Development of digitalization in the schools - insights from Denmark

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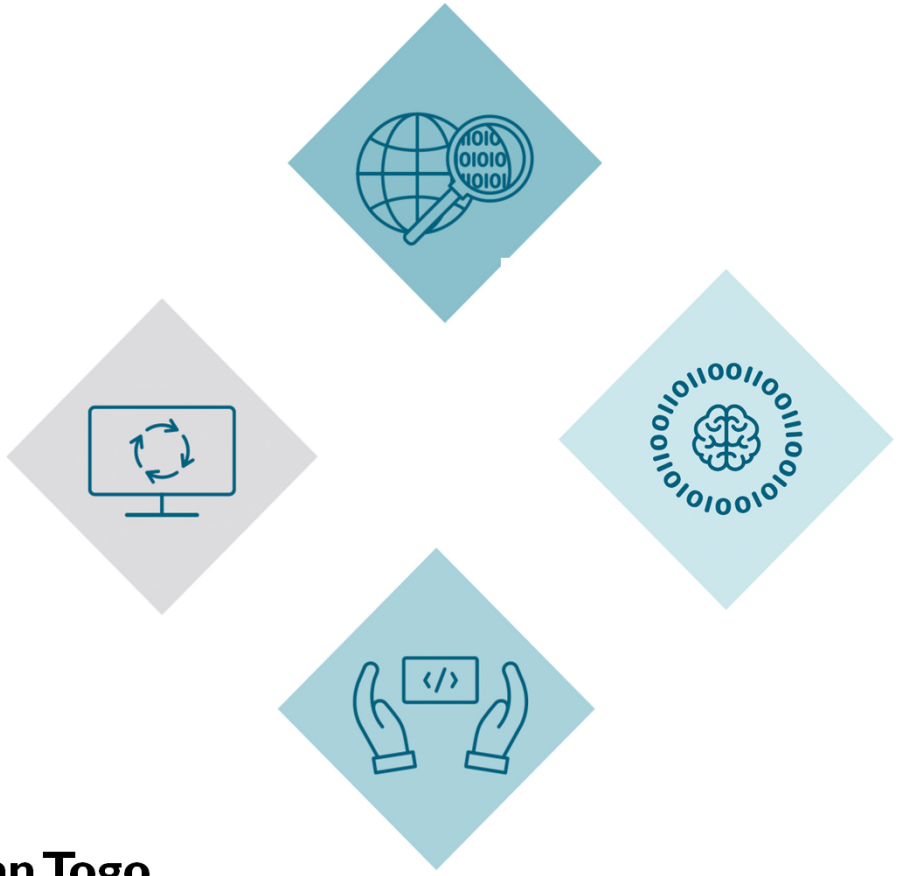

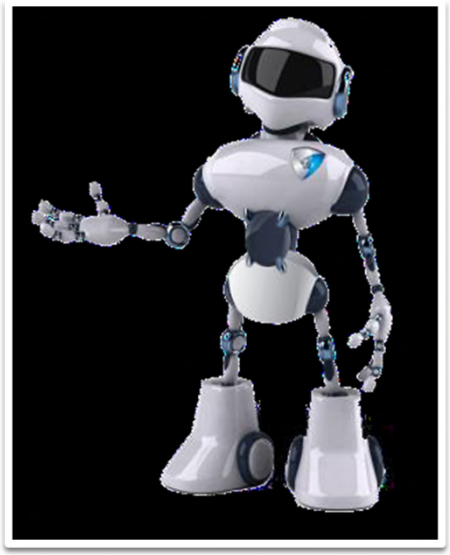

v. Finn Togo
Head of Office - Pedagogical IT
National agency for IT and Learning
Ministry of Children and Education
Denmark

The Danish education system

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Higher education
(university and prof. bachelor and academy prof.)

Upper secondary education

Vocational education and training
(VET)

Primary/lower secondary education

Key facts

- Population: 5.8 million
- Primary/lower secondary schools: +1.500 schools and 700.000 pupils (60.000 teachers)
- Upper secondary (Gymnasiale uddannelser): 175 schools and +110.000 students
- Vocational education: 89 schools and +100.000 students
- Adult education

Digital learning in Denmark

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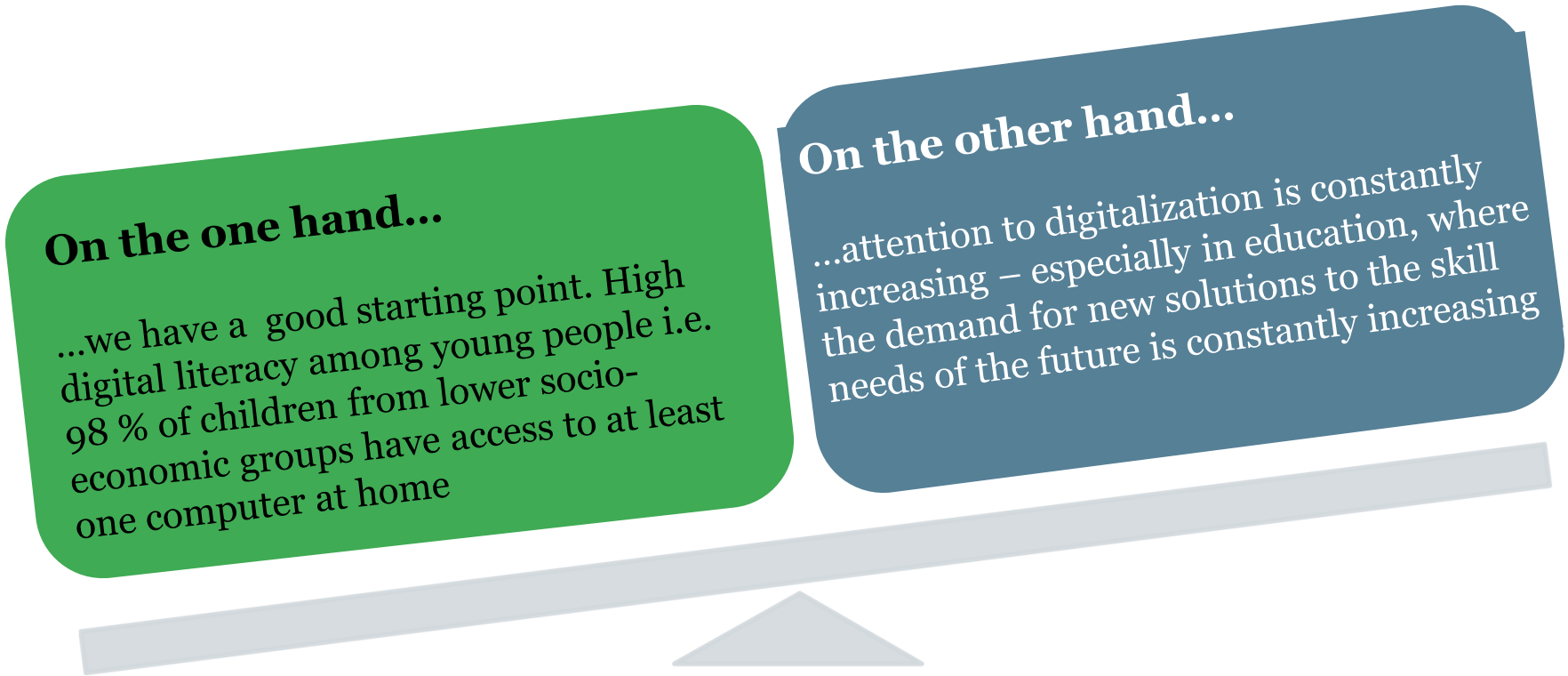
What is the status on transforming digital opportunities into better learning in the education sector?



Looking back on the lacks…
Before 2012

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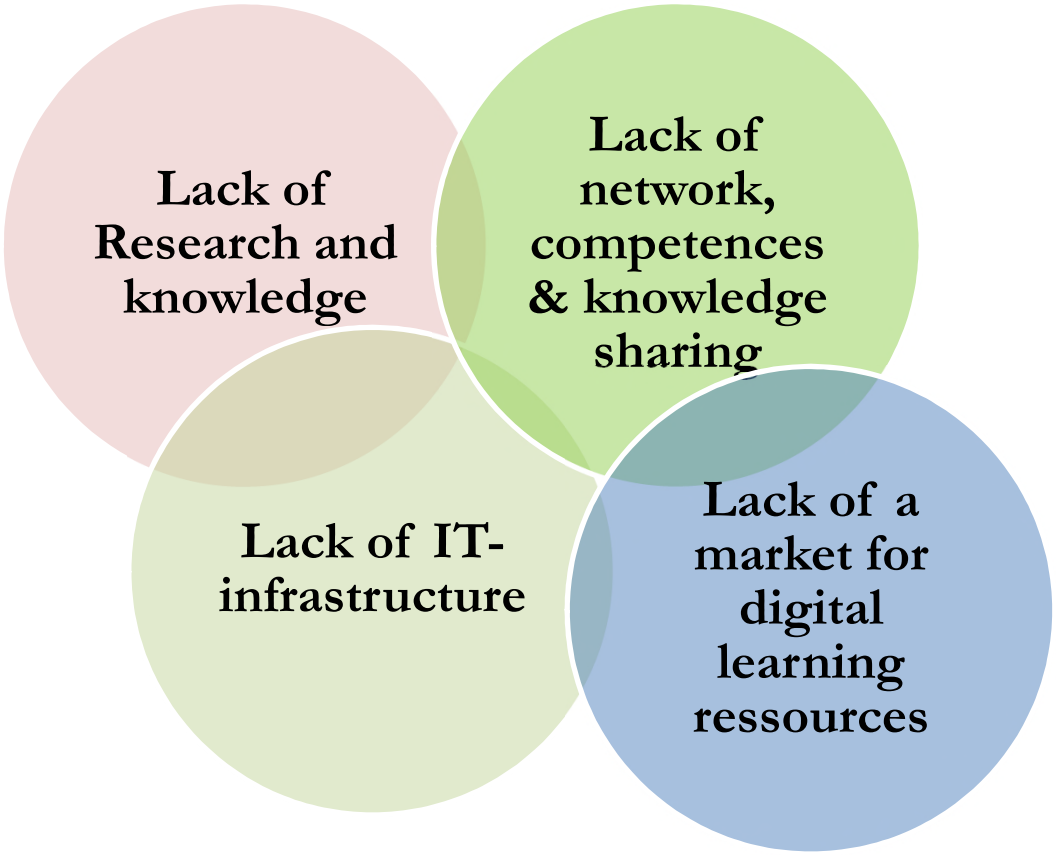

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National it-strategy for public primary and lower secondary schools

Shared responsibilities in the strategy 2012-2017

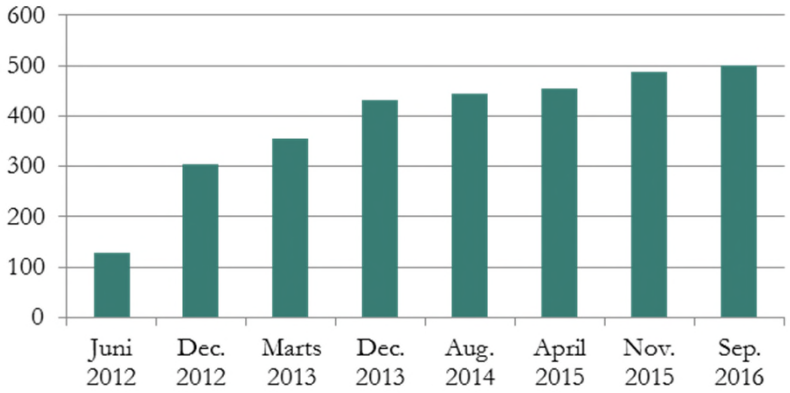
Municipalities:

- **Wifi** and **hardware**
- **Learning management systems (2017) + Cooperation platform (AULA) in 2019**

National level:

- **500 mio**. **DKK** government funding primarily spent on supporting municipalities' investments in digital learning ressources (50 % of cost), research etc.
- Public infrastructure through **UNI-Login** (single sign on-solution)
- Public **it-standards** to ensure communication and data transfer

Number of digital learning resources that meet the criteria for government grant



Danish it-infrastructure and market

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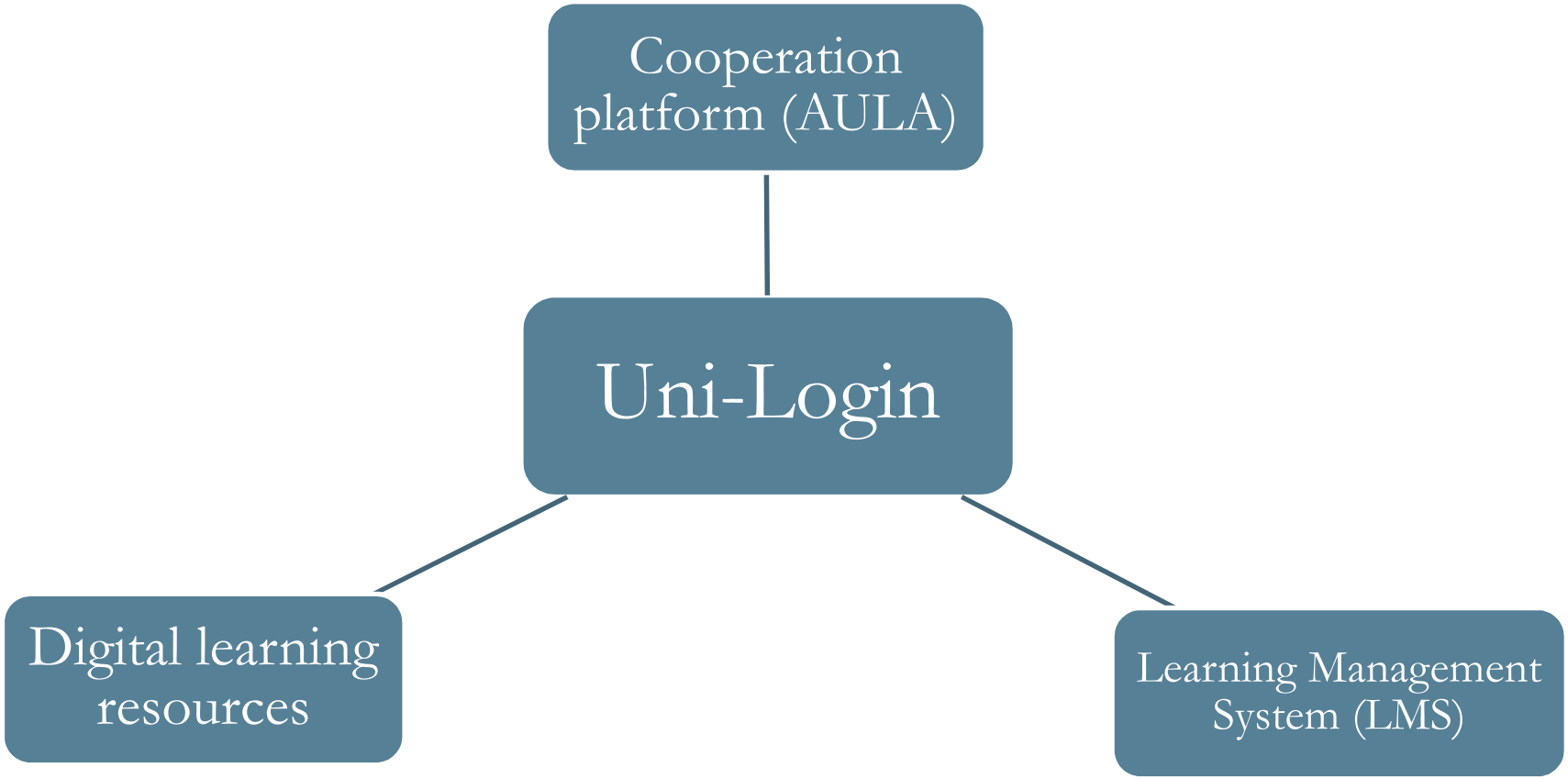

Uni-Login

The key to the school's digital resources

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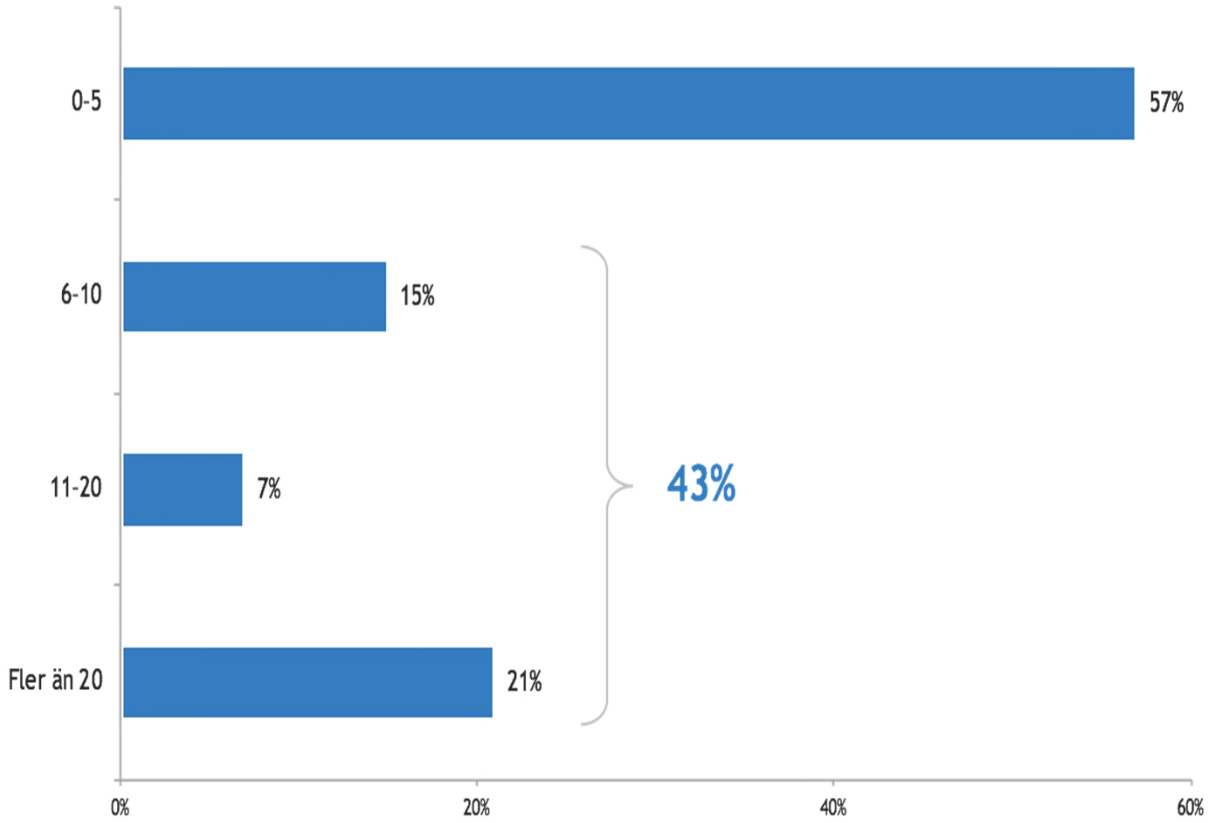
- Digital infrastructure that connects pupils, teachers, parents, the school and digital learning resources
- Even the youngest pupils use it
- Access to almost all digital resources in the school
  - Digital learning resources
  - The school's intranet
  - Internet and Cloud services
  - The school's computers and Wi-Fi
- More than 1 million registered users (pupils, parents, teachers, school leaders)
- 20+ mio. logins per month = 1 million logins per school day (average)

Teachers

How many logins does each teacher have in Sweden?

Base: Teachers (n=477)



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It-infrastructure and devices

- 9 out of 10 schools rate their school's WiFi and it-equipment highly
- 75 % rarely experience problems with the WiFi
- Danish schools employ different strategies regarding the students' use of either tablets or computer:
  - 1:1 – the school provides the students with a device (tablet/computer)
  - 1:2 – the school provides a number of devices, shared between at least 2 students
  - BYOD – the students bring their own device. The school or municipality will provide a device for the students who cannot bring their own

Status: Digitalization before/now – primary schools

	2011	2018
1. Market 	Limited supply of and market for digital teaching resources	86 pct. of the headmasters find that they have seen a positive development in the quality of digital learning resources within the last five years, while 83 pct. experience a positive development in the supply of digital learning resources. However, increasing centralization of purchase in the municipalities is experienced
2. Application 	IT was used as a supplement to the paper-based teaching and was not naturally integrated into the teacher's work	More than 80 pct. the teachers use digital resources as much as possible, when they teach. Most teachers use IT in combination with analogue resources. Teachers/pupils generally experience positive effects, e.g. in terms of teaching differentiation and motivation. However, the positive effects seems to have declined a little since 2014.
3. Infrastructure 	Many teachers and pupils had the experience, that the schools' IT and internet access did not work optimally	The proportion of teachers who experience practical and technical challenges with the digital resources has decreased from 22 per cent in 2014 to 12 per cent in 2018
4. Learning platforms 		Mixed experiences so far. Among the most digitally confident teachers 50-75 pct. experience positive effects

Evaluation of the IT in public schools-program (2012-2017)

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Perceived pedagogical effect

- The teachers report **positive pedagogical effects**, especially regarding differentiated teaching and motivation

The supply and quality of digital learning ressources

- 7 out of 10 school leaders report a **positive development in both the supply and the quality** of didactic digital learning resources within the last five years.
- However we still need focus on **quality, availability and competences**

Evaluation of the IT in public schools-program (2012-2017)

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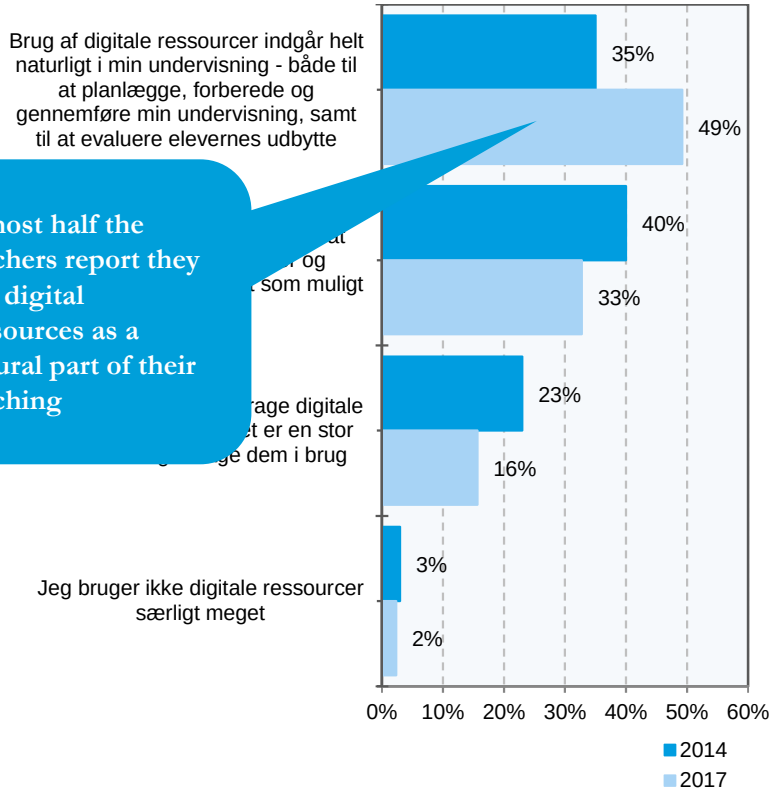
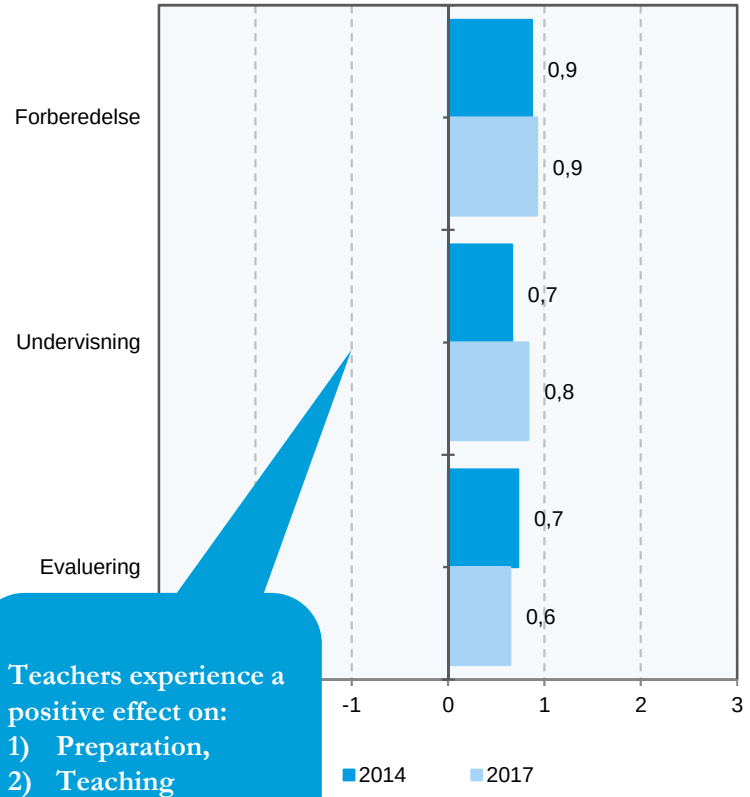
Development of use



Almost half the teachers report they use digital ressources as a natural part of their teaching

Time



Teachers experience a positive effect on:
1) Preparation,
2) Teaching
3) Evaluation

Evaluation of the effects of IT-based teaching

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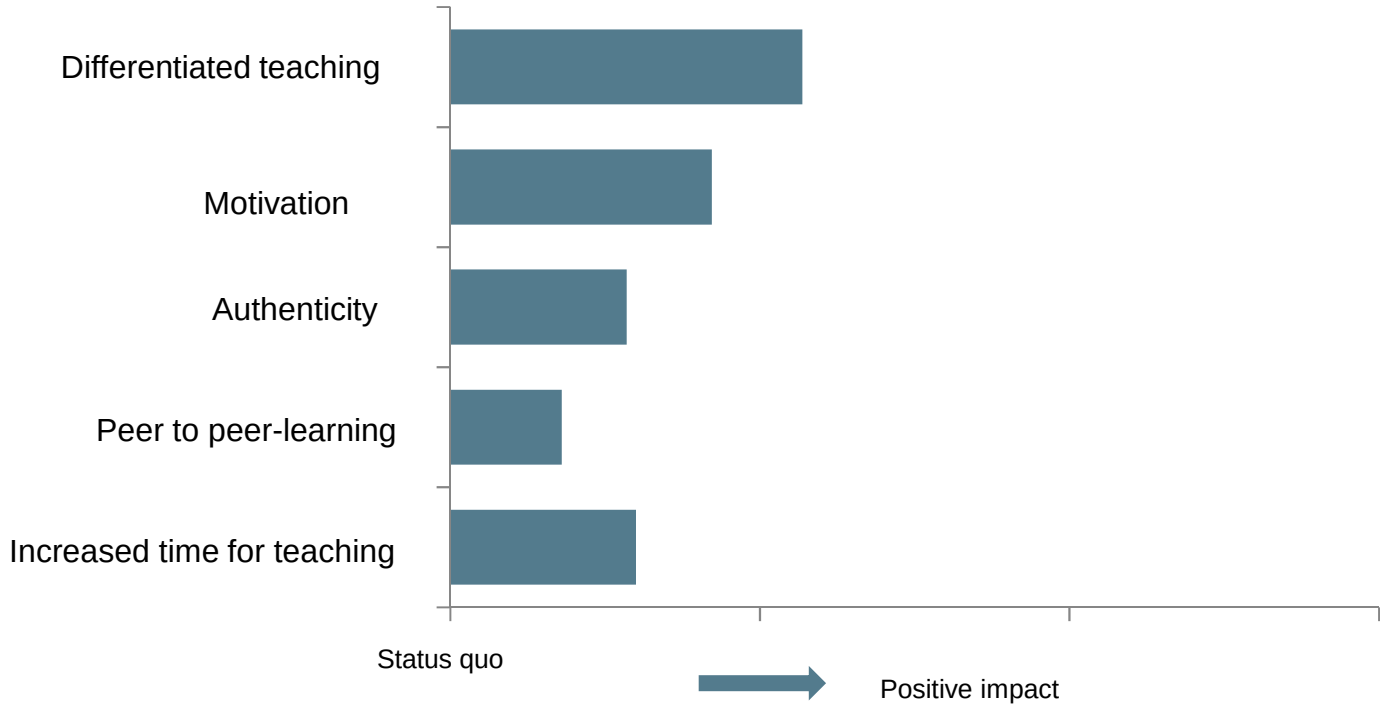
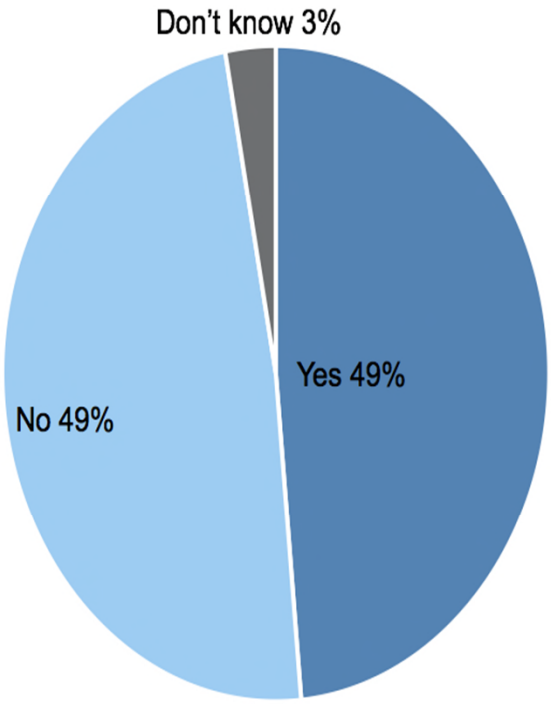
Impact on different aspects of teaching



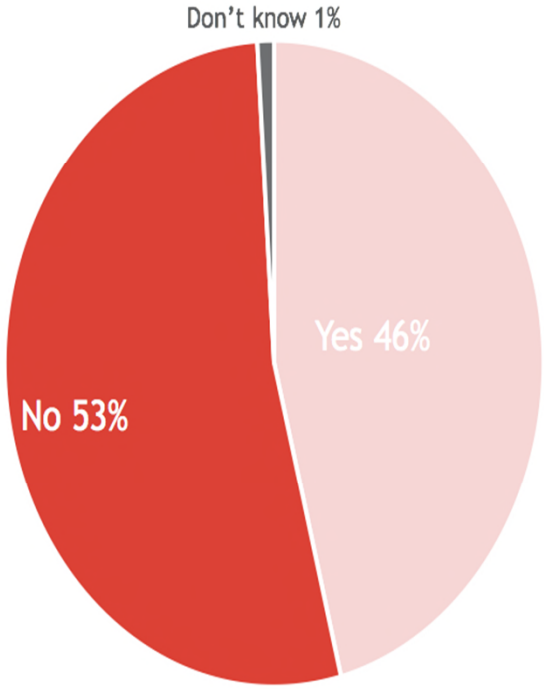
Does your school have a digital strategy?

Base: School leaders (SE: n=74 // DK: n=272)

Sweden

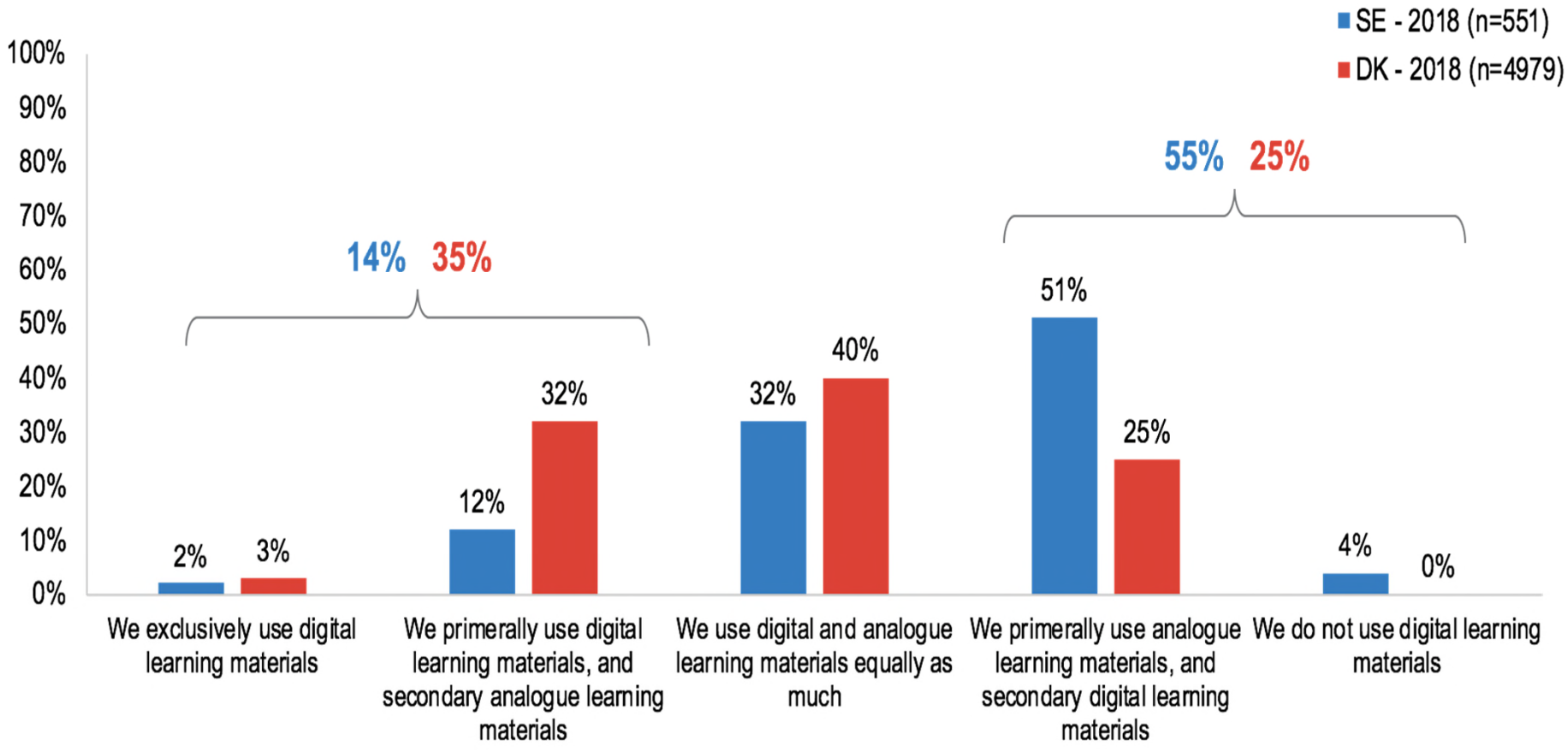


Denmark



The use of digital & analogue materials

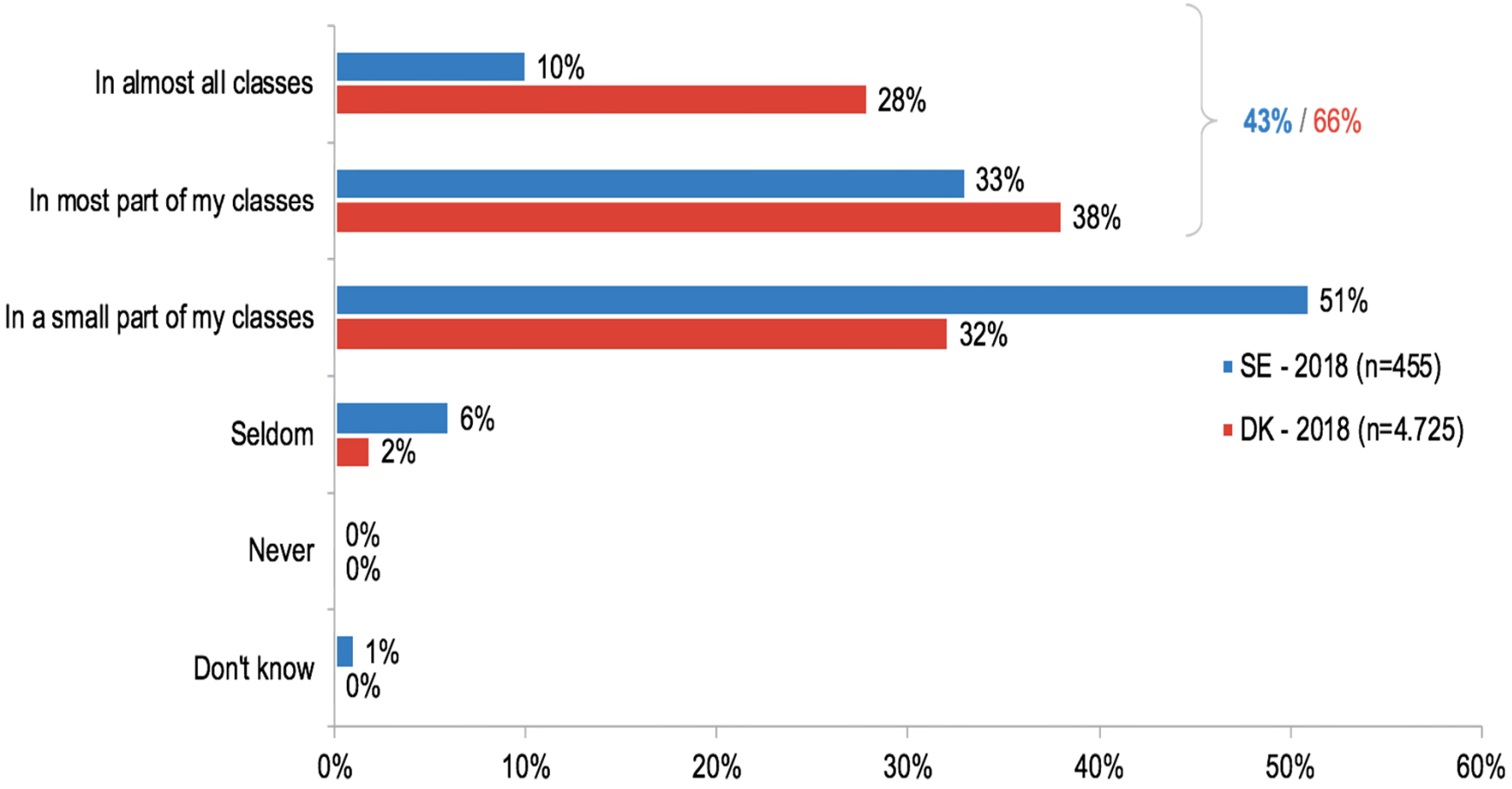
Base: All



Teachers

How often do you use digital learning materials?

Base: Teachers, who use digital learning materials



Recent political agenda

Action plan for technology in education

(February 2018)

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1. Technology understanding for all children, young people and adults
2. Digital skills of teachers, managers and educators
3. Use of IT in education
4. User-friendly digital infrastructure and learning resources
5. Use of data and data ethics

Initiatives in all educational areas

Nordic learning ressource seminar - Copenhagen

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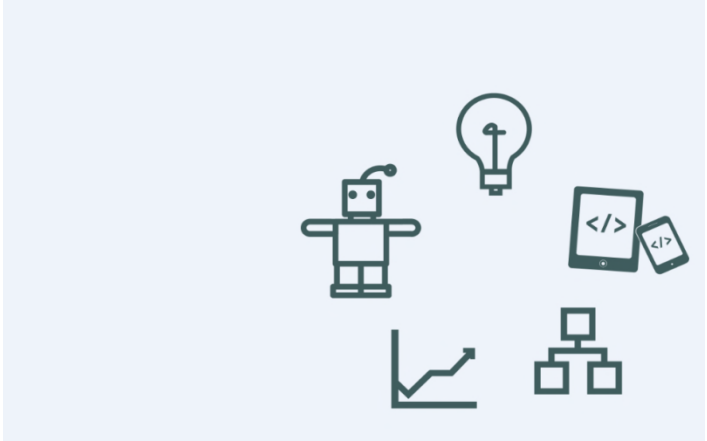
New trial program: Mandatory ”teknologiforståelse” primary/lower secondary school

(Technology comprehension)



- Program duration: 2018-2021
- Focus on programming (computational thinking), consequences of technology and automation on society, design and innovation, problem solving, digital competencies (i.e. social media)
- Development of teacher competences
- 40-50 schools participate

THE FOUR COMPETENCE AREAS

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Digital empowerment

Critical, reflexive and constructive examination and understanding of possibilities and consequences of digital artefacts.

Analysis of technology—intention and use | Evaluation | Redesign

Digital design and design processes

Organisation and implementation of iterative and incremental design processes considering the context of future use.

Problem framing | Ideation | Prototyping | Argumentation

Computational thinking

Analysis, modelling and structuring of data and data processes for automatic execution by a computer.

Data | Algorithms | Structuring | Modelling

Technological knowledge and skills

“Mastery” of digital technologies (computer systems and networks), associated languages and programming.

Programming | Computer systems | Networks | Security

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Digitalization of the educational system - status and challenges

- Publication: ”Digitalization with thought and vision” from March 2019 outlines status and challenges
- The publication is based on research results, status reports, surveys and workshops with teachers, pupils, headmasters and stakeholders
- *Involvement campaign* in the spring of 2019 both on social media and a ”suggestions mailbox”. The latter resulted in 61 suggestions from the sector

The new government (july 2019) is right now concerning which political initiatives to pursue in the matter of digitalization

Four themes in the publication

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Technology in education
The use of technology and digital products in the teaching situation. Focus on quality/effect

Technology and the well-being of children and young people
The effects of technology on the health and well-being of children and young people

Understanding technology
Understanding technology and teaching students in the application and development of and approach to technology

Technology at the school
Ensure efficient IT infrastructure in schools and access to digital tools, for example wifi and devices

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Challenges in Denmark right now

- Mixed evidence for learning effects while using it
  - and there is a lack of research on the subject in DK
- Policy for using mobile phones (and tablets) in schools ?
- GDPR compliance and data ethics
- Teachers' it-competencies
- Quality and overview of learning ressources
- Many schools want to work with "Technology comprehension"
  - but teachers and teachers' teachers lack the rigth/deep competences

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DANISH MINISTRY OF EDUCATION
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See you at the Danish Learning Festival on the 4th-5th of March 2020 in Bella Center, Copenhagen ??

We establish a section dedicated international exhibitors

DANMARKS LÆRINGS FESTIVAL2020
Den 4.-5. marts i Bella Center

https://danmarkslaeringsfestival.dk/

2018 survey
Yougov/Clio Online

A study amongst 551 (SE) and 4.979 (DK) teachers and school leaders executed by YouGov

Researching the use of digital learning materials, benefits and barriers

Increased focus on understanding school leaders, LMS (DK) and login situation (SE)

Thank you for borrowing results from that survey