Google for Education

Future of the Classroom

Emerging Trends in K-12 Education
Nordics Edition

Our approach

This report is part of a series on the evolution of K-12 education and maps out current and emerging trends in classroom education. In collaboration with our research partner **Canvas8**, we conducted a global analysis spanning:

- Fourteen expert interviews with global and country-specific thought leaders in education
- Academic literature review focusing on the last two years of peer-reviewed publications
- Desk research and media narrative analysis across the education sector, including policy research and teacher surveys, as well as input from Google for Education representatives across the globe

We acknowledge that some of the areas discussed in this report are ones that overlap with Google-led products and programs. In order to maintain a focus on the research and studies presented, we've intentionally excluded them.

The Nordics are leading in education

The Nordic countries are global leaders in education, with Finland consistently topping world rankings.[1] In line with this, the Nordics invest greatly in education with proportions of GDP among the highest compared to other EU countries - these range from 6.1% in Finland to 6.9% in Denmark.[2]

Nordic schools also favor learning collaborative skills and life skills over learning that's focused on "*getting the best grades*."[1] In Finland, the only nationwide exam is for students who study until they are 18.[3] Increasingly, Nordic countries are using educational technology in ways that reflect these values.

1st

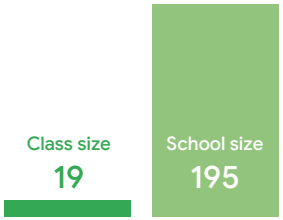
is Finland's rank among 50 countries in the Worldwide Educating for the Future Index, which measures "the effectiveness of education systems in preparing students for the demands of work and life in a rapidly changing landscape."

The Economist Intelligence Unit (2018)[17]

"Now with technology taking a stronger lead in learning, I think we still need to emphasize the importance of ethics in learning and in our daily life."

Anneli Rautiainen, Head of Innovation Unit at Finnish National Agency for Education

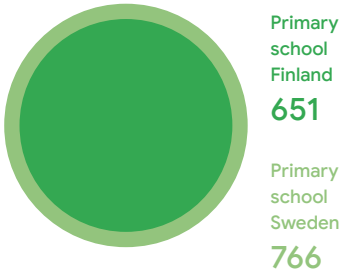
The Nordics classroom at a glance



19

students is the average class size and 195 is the average school size in **Finland**.

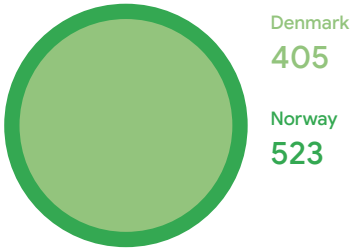
BBC (2017)



651 hours

are taught per year on average by public primary school teachers in **Finland** and 766 hours are taught in **Sweden**, both of which are below the OECD average of 799 hours .

OECD (2018)[4]



405 hours

are taught per year by upper secondary teachers in public general programs in **Denmark**, while 523 hours are taught in **Norway**.

OECD (2017)[5 6]

Key Trends

From our Global Report, we've analyzed three of the most prominent trends in the Nordics' K-12 classrooms

01 Computational Thinking

Parents and teachers want students to develop problem solving, alongside digital skills, so they will be better prepared for future jobs.

02 Collaborative Classrooms

As schools put a focus on openness, flexibility, and collaboration, they're redesigning classrooms to match.

03 Emerging Technologies

Schools are incorporating emerging technologies into the classroom to create more innovative and engaging teaching methods.

"As in other countries, I think with the Nordic countries, we are in the situation where we have to really look at the current system so that it won't become too stable because of the surrounding complex world and the fast-changing world."

Anneli Rautiainen, Head of Innovation Unit at Finnish National Agency for Education

Computational Thinking

The OECD has highlighted that students entering schools in 2018 will face future challenges that can't even be predicted today.[7] There's a call for teacher training to ensure students are ready for the increasingly digital economy - with only one in five Swedish math teachers possessing knowledge of coding, Stockholm is funding coding lessons for approximately 3500 (mainly math) teachers.[15]

And though there is still inequality, some Nordic countries are high in certain areas of inclusion in STEM subjects later in life. For example, with 29% of people entering tertiary education in engineering, manufacturing or construction being women, Sweden ranks 6th out of all OECD countries for female inclusion in this field.[18] Meanwhile, Denmark ranks 3rd in the share of women participating in doctoral programs in this field.[19]

3500

teachers are being funded for coding lessons across Stockholm. Most of these are math instructors.

Politico (2018)

“I think STEM subjects are utterly vital. STEM skills are even more important than just coding because it’s virtually impossible to teach yourself maths, but you can teach yourself coding if you have good math and logic skills.”

Rachel Wolf, founding partner at Public First

There is also a focus on integrating these topics early on in education - with coding being taught in Swedish primary schools from Year One, since summer 2018. And with enrollment in early childhood and care extremely high in Sweden for children between the ages of 2 and 5 – boosting 90% enrollment in each age – there is an opportunity to increase exposure at a young age. Denmark also sports similar enrollment rates, compared to an average of 75% across all OECD countries.[19] [18]

The Minister of Education in Denmark stresses that instead of being “users of technology”, students have to learn to be “creative makers.”[9] [8] And 2018 saw the development of an education technology (edtech) action plan in Denmark; this plan seeks to improve digital competencies for students and educators, as well as make better use of ICT in teaching.[2]

“I don’t think schools can manage without coding and STEM. In Finland, we have had coding in the curriculum starting in the first grade; it is not taught separately, but through the thinking of various subjects. I think it’s become natural that it’s included.”

Anneli Rautiainen, Head of Innovation Unit at Finnish National Agency for Education

Collaborative Classrooms

The Nordics are seeing a desire to alter the layout of learning environments in schools to encourage creativity, collaboration, and flexibility. In Norway, 50% of teachers say that the introduction of technology has not influenced the way they furnish their classrooms, but they add that teachers have to adapt their teaching style to accommodate moving to different parts of the room.[10]

After all, research is continually proving that classroom design – including color, lighting, acoustics and spatial organization – impacts student learning. This impact can be either positive or negative and even minor changes can result in different educational outcomes.

50%

of Norwegian teachers say that the introduction of tech has not influenced the way they furnish their classrooms, but teachers have to adapt their teaching style to accommodate moving to different parts of the room.

Education Research International (2017)

“It’s no longer this, in rows, facing a blackboard, which is what it was like when I was growing up. Schools are actually encouraging groups to collaborate. I think that’s a welcome change.”

Vikas Pota, Group CEO of Tmrw Digital and Chairman of the Board of Trustees of the Varkey Foundation

Schools that combine open-plan spaces with differentiated or more conventional spaces have been touted as the leaders of innovative learning environments.

In Finland, innovative classroom layouts are common and classroom design has revolutionized student education by furthering collaboration and individual support. The Finnish education system employs the mantra, 'better architecture contributes to better scholastic experience’. For example, the Saunalahti School merges classroom with community: the school features large open spaces that double as ‘living rooms’ for the town of Espoo. The school encourages collaboration with the community, promoting independent learning and supporting non-traditional learning environments.[11]

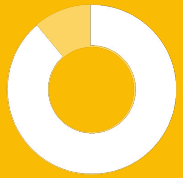
“I’ve seen schools in Finland where maybe the buildings are 100 years old, but once you walk in you can see that they have changed the pedagogy and the learning environment. It hasn’t cost very much, which means you can do a lot by changing your learning environment without having a new building, or the latest facilities.”

Anneli Rautiainen, Head of Innovation Unit at Finnish National Agency for Education

Emerging Technologies

Be it trailing virtual reality to facilitate empathy and understanding or offering free, online courses covering the basics of artificial intelligence, Nordic countries are often considered to be leading the way when it comes to incorporating emerging technologies into education.

This infrastructure makes room for innovation, and it's being reflected in the classroom. Schools in the Nordics are highly digital – in Sweden, 90% of primary schools and 100% of upper secondary schools are classified as "highly digitally equipped and connected." These numbers are mirrored in the other Nordic countries, with 94% of primary schools and 95% of upper secondary schools in Finland meeting the highly digital criteria; 90% and 88% in Denmark; and 93% and 96% in Norway, respectively.[14]



90%

of primary schools and 100% of upper secondary schools in Sweden are "highly digitally equipped and connected."

European Commission (2017-18)

"The kinds of things that tech ought to be able to do, and can do, is get the very best content and scale it out to people – content I think has been an underappreciated dimension of this."

Rachel Wolf, founding partner at Public First

And governments in the Nordics are looking for more ways to incorporate emerging technologies into learning, in the classroom.

Emerging 1st among 28 EU countries in the 2017 Digital Economy and Society Index, which measures digital progress, Denmark plans to introduce several digital projects by 2022. The Nordic country's Digital Growth Strategy (DGS) covers areas from elementary school to businesses. The DGS is positioning Denmark as a leader in key digital areas, including artificial intelligence, the internet of things, and big data.[16]

"Technology is one of the transferable skills, for us. It's not a separate subject, but it is embedded in all learning."

Anneli Rautiainen, Head of Innovation Unit at Finnish National Agency for Education

“Entrepreneurship skills, cultural competence, interaction, and self-expression, multi-literacy, participation, involvement, and building a sustainable future – all of these skills are embedded in subject learning. When the teacher is teaching a subject, she or he is also aware that they’re teaching these skills.”

Anneli Rautiainen, Head of Innovation Unit
at Finnish National Agency for Education

Read the Future of the Classroom: *Global Edition*
for insights across all 8 emerging trends

Digital Responsibility

Computational Thinking

Collaborative Classrooms

Innovating Pedagogy

Life Skills & Workforce Preparation

Student-led Learning

Connecting Guardians & Schools

Emerging Technologies

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