



**DANISH MINISTRY  
OF EDUCATION**  
NATIONAL AGENCY  
FOR IT AND LEARNING

# **Project ”Data for Learning Progress”**

Teachers’ use of data to improve students’  
learning progress in the Danish public school

25. April 2017

National Agency for It and Learning,

Danish Ministry of Education

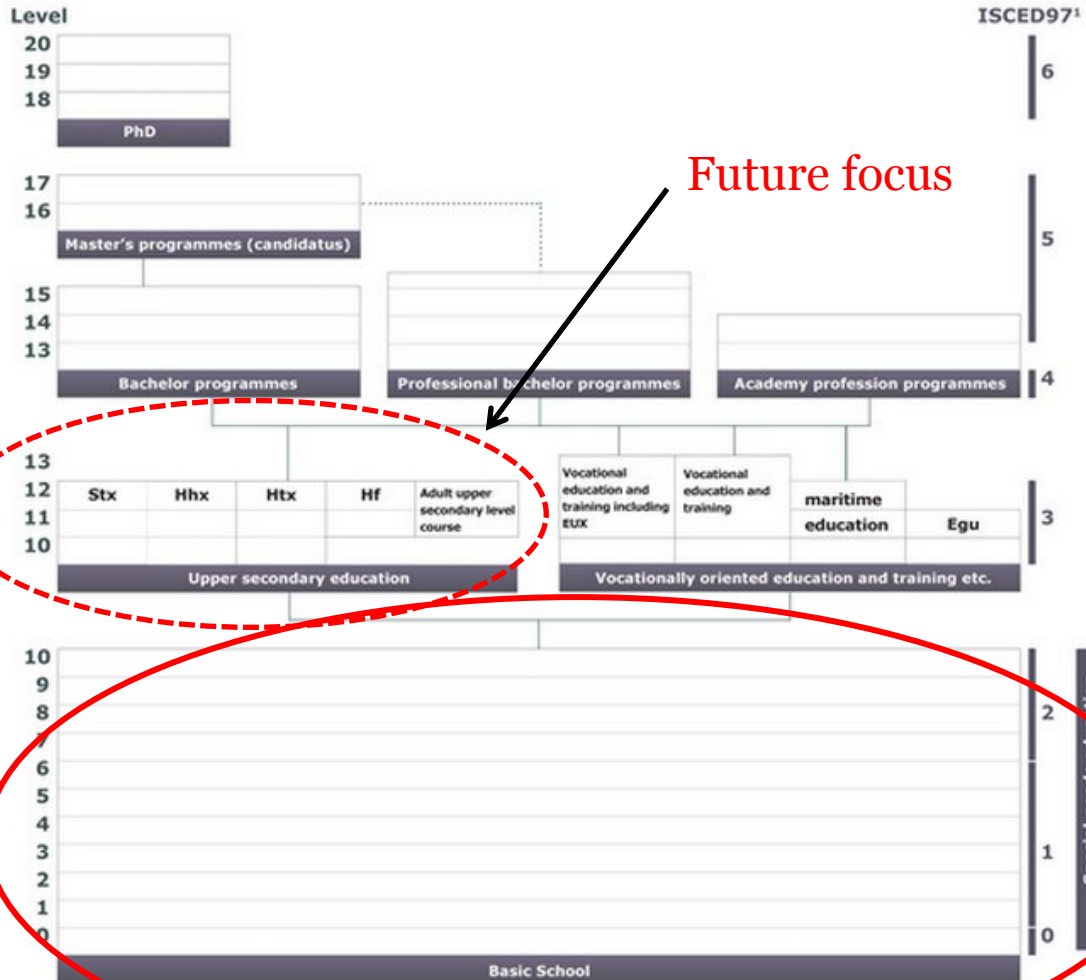
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# Project goal

The goal of the project is to deliver **recommendations** about how **data** on students' learning and well-being can be collected, combined and displayed to support teachers **improving the learning progress of students** in the Danish basic school.



# The ISCED range of the project



The project “Data for Learning Progress” has the Basic School (ISCED level 0,1,2) as its range.

The ministry is currently analyzing the perspectives of launching a project with similar perspectives pointed at the upper secondary education (ISCED level 3).

← Project focus



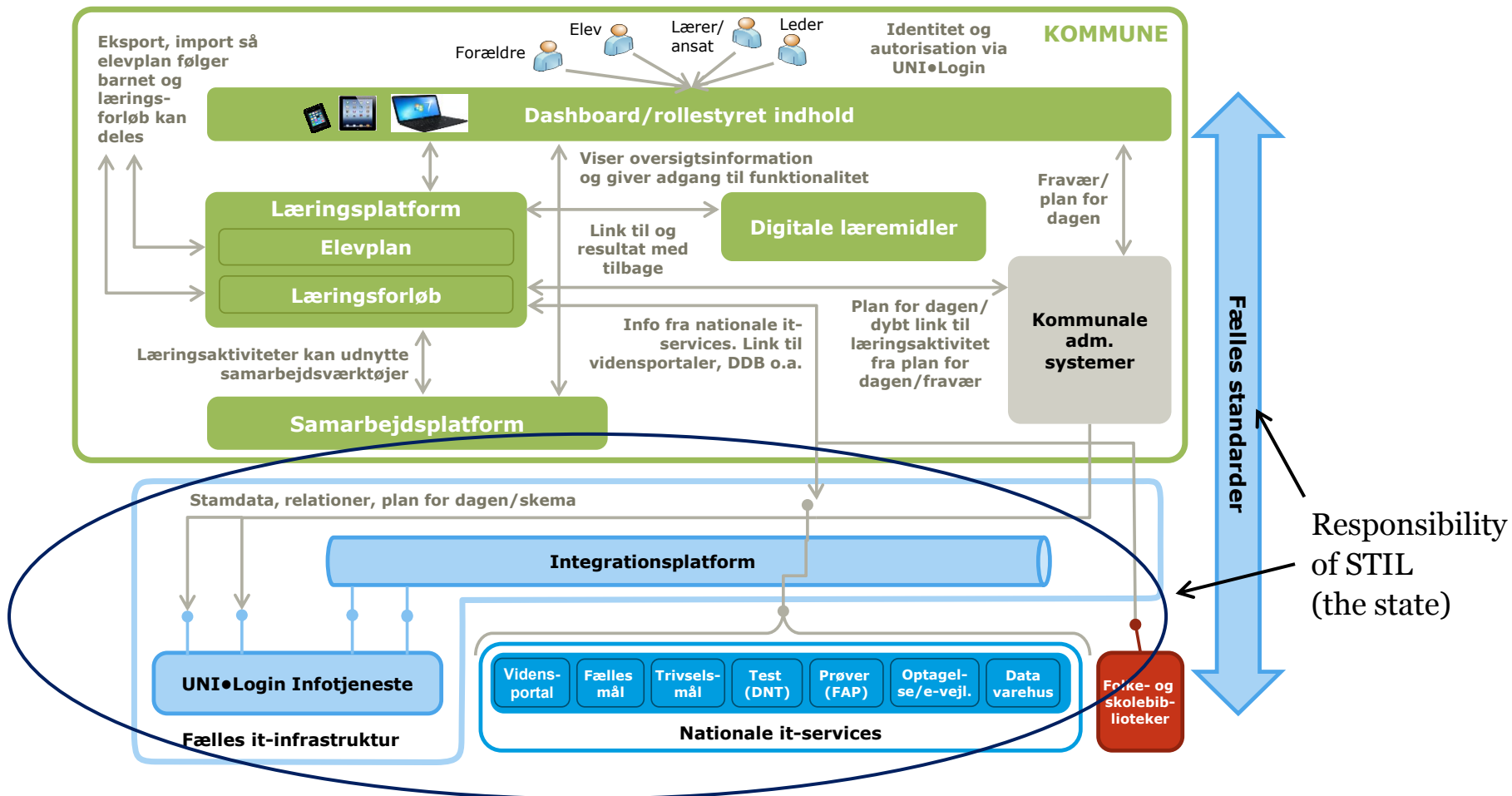
# The context of the project

- The 2014 political reform of the Danish Public School
  - The Danish government and the association for the Danish municipalities “Local Government Denmark” are collaborating on an ambitious strategy to **increase and qualify the use of IT as an integrated part of teaching.**
- Stimulate/support the purchase of digital learning resources in order to develop a sustainable market and supply of high quality of digital learning resources (certain criteria must be met in order to be eligible for government grant) – quickly in some schools and slowly in other schools
  - The government has allocated approximately **½ a billion DKK – app. 67 mio. Euro** from 2012 through 2017. to implement the strategy. The Danish municipalities are co-funding the strategy with an equivalent amount.
- The User portal of the Danish Public School is currently being implemented, ensuring seamless integration of systems and flow of data (infrastructure)
  - Local level : **LMS**’ purchased and implemented by municipalities by end of ’17
  - National level: See next slides

# Architecture framework of the User Portal



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# The User Portal Initiative for the Danish Public school



- The foundation of the project is the **digital infrastructure** defined within the User Portal Initiative of the Danish Basic School, which includes **rules for standardisation**
- The User Portal Initiative and the project "Data for Learning Progress" is governed by the same **joint steering group** of The State (Ministry of finance, Ministry of Education) and The Municipalities (The Association of Local Governments)
- The digital infrastructure gives a **framework for creating data views** on student learning progress.
- Main parts of the digital infrastructure are:
  - The **School Learning Platform**, which is the place to access all digital learning materials, accessing students' personal learning plans, digital student portfolio
  - The **School Collaboration Platform**, which enables e.g. teachers, students and parents to communicate and share knowledge
  - Expanding the **Danish single-sign-on solution** for the educational sector – UNI-login –to also include parents



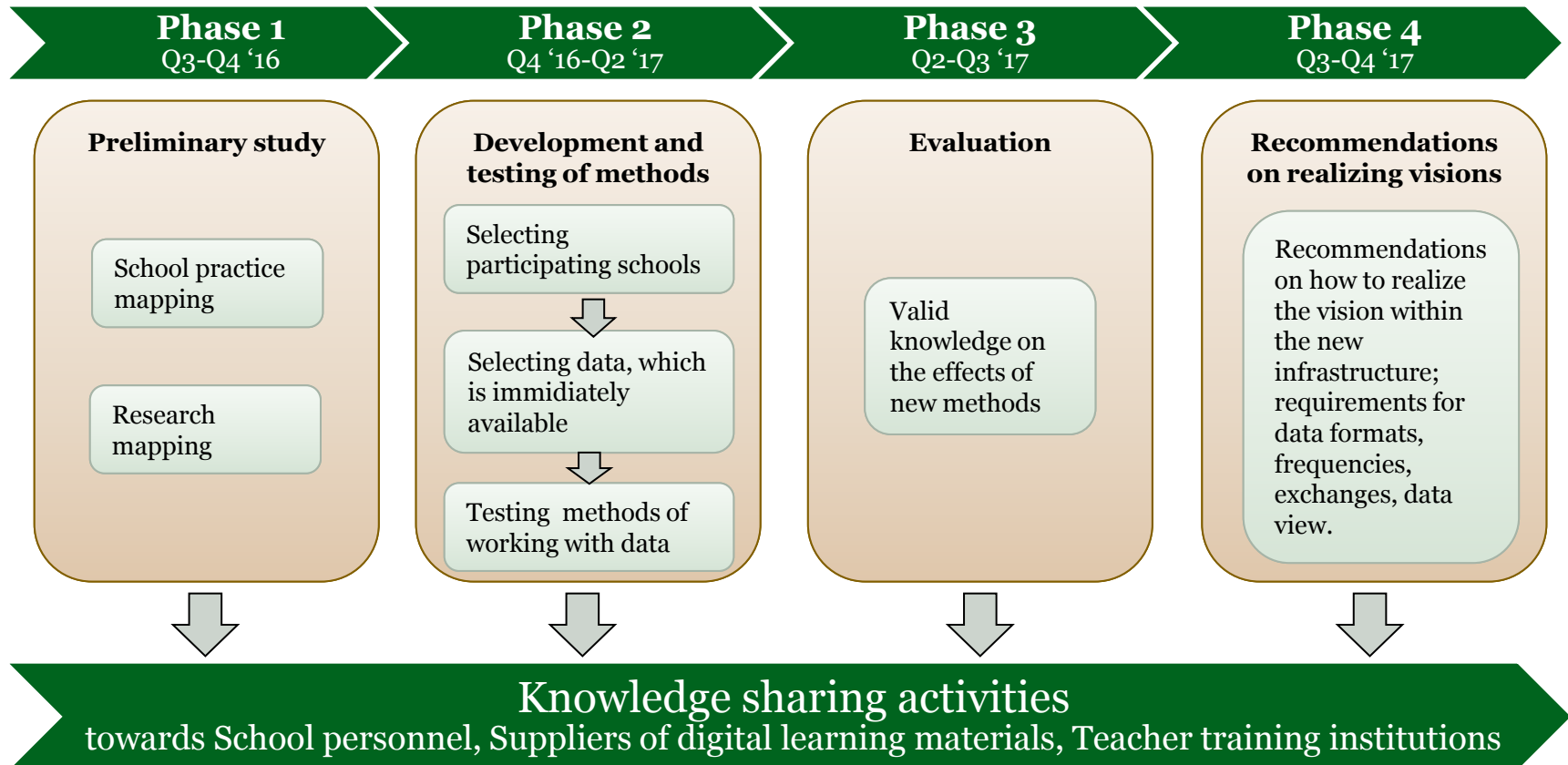
# A new approach to data

- **Traditionally** the approach to data by the National Agency for It and Learning is, that
  - we **collect** data,
  - we validate and analyze data,
  - we display data in our datawarehouse,
  - we publish statistics and analysis reports,
  - we support the policy processes of the ministry,
  - we support the school supervision by the ministry.
- Our approach ensures high quality of data, but data has a low frequency and the production time is high.
- **In this project** on learning progression we seek to build upon the infrastructure defined by the User Portal Initiative to facilitate the accessibility and flow of data from its sources to data views at the school learning platform.
- We will **not collect data**, but facilitate the flow and immediate visualization of data to support the teacher.



# Timeline of the project

The project is carried out by a consortium of government research institutions. Price tag: € 1,1 mio



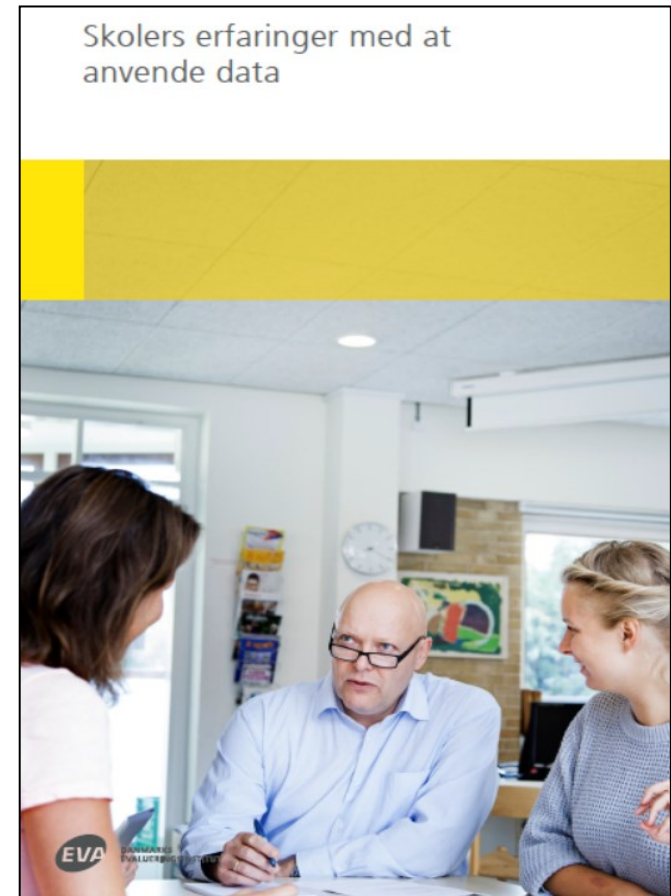
# Results of the research mapping

- In most OECD-countries there is an increasing tendency to focus on developing 21st century skills, like creativity and problem-solving, rather than having a narrow focus on acquiring knowledge. This leads to a focus on **how to measure** the progress of students' proficiency of these skills.
- There is a need to work with teachers to develop a **data culture**. Schools must work with expectations, visions and goals for teachers' use of data. School management must act proactively.
- Schools need to **involve teachers** in the process of selecting the student-data, that adds value to specific work-processes for the teachers.



# Results of the school practice mapping

- **Schools** has an unused potential for working systematically with data culture
- To a large extent **teachers** lacks competencies and allotted time to work systematically with student data.
- **Students** does not have a clear measure of their performance.
- **Parents** miss real-time information on the learning progress and well-being of their child. Parents demand richer and more varied data than infrequent test results provide today.



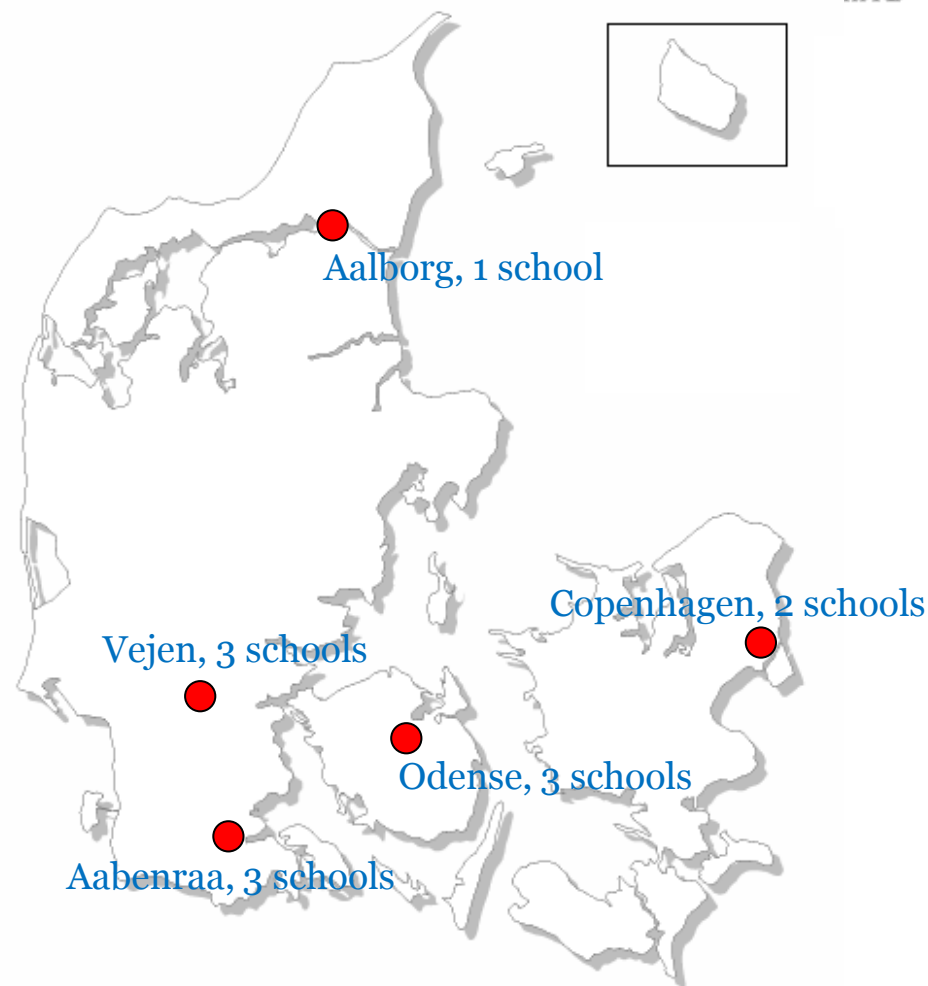
# Developing and testing methods to work with data



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The consulting consortium works with teams of teachers from 12 schools. The method is to explore which data to use, and how specific data views can support certain tasks for the teacher, for instance:

- Preparing teaching efforts towards individual **students** and class as a whole
- Preparing bilateral dialogue-meetings with **parents**
- Preparing discussions within the **teaching-team** on the learning progress of the class
- Preparing discussions with **school management** on the learning progress of the class





# Which data to focus on?

## Local student data

- Data on students' **performance and level of activity** on each subject (extracted from digital learning materials and the school learning platform)
- Data on students' **formal progress with the curriculum** of each subject
- Data on students' **motivation and well-being** (self-assessment)
- Records of **school attendance** and **timeliness** of submission of assignments
- **Qualitative data**, links to teachers' notes and content of submitted assignments.
- Data is **already existing**, it's all about operationalizing the digital infrastructure, set up by the User Portal Initiative.

## National student data

- National curriculum tests (very infrequent), National survey of student well-being (at the moment collected for statistical purposes)

## Flexible student data

- Support teachers' ability to create **grouped and aggregated** data of select students or the class total.
- Support **sharing of data** to other teachers, parents and school management.

# Evaluation and recommendations for implementing

The consulting consortium delivers:

- **An evaluation report** that sums up the experiences of teachers working with data in new ways, measuring teacher readiness a priori and a posteriori to work with data.
- **A plan for implementation** of student learning data dashboards in the learning platforms, that all public schools must acquire within 2017. The plan requires definitions of standards for data content, data storage and data transfer.

# The political agenda about Data on learning progress

- **All parties** (Teachers' Union, Association of School Leaders, The Local Governments, The National Parliament) **agree on the principal benefits** of creating detailed data views of the learning progress of the students.
- However, there are a number of **key issues** that raise opinions:
- The **privacy issue**, this is a general trend of all areas of digitalization
- The **data ownership issue**. The Teachers' Union wants to control the data, and decide who should have access to which data.
- The **Learning Analytics issue**: There are strong proponents (administrators) and strong opponents (teachers) of using Learning Analytics to define algorithms, that computes the learning progress of the individual student (and perhaps gives advice to teachers on educational improvements).



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