The Demonstrations School Projects

From 2013-2015 the National Agency for IT and Learning has worked together with three universities, seven university colleges, 28 primary and lower secondary schools in Denmark and approximately 515 teachers and nursery teachers in a major effort to create insight into how, when and why IT can enhance student[1] learning. The general aim of the project, known as *The Demonstration School Projects,* has been to support student learning and participation, create more innovative teaching, reallocate time in the classroom and direct attention towards *21st century skills*.

21st century skills is an umbrella term for a set of skills which in several major international publications has been identified as particularly important for students in the 21st century. The term covers enhanced skills in ways of thinking, tools for working, ways of working and ways of living in the world in the 21st century.[2]

The five subprojects have generated a number of research findings. Amongst these findings the projects show that: IT holds the potential to real-locate time in the classroom; IT can be an accelerator for innovative teaching; students who use IT to perform basic tasks and problem-solving score higher in several of the 21st century skills than students who use IT to a lesser extent.

Key words: *technology, learning, ICT-innovative teaching, 21st century skills, student participation, student production*

Project design

The Demonstration School Projects consist of five subprojects which all aim to support the development of 21st Century Skills by using IT to create and test new ways of teaching. Though the five subprojects have different approaches and apply different interventions to develop practice at a number of primary and lower secondary schools in Denmark, they share a common thinking towards school development. All of the subprojects have chosen to work with schools that have expressed a willingness to change, and the interventions have all been long-term and practice-oriented, where a number of consultants and academic experts have worked closely together with the schools. The research in the five subprojects is based on both qualitative and quantitative methods, and has applied various tests of

---

[1] The term "student" includes students, pupils and children attending preschool or nursery.
[2] http://www.atc21s.org/

student ability, surveys and action-based learning concepts.

Furthermore, three of the five subprojects have applied the same multi-facetted approach in their intervention, involving three specific dimensions of intervention. Firstly a teaching design dimension focused on developing the teacher's skills through a combination of workshops, action learning and reflection. Secondly a technological dimension focused on how IT can be used to support different teaching activities and at the same time increase teachers' knowledge of specific digital learning materials and tools. Thirdly an organizational dimension focusing on how schools can establish new ways of collaborating, network activities and sustain school development. The fourth project has taken the form of a series of workshops to develop teachers' use of a digital tool to support goal-oriented teaching and learning. The final subproject has been structured around six specific interventions, which have been developed and planned in close co-operation with the participating schools.

A brief presentation of the five subprojects is presented below.

Inclusion and Differentiated Teaching

The subproject *Inclusion and Differentiated Teaching* has aimed to promote innovative teaching practices, introduce relevant digital technologies to the classroom, and learn about and enhance the school's capacity to guide teachers. The general aim has been to support both inclusive and differentiated teaching. For two years, experts and consultants have supported five schools in their use of digital technologies. Among other initiatives, the schools have worked closely with reading and writing technologies and

assessment tools to provide better feedback for students, all with the purpose of showing teachers various new ways to differentiate their teaching. Teachers and students have used digital tools to support collaboration and process management.

IT in the Innovative School

The subproject *IT in the Innovative School* has aimed to increase teachers' abilities to use IT in more creative ways. Through five predesigned curricula, the project aims to inspire new ways of teaching and new ways to collaborate and enhance the students' 21st century skills. The curriculum, which is accessible online, is innovative and computer-based. Alongside the five curricula, each school has started a student-based support group with the task of supporting teachers on technical issues in their own and other classes. Finally, the project has aimed to enhance collaboration and networking at the school level.

IT-didactics and Teacher Skills in an Organizational Perspective

The subproject *IT-didactics and Teacher Skills in an Organizational Perspective* aims to enhance the use of IT in various subjects. This subproject examined how IT-based learning resources can be used in new and innovative learning courses, and how team-based collaboration on developing the courses can affect the general cooperation among teachers. In the project's interventions, teachers have experimented with new and different ways of using IT, and have developed and tested new courses.

Digitally Supported Learning Goals

The subproject *Digitally Supported Learning Goals* has aimed to develop a prototype of a digital tool and to test how such a tool can support

teachers in working with the Danish curriculum and setting learning goals for students. The general purpose of the project has been to provide insight into how a digital tool that supports working with learning goals affects the work of teachers and student learning. At the same time, the subproject has focused on different strategies for setting learning goals and the factors that both enhance and limit this work.

Students' Digital Production and Students as Learning Designers

The subproject *Students' Digital Production and Students as Learning Designers* has studied how the students as designers and producers of digital learning resources can enhance student learning, sense of ownership and increase the motivation to participate. The project interventions seek to let all students produce digital learning resources for other students, and let students teach each other. This subproject thus seeks new approaches for teachers and students as learning designers and new ways in which students can be active contributors and qualify their learning outcomes.

Research findings

The five subprojects have generated a number of main research findings, which can be presented under the following headings:

➢ *Multi-dimensional school development promotes innovative, computer-based teaching practices*
If practice in Danish schools is to evolve in such a way that progressive teaching and learning through the use of computers is strengthened, it will require a multi-dimensional, long-term school develop-

ment practice with focus on capacity building and collaboration.

➢ *Need for enhanced innovative teaching*
The Demonstration School Projects have shown that there is good reason for schools to work towards more innovative teaching practices. The researchers found that teaching practices, particularly in the subjects Danish and Mathematics, are often traditional and guided by a conservative logic.

➢ *Teacher collaboration enhances the integration of IT in the subjects and innovative teaching practice*
Team collaboration, inquiry into teaching practices, peer coaching and school-based skills development support an innovative teaching practice. The research shows that teachers who collaborate in a team on the development of curriculum and teaching practices teach in more innovative ways than teachers who only engage in limited team collaboration with their colleagues.

➢ *IT can be an accelerator for innovative teaching*
When teachers move towards more innovative teaching practice, IT can be used to support teaching and learning.

➢ *When students investigate and collaborate, IT strengthens their 21st century skills*
IT supports students' 21st century skills when teaching is student-centered, investigative and collaborative.

➢ *Digitally supported learning goals strengthen team-based discussions about teaching*
It is important that the digitally support-ed learning goals can be adapted to the individual teacher's needs and way of working. At the same time, the tools that digitally support the learning goals need to function as a possible common plat-form for cooperation, dialogue and re-flection.

➢ *Digitally supported learning goals can support a differentiated teaching practice*
Digitally supported learning goals seem to play an important role in supporting a differentiated teaching practice.

➢ *Students' digital production supports stu-dents' learning processes and learning outcomes*
Students' academic learning processes and learning outcomes are supported when students are actively involved as contributors and producers of digital learning resources, and when they use digital tools to facilitate their own learn-ing processes.

➢ *IT holds a potential for reallocating time in the classroom*
The inclusion of IT, digital production and new teacher and student roles help the teacher to reallocate time in the classroom.

Danmarks Evalueringsinstitut udforsker og udvikler kvaliteten
af dagtilbud for børn, skoler og uddannelser. Vi leverer viden,
der bruges på alle niveauer – fra institutioner og skoler til
kommuner og ministerier.

Læs mere om EVA på vores hjemmeside, www.eva.dk.
Her kan du også downloade alle EVA's udgivelser
– trykte eksemplarer kan bestilles via en boghandler.

Fejl! Ingen tekst med den anførte typografi i dokumentet.