at different levels of the education system. This limited effective use of data for learning and teaching purposes. It also had implication for teachers’ time and professional development in order to enable them to analyse data and reflect on how it could be used to improve learning and teaching.

Implications of a lack of strategic planning for students were also commented on by the CDL1 participants. For example, “students in some instances being given digital devices without consideration of how they would use them as a learning tool”. A recurring comment was the need for systematic evaluation of the platforms and tools to identify “what is gained and lost with the introduction of technology in the classroom”. These comments were linked to calls for more research to enable evidence-informed decision-making about the use of digital tools and about datafication in general. The need for further research is explored further in a section below.

In two of the CDL1 Reports implications of digitalisation were commented on in relation to the curriculum development. It was suggested a national digitalisation plan was needed to provide guidance on how digital competence could be embedded in the curriculum as a cross-cutting theme, including digital responsibility and digital health. The importance of digital competence for students’ learning at school was emphasised and for their future lives. It was the participants’ view that, “the lack of concrete work on [developing] digital competence results in a lack of support for students in a significant part of their lives, especially in terms of digital identity and responsibility”. While participants in the other country CDLs also sought clearer strategies and guidance they emphasised the need to maintain flexibility. In their view “strict criteria are a challenge to adapt to the practice of teaching and learning in schools” and specifically address the needs of students. Consideration of inclusion of all students needs careful consideration, particularly in development of a national digitalisation plan and any changes to curricula. It was

recognised that clearer strategies for schools regarding digitalisation could be positive and offer new tailored personalized solutions for inclusion of all students, but this needed flexibility for local decision-making to ensure that digital divides are not amplified through standardised approaches.

In one country report, participant views suggested that mechanisms should be established to put in place “an independent digital education observatory and to allocate national resources to detect needs, rather than implementing one-size-fits-all innovations without training or support for schools, families, and students”. In the participants’ view, “This would ensure that digital education is dynamic and adaptable to the local context and social development, encouraged through communities of learning among teachers and allow for resource sharing and best practices as a way to integrate digital education effectively into all knowledge areas”.

The lack of strategic planning was also highlighted in relation to evaluation of current digitalisation in schools. Participants commented on the necessity for an evaluation of needs regarding inclusive quality digital education in school. These comments were associated with concern that large funding investments are being made and digital platforms and in the participants’ view, tools are being implemented without sufficient needs analysis and evaluation of current implementation practices or research to provide evidence of how best ‘datafication can support and improve learning and teaching.

Need for more research to identify how use of data improves learning and teaching

The participants in three of the CDL1 Reports mentioned explicitly the need for research in order to understand more about the use of data to improve learning and teaching. In the other reports questions were raised regarding aspects of datafication that require further investigation and clarification. A common theme across the reports was a lack of evidence to support the development of digital policies relating to learning and teaching. Examples of these questions provide insight into the specific aspects that the CDL1 participants suggest more research is required:

- Which types of data should be analysed in order to support the students’ learning processes?
- Who should have which type of data to analyse?
- Which type of indicators do we need to be able to measure equity and inclusion?
- Which data is crucial to make a difference? [Data about] class size, teaching quality, socio-economic background, if the students have eaten breakfast, the teacher’s movement pattern, opportunity to have your voice heard, etc. What gives the greatest effect?
- How do we use the data?
- How can monitoring data (...) from corridors and school grounds, e.g., measuring environmental factors such as good air, light, etc. be used in a way to benefit student learning, teaching quality and equity?

- Does the amount and use of data increase action potential?

The questions included in the reports suggest a general uncertainty about what data should be collected, by whom and how it should be used to improve learning and teaching and the inclusion of all students. A further concern expressed was whether overuse of technology may hinder the quality of teaching and learning. They questioned whether overuse of technology may lead to a reduction in personal interaction between teachers and their students, resulting in less teacher awareness of student learning processes. In one country report concern was expressed as a “warning about challenges such as mechanization and dehumanization of educational processes”. These concerns were linked to comments regarding the need for more research to provide better understanding of positive and negative implications of digitalisation in schools.

There was also general uncertainty expressed about implications of artificial intelligence (AI) in the CDL1 Reports. For example, participants have concerns about security and data protection issues, as well as concerns about the ethical issues of increasing use of AI. In one country report participant consensus was reported “about the recognition that some technologies exert more control over the user than others (social media’s addictive component vs AI tools)”. In general, AI is perceived as a new challenge with more research needed to understand its use and the implications for learning and teaching.

In one country report, it was reported that the participants discussed and planned practitioner research in order to explore a broad number of topics related to use of data to improve learning and teaching and inclusion. The teachers involved in CDL1 aim to trial actions in their schools with their own students. It was reported that the participants hope to design dialogue at CDL2 around questions such as:

- How to use data for assessment constructively in the class and according to the individual pupils?
- What is good data literacy as a teacher, as a student, as a school leader and as a municipality?
- What potential and challenges can we see on the basis of these experiences in relation to creating future safe and collaborative learning environments, supported by creative research and the use of digital data with students.

More practitioner research and research involving multiple stakeholders should be encouraged to identify the reality of the challenges of implementing digital education with a focus on improving learning for all students.

Challenges and opportunities of using data to improve learning and teaching and inclusion

There were many challenges identified relating to data use for learning and teaching, particularly associated with data storage, ownership, security and privacy when analysing and using data.

There appeared to be a general view that data was used more for administrative or bureaucratic reasons with less focus on using data to improve learning and teaching. Nevertheless, the participant responses indicate there are signs of increasing awareness and/or understanding of “the potential of data in assessing student performance, identifying areas for improvement, and adapting teaching strategies”. Alongside the identification of challenges, the participants suggested many opportunities for using data to improve learning and teaching, including potential for inclusive learning and teaching approaches.

Digitalisation creates a lot of possibilities for equal opportunities within education for all students. It can also adapt to specific needs of the students.

With available, quality assured and standardized data at different levels within the school organization we have the opportunity to illuminate and analyze, for example, student results and teaching quality regarding equity and inclusion. Based on quality assured data, and relevant indicators, we might be able to see potential areas for development.

Participants suggested that digital tools can enable “quicker and more detailed tracking of student evaluations, enabling a deeper understanding of their academic performance”. This in turn could enable earlier detection of learning issues and possibilities.

The digital platform allows for data analysis, aiding in making informed decisions to enhance the teaching and learning process. For instance, by allowing the cross-analysis of academic performance and socio-economic background to measure the equity of the education system more effectively.

Often potential opportunities identified were followed by challenges or challenges were expressed followed by ideas for solutions. There was a view that the starting point regarding datafication to improve learning and teaching “should be what we would like to learn from the data - and not which type of data is available”. While recognizing the importance of “analysing data from the micro to macro level in order to attain a broad perspective”, recurring comments were made about the need to have better access to data so it can be analysed at an individual student level. It was suggested this could enable better understanding about how to support and improve individual student’s learning.

We have data at the level of a school organizer that, to a greater extent, needs to be broken down and analyzed at unit and individual level in order to contribute to equity and inclusion.

Data is used in a more conscious way than before, but still we see that most data (for example the national monitoring exams) are analysed on school or class level and not on an individual level (even though the teacher can get information about how each pupil performed on the national test in reading, English and math).

The potential impact of the use of data to personalise students’ learning paths and enable teachers to plan “differentiating pedagogical strategies” was highlighted alongside a recurring

emphasis on more active involvement of students in data analysis. It was suggested that students should have access to data related to their educational paths to increase awareness of their own learning. Increasing students' digital awareness was also related to developing a healthier digital culture for students, with better understanding of safeguarding data privacy and improving criticality around sources of digital communications and information. The participants suggested that teachers need to work with data with their students, to enable them to be more critical about their own digital data. For example,

... doing experiments with students to collect data on their time consumption and social media and digital platforms. There is a lot of potential here to work playfully and experimentally with their own digital life and use of data.

The involvement of parents alongside students was also emphasised in order to understand more about how the use of data could improve learning and teaching, as well as emphasising parents' role in the cultivation of a healthy digital culture.

In one CDL1 Report how data can be used in the school system to benefit student learning, teaching quality and equality was suggested by identifying data use at different education levels. The suggestions were illustrated by examples of data use:

- at individual level (e.g., "data gathered from digital leaning materials")
- teacher level (e.g., "data can be used to create a learning organization with a culture of discussion around learning and teaching strategies")
- school level e.g., ("data can be used to follow classes and/or teachers over time, identify patterns, gaps, and results over time")
- school organiser level (e.g., "use of aggregated data as a basis for operational development, resource allocation and as a basis for well-founded decisions)
- national level (e.g., data from national agencies and databases "can be used at school organizer level and unit level to carry out analyses").

Across the reports opportunities of datafication related to issues of inclusion were highlighted, however a recurring view was there is "relatively little data that can show the school situation and quality of education for students with disabilities." It was recognised that often this is because of the sensitivity of the data and privacy issues. The participants suggested that more data on the students with special needs could contribute to "students with disabilities having their rights met in education and to ensure inclusion and equity". A huge amount of data is already collected at different levels and it was suggested that data could be more be used more effectively to improve inclusion. This could be done by "making visible the differences in results and resources among schools", as well as, using the data available to make data-informed decisions to improve the quality of learning and teaching for all students.

Lack of professional development to enable the use of data in school and improve learning and teaching

A significant challenge identified in using data to improve learning and teaching was related to the need for an increase in relevant professional development for teachers, school leaders and other stakeholders in the digital eco-system. Regarding professional development needs, once again many areas of development were identified in the CDL1 reports indicating the complexity of learning needs. Professional development needs identified included, the need for understanding more about digital literacy in general (including conceptual understanding) and more specifically data analysis with a focus on improving learning and teaching in practice, understanding ethical issues of data handling, analysis, storage and sharing as well as improving understanding of and practice for equity and inclusion. Empowerment and training were mentioned as “essential elements for extracting value from data” in one CDL1 Report.

The complexity of professional development needs was evident across the CDL1 Reports and highlighted the current gaps in provision. Improving individual teachers’ and school leaders’ digital competence was emphasised, as well as ‘school organisers’, municipal leaders’ and teacher educators’ digital competence. This illustrates the extent of the challenge across the stakeholders. The professional development needs of these stakeholders are likely to be diverse and need to be better understood in order to provide relevant and timely professional learning. Further, the dynamic and continually changing nature of technology and interactions with it, means that ongoing professional learning is necessary and should be central to national and local digitalisation planning, implementation and evaluation strategies.

Some specific professional development needs were particularly identified across the CDL1 Reports. A recurring professional development need was improvement of school leaders’ and teachers’ data analysis skills. This was viewed as essential, not only in order to understand how to go about the analysis process, but also to make sense of the huge amount of data available and use it to adapt teaching strategies to support the development of students’ learning. The comments about improving the professional development of data analysis were often connected to ethical concerns. These comments indicated the urgent need for tailored professional development that enables teachers to share their ethical concerns and enable them to develop their competence and confidence in the ethical use of data.

Where professional development has been available for teachers, some of the comments in the CDL1 Reports indicated this has focused on the use of a specific device or tool. This approach was criticised as too generalised a professional development offering. In one country report the participants emphasised:

The important thing is not so much to use a specific tool, but to have the skillset and mindset to learn and adapt to all the tools

The participants referred to this 'mindset' as "digital metacognition, so they can reflect on this fast-paced digital environment and understand their need and ability to constantly adapt".

The importance of school leaders in the use of data in schools was recognised by the participants. This was linked to the need for professional development of school leaders', as well as teachers' digital competence.

We should start by making the data that already exists today available but also increase the competence among school leaders and staff concerning how to analyze data and ask questions based on the purpose of improved teaching and learning.

This suggests the importance of identifying professional learning needs at school and individual teacher levels. Professional development could be encouraged through discussion in teacher communities in and across schools for example, about the purpose of the use of data so better use could be made of data already available to benefit student learning.

The need to develop a 'data work culture' was raised in two of the CDL1 Reports. In one report the participants indicated there was still a long way to go in developing a data work culture and emphasised the need for training. In relation to this comment, the emphasis was not only on school leader and teacher professional development, but also on training involving students too. Other country reports also emphasised the need for the development of students' digital competence.

Students may be very digitally competent on certain tools (particularly social media or video content), but not on key digital tools like the usage of basic digital functions.

This need to improve students' digital competence by embedding its development in the curriculum was identified in two of the CDL1 Reports. In one of the countries, it was reported that this was already underway with digital competence being implemented as a cross-cutting competence within the curriculum. However, it was also reported that, "due to lack of specificity and specific training, this competence ends up in no-man's land". This indicates more guidance and professional development is needed for school leaders and teachers to enable them to effectively enable cross-curriculum development of students' digital competence. Challenges in implementing cross-cutting competences successfully in curricula are not new, there is an opportunity to investigate whether datafication can assist more effective implementation of digital competence and other cross-curriculum competences, as well as, an offer to gain insights into how digital technology could potentially improve professional learning for teachers. For example, through sharing challenges and identifying solutions in cross-school, national or international digital professional learning communities.

Other stakeholders were also identified as requiring learning development in specific aspects of digitalization of schools. For example, the importance of improving parents' digital competence was identified as part of the development of a digital school culture.

Digital tools make it possible to inform families about their children's progress and inform students about their performance, promoting engagement and commitment from all stakeholders in the educational process.

However, it is recognised, "There is still a big challenge for parents to enter the digital ecology the child is using in school". One country reported that it is currently piloting a new solution for parents in a selection of its municipalities. This may provide opportunities for parents to understand more about the data being collected and to gain a better understanding of how it is being used to improve their learning.

As mentioned earlier, a comment made in one country report indicated "fear of corporations and Edtech entering classrooms" because it "happens without understanding their implications and interests". The participants in this country also suggested, "there is opportunity to create an edtech market that is aligned with the public interests if there was more dialogue between EdTech companies and civil society". There is potential when more consideration is given to the developing a more collaborative and effective digital ecosystem to bring multiple stakeholders together for professional development purposes, involving students, parents, teachers, school leaders, teacher educators, municipality and national leaders and EdTech developers. Such professional development could take place through a dialogue lab approach for example, to enable all stakeholders to share and understand different purposes and needs relating to datafication in schools. This would give EdTech providers an opportunity to understand the challenges of using data to improve learning and teaching from the perspective of school stakeholders. While school stakeholders may be able to gain an insight into technology development possibilities directly from EdTech developers. The involvement of a small number of EdTech developers in some of the CDL1s suggests that there is positive precedent for multiple stakeholder dialogue which could be further developed to contribute to the professional development of all involved in school digital ecologies.

Participant views about the Dialogue Lab Approach

All county reports, with the exception of one, included comments about the Dialogue Lab approach. The comments provided were all positive, regarding the opportunities the approach provided for open dialogue between stakeholders about datafication and the development of inclusive quality digital education. The structured format of the CDL1s balanced with flexibility to tailor the reflective questions to each country context was welcomed. The country involvement in the development of the questions ensured their relevancy to their own priorities and contexts. The aim of the CDL1 was to provide opportunities to engaged in structured dialogue focusing on implications of data use for equity/inclusion, professional development and ecosystem

governance. The participant responses included throughout the section provide evidence the aim was fulfilled.

A selection of comments from each of the four country reports about the Dialogue Lab approach is provided below to give “voice” to the participants of CDL1 in the conclusion of this report.

- Excitement and engagement - All the participants were very engaged and received all parts of dialogue lab with enthusiasm and dynamism.
- They all expressed their satisfaction and excitement in having these discussions because it allowed them to connect with other interesting professionals.
- It has been exciting to discuss challenges and potentials in the use of digital data in education.
- The CDL framework to ensure that all voices are heard and can contribute was easily understood, moderators barely had to intervene and the discussion flowed.
- A well-functioning format with a high level of stringency, built upon semi-structured questions which promotes open and broad discussions between stakeholders.
- Well defined questions which concerned the same area without being all too similar.
- The day was well structured with a suitable alternation between conversations, reflections and development.
- It is great that we get the opportunity to develop ideas for my teaching that we can use in our practice ... to have my understanding of data challenged through conversations and examples of how to work with data together with the students in more creative and playful ways.
- It is perfect that we can have our own take on our dialogue lab, so that it makes sense in the context of XXX⁴ school development.
- The fact that we were fewer of us made possible much better discussions where all had the opportunity to give relevant input to the conversation.
- All the stakeholders emphasised that Dialogue Labs promote collaboration and engagement among participants. It is also an opportunity to create a space for open dialogue.

⁴ Country name removed from comment.

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