Digital Strategies in Education Across Nordic Countries

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Abstract

Digitalization has already played an important role in education when COVID-19 forced the closing of school buildings and the digitalization of education to varying degrees around the world. COVID-19 started an unprecedented experiment in school systems and the ongoing digital transformation was suddenly accelerated. This situation initiated the creation of new challenges and opportunities for users such as teachers, pupils, administrators, but also creators of national strategies and action plans in education. The paper is specifically focused on the comparison of current government strategic documents dealing with the National Strategies for School System Digitalization within selected Member States of the European Union (EU). This study discusses and analyses two interrelated issues: first, the current trends in the development of digitalization across the Nordic EU countries regarding the development of digital transformation, and second, related initiatives described in selected National Strategies for Digitalization in Education. The research objectives are specified in the summarizing chapter, based on which the methodology for comparing the documents is described. The main objective of the study is to analyse the Swedish National Digitalization Strategy for the School System, the Danish National Strategy for Digitalization and the Finnish Artificial Intelligence Programme. A sub-objective is to identify the interests of these Nordic countries in digital innovation in education. The results of the study show that the digital strategy in education across the Nordic EU countries is strongly linked to the 21st century education, thus contributing to various debates on technologies, development of digital literacy and progress in education.

Keywords: Digitalization, Digital Transformation, Strategic Documents

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Introduction

Digitalization has already played an important role in education when COVID-19 forced the closing of school buildings and the digitalization of education to varying degrees around the world. COVID-19 started an unprecedented experiment in school systems and the ongoing digital transformation was suddenly accelerated. This situation initiated the creation of new challenges and opportunities for users such as teachers, pupils, administrators, but also creators of national strategies and action plans in education. The paper is specifically focused on the comparison of current government strategic documents dealing with the National Strategies for School System Digitalization within selected Member States of the European Union (EU).

Subsequently, we present important terms that are related to the issue being addressed:

1. *The Digital Education Action Plan*

The Digital Education Action Plan (2021-2027) is a renewed European Union (EU) policy initiative that sets out a common vision of high-quality, inclusive, and accessible digital education in Europe, and aims to support the adaptation of the education and training systems of Member States to the digital age. The Action Plan, adopted on 30 September 2020, is a call for greater cooperation at European level on digital education to address the challenges and opportunities of the COVID-19 pandemic, and to present opportunities for the education and training community (teachers, students), policy makers, academia, and researchers on national, EU and international level (European Education Area: Digital Education Action Plan, 2022).

2. *The Recovery and Resilience Facility*

Member States use the funds provided by the Recovery and Resilience Facility to implement ambitious reforms and investment to make their economies and societies more sustainable, resilient and prepared for the digital transitions (The Recovery and Resilience Facility, 2022). In this section, we are interested in the following two areas, i.e.:
- Digital transformation
  Here are the areas of focus for development: Promoting the roll-out of very high-capacity networks, the digitalisation of public services, government processes, and businesses, in particular SMEs; developing basic and advanced digital skills; supporting digital-related R&D and the deployment of advanced technologies.
- Policies for the next generation
  Here are the areas of focus for development: Improving access to and the quality of general, vocational, and higher education; focusing on digital education, early childhood education and care; supporting youth employment.
- The issue of digital education within the framework of Europe's digital future
  To shape Europe's digital future, the European Commission is determined to tackle the digital skills gap and promote projects and strategies to improve the level of digital skills in Europe. All Europeans need digital skills to study, work, communicate, access online public services and find trustworthy information. Digital skills are a crucial driver of the EU's competitiveness and innovation capacity. They are also a key determinant of social cohesion and personal well-being. Ongoing digital and green transformations bring fast economic restructuring, which requires people to engage in lifelong learning. Moreover, these transitions require Member

States to unlock their full skills and innovation potential. This includes reforms to improve the quality of education and training systems. The European Commission supports EU Member States by providing expertise and exchange of good practices in the field of skills, education, and training. Examples of support (Reform Support: Digital transition, 2022):

- Improving the upskilling and reskilling systems in adult education.
- Fostering digital education and skills.
- Improving higher education, research, and innovation.
- Improving vocational education and training.

Methodology and Research Goals

This study discusses and analyses two interrelated issues:

- first, the current trends in the development of digitalization across the Nordic EU countries regarding the development of digital transformation,
- and second, related initiatives described in selected National Strategies for Digitalization in Education.

The research objectives are specified in the summarizing chapter, based on which the methodology for comparing the documents is described.

The main objective of the study is to analyse the Swedish National Digitalization Strategy for the School System, the Danish National Strategy for Digitalization, and the Finnish Artificial Intelligence Programme. A sub-objective is to identify the interests of these Nordic countries in digital innovation in education.

Sweden: Digital Transformation and Strategies for Digitalization in Education

Digital challenges for Sweden focus on the need to realise the transformative potential of digitalisation, including broadband network roll-out and increased numbers of study places in higher vocational education to address the current scarcity of experts in the information and communication technology sector. In addition, the Swedish plan contains investments to scale-up the education at universities and other higher education institutions (Sweden's Recovery and Resilience Plan, 2023).

The Swedish National Digitalization Strategy for the School System: The main objective of the Swedish strategy is to create further opportunities for digitalisation, to achieve a high level of digital skills (especially for children, students, and young people) and to promote the development of knowledge, equal opportunities, and access to technology. The national digitalisation strategy for the school system in Sweden is based on 3 focus areas each accompanied by a set of milestones (National Strategies: Sweden National Digitalization Strategy School System, 2023).

1. *Digital literacy for everyone: All children and students need to develop appropriate digital skills:*
   - Children and pupils in primary and secondary education should be given the necessary conditions to develop digital skills.
   - Pre-school leaders, head teachers and school leaders must have the ability to strategically lead digital development in their organisations.
   - Staff working with children and students must be competent to identify, select and use digital tools in education.

2. *Equal access and use: Children, students and staff must have good and equal access to digital tools and resources to improve educational activities:*
    - Children, students, and staff must have access to relevant digital tools based on their needs and adapted to their conditions.
    - Appropriate infrastructure and technical and pedagogical support must be in place.
    - The digital learning resources used in teaching must be appropriate and technology opportunities should be used efficiently.
    - Staff training and administrative work should be available in digital format to contribute to policy analysis and implementation.
3. *Research and Follow-up on the Opportunities of Digitalisation:*
    - Research into the impact of digitalisation on teaching and learning should be strengthened and supported.
    - The follow-up of digitalisation in the school system will be implemented and support the development of future activities and initiatives.

Denmark: Digital Transformation and Strategies for Digitalization in Education

The Danish government established an expert group called "digitalisation partnership", consisting of the main stakeholders of the industry (including business representatives and experts). Based on recommendations and following political negotiations, the government presented the new Digital Strategy in 2022. The aim of the measure was to set up a new digital strategy consisting of five sub-reforms with the following objectives (Digitaliseringspartnerskab offentliggør anbefalinger for Danmarks digitale fremtid, 2021):
- Sub-reform 1: Strategy for the digital public sector and services of the future.
- Sub-reform 2: Strategy for the digital professions and jobs of the future.
- Sub-reform 3: Framework for innovation, public-private partnerships, and use of new technology.
- Sub-reform 4: Framework for a data-driven society.
- Sub-reform 5: Framework for Denmark fit for a digital future.

The Danish National Strategy for Digitalization focuses on the following points (National Strategies: Denmark National Strategy Digitalization 2022-2026, 2023):
- Children and young people should be better equipped for the digital society of the future. That is why technology must be integrated in primary school education. This can be done by introducing more practical elements into primary education. At the same time, technology as a proficiency must be strengthened among teachers at higher education and future primary school teachers.
- The digital skills and understanding of graduates and the workforce must be boosted by strengthening higher education (both regular programmes and supplementary and continuing programmes).

The lack of specialised IT skills risks inhibiting Danish growth, innovation, and export opportunities. That is why more people need training in IT, technology, data, and coding. The government wants the Danes to acquire more digital skills by 2030 so that they become equipped to seize the opportunities offered by the digital development.

Finland: Digital Transformation and Strategies for Digitalization in Education

Promoting the digital transformation is a cross-cutting theme across the Finnish plan. Digital challenges for Finland focus on the need to realise the transformative potential of digitalisation. This includes upgrading rail traffic management system, extending the coverage of broadband connections, digitalising healthcare, and employment services, increasing the level of digitalisation and automation in business, and raising the level of investment in research, development, and Innovation (Finland's Recovery and Resilience Plan, 2023). The country, therefore, provides a unique opportunity for understanding the narratives, policy interventions, which shape perceptions the future of work and education in Europe. Finland has more recently introduced three major strategic initiatives:
-   The AI strategy: Finland's Age of Artificial Intelligence.
-   The Future of work 2030.
-   The reform of continuous learning.

In this respect, the government's approach to the implementation of the continuous learning reform with the establishment of the National Service Centre for Continuous Learning to stimulate further supply of short skills-based courses, and the strategy and vision proposed by the innovation fund SITRA through a model of localised ecosystems of skills formation and based on systematic experimentation present two distinct scenarios for realisation of Finland as a learning intensive society. The latter model could situate Finland as a globally leading country showing new avenues to a digitally inclusive society and a future of work underpinned by a sense of personal agency, competence, and personal meaning (Finland: AI, policy innovation and the future of work and learning, 2023).

The Finnish Artificial Intelligence Programme, launched in May 2017, prioritises actions aimed at enhancing Finland's position in the global of Artificial Intelligence (AI) and build partnerships with national, European, and international stakeholders. According to the AI Programme, developed and coordinated by the Finnish Ministry of Economic Affairs and Employment, labour markets and citizens should prepare for the disruptive effect that AI poses in education. To address this challenge, the Programme aims to strengthen the role of lifelong learning and adapt education and vocation education and training (VET) systems so that they can respond to increased demand for skilled and highly educated workforce. Within this context, Finland's Artificial Intelligence Programme prioritises actions and initiatives on innovative approaches in AI and machine learning and continuously upgrades and improves technical infrastructure and the deployment of 5G technology. Through this approach, the Programme aims to optimise education and modernise it to achieve better results. Within the framework of the Programme, a variety of additional training activities and opportunities for citizens, labour force, education professionals and students, and digital experts (National Strategies: Finland artificial intelligence programme, 2021).

Discourse

Digitalization plays a key role in the Nordic countries, and Scandinavia is often seen as a leading player in digital innovation. Countries such as Sweden, Denmark, Norway, and Finland are known for their rapid adoption of new technologies and the efficient use of digital services in both the public and private sectors. The high level of digital literacy of the population, together with progressive government policies, support the development of both the digital innovation and education. The approach to digital transformation in Scandinavia is systematic and comprehensive. In the field of education, Scandinavia brings digital

innovations to the classroom, develops online and distance learning methods, and provides teachers and students with modern teaching tools. Finland, for example, is known for its innovative approach to education, which includes integrating technology into the curriculum and providing students with tablets and computers. In the education sector, Sweden is implementing digitalization strategies that aim not only to modernize teaching methods, but also to ensure that digital competences are an integral part of lifelong learning. The government invests in research and development of educational technologies and supports projects aimed at increasing the digital skills of teachers and students. One of the key elements of Sweden's strategy for digitalization in education is to provide equal access to quality digital educational resources for all students, regardless of their socio-economic status. This is important to maintain the principle of equal opportunities, which is highly valued in the Nordic countries. In Denmark, the strategy for digitalization in education focuses on similar goals. The Danish government supports innovation in education through various initiatives, such as national projects for digital education, which include the development of digital curricula and the creation of online learning platforms. Danish schools are equipped with the latest technology and infrastructure, allowing for the effective integration of digital tools into the classroom. Finland, as another Nordic country, approaches digitization in education with a similar commitment to innovation and equality. Finland's education system has long been considered one of the best in the world, and digitization has played a significant role in its success. The Finnish government promotes digital education through various programs and initiatives that aim to promote technological literacy and critical thinking.

Conclusion

The National Recovery Plan is a key element for the restart of EU Member States after the COVID-19 pandemic. This strategic document, which each country must submit to the European Commission, maps out the paths to sustainable and inclusive growth. The Digital Education Action Plan is an essential component and aims to transform Member States' education systems to meet the new challenges of the digital era and prepare pupils and students for the future labour market. For these reasons, we have focused on Scandinavian countries such as Sweden, Denmark, and Finland, which are members of the European Union and emphasize digital education as part of their national recovery plans. These countries have a long tradition of innovation in education, and their approaches are often seen as role models. All three countries – Denmark, Sweden, and Finland – show that digital strategy in Europe is not just about technology, but about a holistic approach that encompasses both education and social equality. This model offers inspiration for other European countries that are trying to digitize education and their society. The interpretation of the documents shows that the digital strategy in education across the Nordic EU countries is strongly linked to the 21st century education, thus contributing to various debates on technologies, development of digital literacy and progress in education.

Acknowledgements

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