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In this issue:

Scandinavia@BETT



Denmark



Norway



Sweden



Scandinavia@bett

We present three cases. Three Scandinavian cases of schools meeting the future. Not in a full and comprehensive study, but a picture with some facets. We want to give you some of the experiences, some of the perspectives and some of the challenges schools meet. And how it's met by three Scandinavian schools and Municipalities.

Here, in this brochure we try to convey a snapshot of the change following digitalization of schools, by showing three glimpses from Scandinavia, from three schools, one each in Norway, Denmark and Sweden.

They have been chosen from three different municipalities, not necessarily outstanding. One larger city on the Norwegian coast, old city with harbor and shipping industry. One a small town in the Jutland countryside in a rural area and an hour from second largest Danish city Århus, and finally a middle sized Swedish industrial town, in forest and mine region with iron as the dominating trade.

They have been chosen to reflect what is happening this very now. Schools slowly – or more rapidly! – developing their curriculum, their methods and their tools. Still doing the same thing, trying to give young people a good start in their life, knowledge, skills and personal development. Reflecting some of the new things growing. For each a video, a written and an oral report to inspire or stimulate reflection.

Three facets are completing the picture. Oystein Johannessen well known for his long period at the Knowledge Department in Oslo, Norway, with his focus on national policies for developing schools with ICT. We also give a perspective of the force of change, by Dr Jan Hysten depicting the Mobile learning scenario. And the necessary companion, the researchers, not paving our way, but accompanying us and giving us better understanding of what we do and what is happening, by professor of educational science at Umeå University, Sweden, Isa Jahnke,

Behind this brochure is the Swedish foundation DIU, working for two decades with practitioners sharing and reflecting on experiences. Our mission has been to reflect what is going on, with a journal – now in English for this event at BETT 2013 – with seminars and conferences, prizes for teachers doing piloting development work. Helping to share and build knowledge. Creating arenas for learning with ICT. We wish you a successful sharing experience.



Peter Becker
Chair Foundation DIU/Stiftelsen DIU, visit us at www.diu.se





Scandinavia

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DIU

Forum for ICT pedagogical discussion

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Myth and Reality about Nordic Education and ICT

by Øystein Johannessen, CEO, Qin AS

In our globalized world we have certain perceptions about each other and about other countries. This is also the case about how the wider world perceives the Scandinavian countries. Among the patterns of outside perceptions, we recognize the images of northern frivolity, the orderliness of the Swedes, the introverness of Norwegians and the good-spirited Danes.

What is the picture of how ICT is used in Scandinavian schools? Around the world I have often been met by the assumption that the Scandinavian countries are among the frontrunners with regard to the educational use of ICT. I will return to this question in a minute.

However, another and fundamental question is whether Scandinavian schools are characterized by what we may call pedagogy with a Scandinavian flavor. There may be some truth to this notion:

- Education has been closely tied to the development of the national state.
- There is a strong emphasis on equity and giving people a first and a second chance
- Collaboration among students is valued
- Project-based and problem-solving approaches to teaching and learning have received a lot of attention.

But let us turn back to the perception of Scandinavia as a cluster of cutting-edge countries with regard to the use of ICT in education. Is this really the case, or are there some nuances to this image? I do believe that for a period the Scandinavian countries enjoyed a unique position internationally with regard to ICT in education. The strength of public economy, good infrastructure and early investments in infrastructure contributed to this. Having said this, the Scandinavian countries as a whole are no longer enjoying a unique position as ICT frontrunners. The key elements of the current situation, which will be elaborated during the Scandinavian Session in London, contribute to a mixed picture:

- The Scandinavian countries still enjoy a superb infrastructure with regard to access to digital tools and broadband internet access.
- The actual use of ICT vary across countries, educational levels and subjects. There are both encouraging numbers as well as discouraging findings when we study ICT statistics from the Scandinavian countries.
- Public policy on educational ICT has been subject to shifting priorities and shifts in continuity over the last 10-15 years. There

seems to be less momentum today than a decade ago.

- The countries have gradually embedded ICT in national curricula or pedagogical frameworks, and they are among early adopters in this area.
- There are variations across the Scandinavian countries with regard to how ICT is embedded in teachers' professional development and how ICT is used at exams and for assessment purposes.

The three cases presented don't give a comprehensive picture of the Scandinavian countries, but may serve as inspiring examples and a good starting point for discussions and collaboration.

ØYSTEIN JOHANNESSEN

Øystein Johannessen is the CEO of Qin AS and an Education Impact Fellow. He is a former Deputy Director General of the Norwegian Ministry of Education and Research, where he worked for 12 years. He also has extensive international experience at European level and from the OECD. Øystein works at the intersection between R&D, strategy and innovation and a frequent blogger and speaker about ICT in Education

Friday, february 1st, 2013

Agenda

- 09.30 Opening: Peter Becker
- 09.35 Perspectives on School development with ICT, professor Stephen Heppell, UK
Introduction to the cases, Øystein Johannessen
- 10.00 Case 1: Nordahl Grieg, Norway
- 10.30 Break with coffe, tea, soft drinks and chat
- 11.00 Case 2: Sandviken municipality, Sweden
- 11.30 Case 3: Odder municipality, Denmark
- 12.00 Factors making ICT in education successful, Professor Isa Jahnke, Umeå university:
- 12.25 Rounding up
- 12.30 Closing

Professor Stephen Heppell, the UK voice at the Scandinavian session

The conference guide during Scandinavian session is Professor Stephen Heppell.

Stephen Heppell is Professor and chair in New Media Environments, Centre for Excellence in Media Practice, Bournemouth University.

Stephen has worked, and is working, with governments around the world, with international agencies, Fortune 500 companies, with schools and communities, with his PhD students and with many influential trusts and organizations

Stephen's "eyes on the horizon, feet on the ground" approach, coupled with a vast portfolio of effective large scale projects over three decades, have established him internationally as a widely and fondly recognized leader in the fields of learning, new media and technology.

Digital Didactics – the future of education

We face a new situation in our daily life school practices nowadays. This new situation can be described in terms of "omnipresent online presence". Mobile devices and Social Media makes it possible nowadays that we have access to knowledge almost every time and wherever we are.

With the invention of the mobile devices like tablets/iPads, we can see a change of informal learning that entered our formal education - and this gives us great new opportunities in schools. But it also affects formal education - whether we want it or not. The technology already arrived in our schools.

To meet the new challenges, we have to ask what "is" teaching and learning in schools nowadays. Is there a difference to 'learning outside of schools' and if yes, what is it?

If the answer is 'No', there is no difference, then, why do we have schools? But if we answer "Yes, teaching makes a difference", we have to ask on how to design the new learning challenges. I argue that teaching nowadays should contribute to a deeper learning (e.g., a reflective practitioners, critical thinking) and should not support surface learning only (e.g. remembering facts, understanding). New ICT and mobile devices can support deeper learning.

In my presentation I give answers how to address this change. There are different aspects which are important on our way to meet the future of formal education. The framework of Digital Didactics, which I develop, helps decision-makers and school leaders to understand the conditions to meet the new challenges

- a) Developing digital didactical designs (didactical level A, B, C) :
 - a. address the diversity of students needs
 - b. transformative learning, personalised learning, complex learning, peer-reflective learning, collaborative learning
 - b) Supporting competence development for teachers (train the teachers)
 - c) Discussing and developing the social roles (the partly contradictory expectations towards the teacher's and learner's roles need to be discussed and changed)
 - d) Curriculum development and course development
 - e) Changing the teacher education at universities
 - f) Creating and implementing an organisational strategy to foster meta-reflection
- iPads and other digital tools themselves don't lead to a change in teaching practices but when integrated in the digital didactics and under the right conditions they can enhance deeper learning. I will talk about what these conditions are.

PROFESSOR DR. ISA JAHNKE

Umeå University
Dep of Applied Educational Science
Interactive Media and Learning (IML)





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Odder Municipality

A School in Tune with the Times

When the Odder municipality adopted a new strategy for public school "Strategy for Future Public School 2012–2016", an important point was to create varying and challenging learning environments among others by integrating digital tools in teaching to a higher degree than previously. The basic idea behind the project is that a good school is in keeping up with developments and society.

– Today's students are growing up in a digital world, then we cannot have an analogue school, says Lise Gammelby, School Improvement Coordinator in Odder.

In Odder, there was also a great need to renew the school ICT equipment.

– We really needed to rethink school. If we are serious about the school to be digital and the digital tools used, they must be easily available. Teachers should not have to plan their teaching dependent on the

availability of ICT facilities, or worrying for if the technology works. The technology must be integrated with the teaching. It was all or nothing.

Now the technology is in place. The infrastructure including broadband and the wireless network works, almost every classroom in the municipality have interactive whiteboards. Moreover, since last year, all students, teachers and recreational instructors have their own iPad.

– The tablets are robust. The technology inside the tablets will not break, the glass may crack but we can handle that. The technology is evolving and there is no way back. What we will choose in two years time, when this Agreement expires we do not know today.

Motivated students and teachers

In the evaluation a year into the project, performed by the municipality with researchers at the Umeå Uni-

versity in Sweden, both students and teachers are shown as motivated and engaged.

– Previously, we have had problems with students growing up, losing motivation for school and learning. Their world outside the school and the world inside the school's walls were far apart. Now the students state that they are more motivated and their teachers confirm this.

In addition, the teachers themselves are very positive and motivated, as shown in the municipality evaluations.

– Of course, the teachers' reactions vary, however a large proportion is highly motivated and everyone is working constantly to develop the teaching methods with the support of the digital tools.

Open the door to the classroom

For more than five years, the Odder municipality has had an ongoing de-

velopment work relating to learning environments where all teachers and school leaders are committed. This has facilitated introduction of new technologies and development of new methods for teaching.

– When you learn something new, it is vital that there is an open learning culture. This we do have in Odder. For five years, we have worked to open the doors to classrooms, and teachers meet regularly in small groups to discuss and focus on issues raised by individual teachers. When the digital tools came into teaching we already had a structure for joint teacher reflection on development of teaching, Lise Gammelby says.

Project of the entire municipality

When the school hands out 2500 new digital tools in a municipality of 22000 inhabitants, almost everybody is influenced, directly or indirectly. Interestingly, the parents also make use of the students' iPads. E-book lending has increased dramatically at the public library in Odder, now peaking Danish statistics.

Carina Näslundh & Peter Becker

Lise Gammelby, School Improvement Coordinator in Odder.



Odder municipality

Odder is a municipality just south of Denmark's second largest city Aarhus, and in the East Jutland metropolitan area, with 1.2 million inhabitants.

- 21,852 people live in the municipality.
- 11,000 live in the city Odder.
- The municipality generates approximately 8000 jobs - 4500 people commute to work outside the district – 2000 commute to Odder.
- The municipality covers 225 km² of land
- 2200 summer cottages are situated at the coast.
- The first school in Odder was founded in 1741 by a local landlord.



Odder Schools

Tablets are used by everyone, teachers, students and principal. Students can move across the school and find their own nook and workplaces. The outside world is important and visible, for example with the clocks showing New York, Tokyo and local time.

Open, tolerant and creative environment, where students are playing together and with their tablets integrated. Music, photography and film – spontaneous film projects on breaks. Not focusing on different apps, more on creativity.

A tradition of open doors to classrooms, teachers meeting regularly in small groups to discuss and focus on issues raised by individual teachers. When the digital tools came into teaching, a structure for joint teacher reflection on development of teaching existed.



So far Jacob Brandt Rasmussen, head of the Saksild Nølev School, needs both iPad and computer to do the job. All of the school administration systems can not yet be handled via the iPad.

Saksild Nølev school:

Experience and Learning Go Hand in Hand

Saksild Nølev School in Odder has a well-stocked music room. Here drum kits, guitars and cymbals mingle with tools for digital music creation. An example is the wall consisting of student self-composed musical stave constructed from favourite songs, pictures of the performers and QR codes linked to YouTube clips of melodies performed.

Jacob Brandt Rasmussen, is both headteacher and music teacher at the school. For him experience and learning goes hand in hand. The new digital tools fit well in this context.

– For me, teaching is first experience and then enlightenment. As the adults in the school, we have responsibility for creating good relations and find the creative meeting points. May it be in music, theatre or in learning to spell. Moreover, the iPad has ex-

panded our palette, says Jacob Brandt Rasmussen.

Fair play in a movie clip

A recent example is the film clips he just inspected. The PE teacher gave the children the task to describe the concept of fair play in a movie clip.

The children themselves produced a discussion paper, including text and illustrations.

The digital tools, which are children's home arena, have also given students a stronger position.

– In my own music teaching, I often ask kids to Council. In addition, in each class we have appointed a few students and trained them to help their classmates and teachers with technology.

With continuous access to the Internet, also questions about web ethics become important to address and discuss in the school.

– Since we got the tablets, we actually have fewer situations when our children are abused online.

Also important, all students and teachers have the same tool, Jacob Brandt Rasmussen points out. To the teachers at the school, it means that it is easier to discuss and advise each other, and not just within their own school but also with teachers in the City's other schools. This is fully in line with the municipality's overall project on learning environments.

Carina Näslundh & Peter Becker



Nordahl Grieg Upper Secondary School, Bergen

Bold Minds in Harmonius Interaction

– My school constantly tries out new learning methods. As students we get what is best in terms of teaching materials, teaching methods and new approaches. We are involved in trying out new things. I'm happy every day when I go to school, says Erlend Gjerdevik Sørtvelt, in third and final year at the Nordahl Grieg upper secondary School in Bergen.

– We have dedicated, well-trained teachers and motivated students in our school, says second-year student Lotte Haug. She chose the Nordahl Grieg specifically because it was a school that worked extensively with digital tools and social media.

With the right to test the novel

Nordahl Grieg upper secondary School in Bergen was inaugurated in 2010. It truly is a modern school. Both in terms of design and methods. Transparency is one of many key words at the Nordahl Grieg. In the physical space with big, generous glazing, but also in style of work and in communication, internal as well as external. This is a school that believes in collaboration, interaction between

teachers and students, collaboration between teachers, interaction with the local community and collaboration with research. With a focus on using social media like Facebook and blogs for communication and cooperation it is necessary for the school not only to speak about transparency, but also live in this transparent environment and respond to it.

Co-operation pays

The school has a motto "Bold minds in harmonius interaction".

– We have a vision; we must live up to it, says headmaster Lin Holvik. Nordahl Grieg is a school with a strong focus on modernising education supported by technology, where teachers are encouraged to experiment and use the technology in new ways to enhance and stimulate learning.

– We build the road as we go and everyone must contribute. We are a school with many young and highly qualified teachers, several with doctoral degrees. We need each teacher to contribute his/her knowledge and ideas to the development of

the school and we have to trust each other's judgment, says Lin Holvik.

– We are on the right track, says Margreta Tveisme, head of ICT and research contacts

– Our students must be able to handle today's media, they must learn to cope with rapid change, be used to working with networks. I want our students to be challenged, be brave and proud and go out and change the world.

In all of Hordaland County which is the principal of the school, all secondary students receive their own computer. This is not unique to the Nordahl Grieg, although the pace of developing teaching methods is.

– The county wanted a pilot school to test various means of making a change in learning, says Kjetil Brat-hetland, special adviser in Hordaland county who has followed the school since its conception.

– And that is what we got indeed.

Carina Näslundh & Peter Becker



The School as a Workplace

- Nordhal Grieg Upper Secondary School is an innovative school which is not afraid of trying new methods, says Christine Akerø and Mariell Oksnes, second-year students in "Media and Communication". They are happy with their choice of school and study programme.

- It differs from many other schools. The school takes advantage of the suggestions from us students.

- Our school has what one might expect of a future workplace. Social media is an important part of communication at the Nordhal Grieg, and we often make use of Facebook groups for different subjects and projects.

- It is a quick way to communicate. It is much easier to keep in touch with teachers and other students in this way, says Christine and Mariell.

Blogs are also used extensively.

- Our class has a shared photo blog, but many students also host their own blogs. It is a way to create a portfolio for the future. You want to build a professional image and it is a great way to get feedback.

Christine Akerø and Mariell Oksnes



Vegard Relling och Aleksander Husøy, are trying out new methods to use computer games as a learning tool.

Civilization IV as a Learning Tool

The school should treat computer games the same way you do novels, movies and stuff like that, says Aleksander Husøy, teacher of English and Social Sciences at Nordahl Grieg Upper Secondary school in Bergen.

Novels, movies and music are used and discussed on completely different basis than video games in today's schools. Aleksander Husøy and colleague Vegard Relling, teacher of Norwegian want to change this..

- The teaching approach used to work with a play, a novel, a movie or a video game is of much greater importance to learning than the novel, movie or game itself, he points out.

- We ourselves have learned a lot from playing and games are an integral part of everyday life for a lot of people today. And we know that games can be motivating, not so much the so-called educational games, but the common commercial games.

- As students play, they make active choices rather than being passive recipients. I think that contributes to learning, says Aleksander Husøy.

Pilot

So far, the two teachers have conducted a cross-curricular project bringing together social sciences, English and Norwegian, where Civilisation IV have been an important part. Not that the students spent all day playing.

- The game simply gave a scenario, which served as the starting point for discussions and other assignments, said Vegard Relling.

- It was an interesting project and a new way of learning, says Lotte Haug, one of the students who participated. And it was a lot of work to both play the scenarios included in the teaching approach and to do the other assignments.

Right now Aleksander Husøy and Vegard Redding are in the midst of planning how to develop their teaching approach with computer games in the future.

Carina Näslundh & Peter Becker



Lin Holvik, Headmaster at Nordahl Grieg.

The School as an Open Arena

– We want to create a transparent and open school. My office, the classrooms and the outside world – all should be accessible. A stimulating and flexible environment in which we see each other and all the activities going on, says Lin Holvik, headmaster of Nordahl Grieg Secondary School.

When Lin Holvik started as head-teacher, the school was still on the drawing board.

– Many things had to be changed in order to create the environment I wanted. We have consciously planned for the building and pedagogy to interact – glass walls, stairs, electrical outlets, wireless network, stages, large and small rooms, flexible room solutions. Traditional and digital resources, books and social media.

Collaboration is a key word in the work of the Nordahl Grieg. Every week, time is set aside for exchange of experience among teachers. The teachers bring their knowledge, interests and special skills, as important elements into the school development, Lin Holvik explains.

– Here it's a short step from idea to action. We use digital resources when existing, as well as common teaching materials. We operate in the world and I want students to feel that they are global citizens



Bryggen is a series of Hanseatic commercial buildings lining the eastern side of the fjord coming into Bergen, Norway. Bryggen has since 1979 been on the UNESCO list for World Cultural Heritage sites. Photo: Istockphoto

Bergen and Hordaland County (Fylke)

Bergen, Norway's second largest city, is part of the Hordaland County which includes 33 municipalities in southwestern Norway. The County is the principal of all Secondary Schools in the area.

- More than 450 000 people live in Hordaland, of which about 271 000 live in Bergen municipality.
- Bergen was founded in 1070 and was the capital of the Norwegian kingdom in the 12th and 13th centuries. Today, Bergen is a major port city with a large fishing fleet and with many companies in the shipping and oil industries



- Hordaland county has an area of 15 440 km² of which nearly a quarter is sea.

Nordahl Grieg Upper Secondary School, Bergen, Hordaland County

- Bold minds in harmonious interaction
- Transparency – internal communication and transparency, as well as external, with strong involvement with the outside world
- Stimulating and flexible environment, also contributing to transparency
- Regular exchange of experience among personnel, new ideas and experiments stimulated
- Traditional and digital resources, books, social media, computer games and innovations



Sandviken Municipality

Everyone should take steps forward

Participation and confidence have been watchwords when all the students and teachers at Murgårdsskolan in Sandviken received a personal computer in spring 2012. It is an ongoing school development project where everybody's thoughts, ideas, tips, opportunities and concerns have been discussed jointly and continuously in order to best prepare for the introduction of the new learning tool. And the conversation continues in order to further develop teaching and learning

– It is important to me that the teachers have time to reflect on both practical and pedagogical issues before computers came into place. What is important is that the computer becomes a natural learning tool, and to be so, teachers must have the opportunity to explore at their own pace, with the support of colleagues and management, says Katarina Löf, head teacher for grades 1-6 on Murgårdsskolan in Sandviken.

Sandviken Municipality has decided that all students and teachers in primary schools shall have their own laptop. And it is now being implemented, one school at a time. Murgårdsskolan was first out and got their laptops in spring 2012. Before

one-to-one computer equipment at Murgårdsskolans was quite old and there were few opportunities to use digital tools in teaching. Now it's different, but neither Katarina Löf or the two part time school ICT coordinators Karin Lepistö and Madeleine Högman believe that teaching and working methods are revolutionized overnight. –We take one step at a time, and assure that everyone is included. Some teachers advance quicker, others slower, but we won't leave any one behind. Everyone should take steps forward no matter where they start. And everyone at the school must take responsibility for developing their teaching..

– ICT is not a subject, it's part of all educational efforts we are making, and help to create a good learning environment. The first evaluation made after six months also shows that all are in favor of the change.

Helping each other

– It happens every day. We have great educational discussions and our teachers try new approaches and give advice to each other, says Karin Lepistö.

– School developments is the focus question.

Also, students have taken on a new role. Many students have grown up digital and they can help each other and the teachers in different situations. Pupils' knowledge has simply been given a new status at the school.

And students with special needs are no longer singled out. Earlier, the students who needed, had a personal computer with specially assigned software. Many didn't want to use it, because they were singled out in the class using the computer. Now all students have the same equipment, although software may differ.

In many one-to-one schools in Sweden students bring their computer home every day. Murgårdsskolan has chosen a different path. The laptops are stored in charging cabinets overnight.

– Later on, developed learning tasks will demand students to work both from home and school, says Katarina Löf..

Carina Näslundh & Peter Becker



Top: ICT-coordinators Karin Lepistö and Madeleine Högman together with pupils at Murgårdsskolan. Bottom left: Headteacher Katarina Löf. Bottom right: Sonny, Aziz and Christoffer. Photo: Rolf Johnzon and Carina Nädlundh-

Computer as a Pen

– When you are in first class and up to learn to read and write it is good to start typing on the keyboard. It is much easier than writing by hand, shaping the signs is difficult in it self, says nine year old Kallw. He is in third grade at Murgårdsskolan in Sandviken.

Kalle learned to read and write with the keyboard as his pen and a piece of software that allowed him to hear what he wrote. Thus he sounded his way when he wrote.

– You learn to recognize all the letters, but now I no longer listen to the sounds when I write, I don't need it. Now in third class Kalle also practise to write with a pen. It's fun to shape letters with a pen, but for longer texts – using computer is better.

– Text is better on the computer. More clear and longer. And the hand doesn't get tired from the pen.

Rasmus in first class so far only write on the computer.

– It's fun to write and read, Rasmus thinks, using both sounding keyboards and speech synthesis when he writes.

Both Kalle and Rasmus read – a lot, both printed books and self-produced texts.

Rasmus and Kalle, pupils at Murgårdsskolan



Learning to Read through Writing on Computers

A constant conversation about texts, about reading and about writing runs at Kungsgårdens school in Sandviken. Nine years ago the school started writing to read with computers, equipped with speech synthesis and sounding keyboard. Today, the approach has developed and the results are so good that all schools in Sandviken use this approach.

–Actually, all our children without exception are successful in writing and reading today. During their first year, all children learn to read and write, and we are minimizing writing and reading difficulties, says Mona Wiklander, special educational needs teacher who developed the approach.

When children start writing on the keyboard they are not hindered by the lack of motor skills, everything they write is legible, both to themselves and others, and they have access to all of the letters from the beginning. They write stories about what interests them and they walk home proud every day.

But it's not just about replacing the stylus with the computer. It is also about having a strategy for language development. Teachers have a continuous dialogue about language with each child, to discuss their texts.

– Our children can write texts in various genres already in the first grade, says Mona Wiklander. We can see that they are much quicker to comprehend texts in various subjects. We have a strategy to work with students' language development.

There is much dialogue about text and writing in school. This is one of the success factors that two researchers from Dalarna University specifically point to in Sandviken. The researchers follow several different groups of students and teachers, and are studying how learning is developing with both students and teachers.

– It is stimulating to work with researchers. They contribute with their knowledge of digital reading and writing and helps us to see our work with new eyes, says Mona Wiklander.



Signe Brockman, chairman of the Sandviken School Committee.

Investing in learning and knowledge

– It really feels incredibly fun that we are going to try to catch up with the future that is already here! Getting laptops to school is an investment in knowledge and learning, says Signe Brockman, chairman (Socialdemocrat) the Sandviken School Committee. Each student and teacher in Sandviken schools will have their own laptop. The aims of Sandviken policy are high. These include raising digital literacy and foster new methods in education. But also to raise effectiveness and student participation and influence on their own learning.

To give all children equal opportunities, is a fundamental aim

– There is no other way, each student and each teacher of course must have modern tools! All children must be provided with the same opportunities regardless of socio-economic background, Signe Brockman emphasizes.

In Sandviken, focus is on digital tools for all students, from year 1.

– Reading and writing is fundamental to all activities in school as well as in adult life.



Photo: Rolf Johnzon

Sandviken municipality

Sandviken is a locality and the seat of Sandviken Municipality in Gävleborg County, Sweden, 190 km north of Stockholm.

- 37.000 people live in the municipality.
- The municipality has an area of 1 165 km²

The town of Sandviken was founded in 1862 by Göran Fredrik Göransson who built an ironworks along the sandy bay on the northern shore of the lake Storsjön. The steel from the ironworks gave the company a prominent position and placed Sandviken (Sandvik AB - major high-technology Swedish engineering concern) on the world map.



Sandviken Schools

Based on many years of development, not the least in Sandviken, a proven experience and knowledge of how to teach reading and writing, with the computer. The motoric obstacles to shape the characters at an early age (seven years of age), especially for boys is circumvented with computer writing.

Starting in the playful developed their own writing and reading. In combination with sounding keyboards and speech synthesizer, this has been successful. Once codes are cracked, writing with pen can gain speed.

"All children can succeed", is the experience gained. This is also the aim chosen by the municipality.

DIUs proposals for local action on ICT in school

Swedish schools shall be based on science and proven experience. The schools will work with modern tools, and the common denominator of modern tools is that they are digital, such as smart phones, computers, tablets, digital cameras, interactive boards. A key issue for the benefit of these tools is good educational resources. Access to digital content, resources and tools, both free and commercial, gets along with digital skills essential for further development.

DIU here summarize four vital points for the actions we deem necessary to take on locally in each municipality and in each school. These are questions we propose municipalities to take on - and we intend to promote these issues in meetings with municipalities throughout the year. We will also reflect this in future articles in DIU.

1. Robust digital literacy

A key issue to use ICT in an effective and motivating way is high and relevant skills. This applies to students and teachers, but also principals, teacher educators and policy makers.

- All teaching staff have the necessary skills for their work.
- At school leaders set clear requirements to understand and be able to lead with the help of ICT
- Each school principal has a plan for accessibility, competence and equivalence.

2. Infrastructure and accessibility

Stable and available infrastructures in the form of networks, digital resources and tools are a must in a developed school. Open wireless networks, access to various tools - computers, tablets, phones - and readily accessible digital resources on the Internet creates conditions for learning regardless of location, technology and age. All students in the school will have access to wireless Internet through their mobile devices or via the school's equipment.

The networks should be open, secure and stable, and have a capacity to meet user requirements. All students need to have access to a personal computer or tablet. Schools must make it easier for the students and staff who are increasingly going to bring their own equipment, while ensuring equivalence by providing facilities to the students and educators who wish to do so.

- Students and teachers choose tools to the situation and needs - school or own equipment.
- Students and teachers have extensive knowledge of how digital resources can be used in efforts to enhance both individual and collective learning
- The school principal is responsible for the existence of a rich array of digital resources and that there are ways of sharing and dissemination of resources produced by educators

3. Competence Responsibility for experience.

We need an organized arena för sharing experience and knowledge of increased ICT use in schools, together with advice and inspiration about the use.

- A physically and network-based organization with a website as a central part of the business.
- The exchange established as a responsibility of the municipality focuses on ICT in learning.
- To share their experiences and knowledge with others is a natural part of everyday teaching

4. Dialogue with the research and development of ICT-based teaching methods

It is necessary to initiate research projects aimed at studying existing and develop new ICT-based teaching methods in various disciplines. The results are disseminated to schools and teachers, who are increasingly involved in both research and experience-building. It is essential that ICT is integrated into daily teaching. Research and experience dissemination, therefore, aims to develop new approaches and working methods.

- Encourage teachers to document and share experiences in schools and in the municipality
- Establish a local organization in interaction with the academy, with the journal DIU, the school gate or other players for teacher research

Peter Becker och Mats Östling

There are countless examples of how mobile phones are used in learning. May it be how Pakistani women train and maintain their reading skills, South African youth chats about democracy, human rights and liberties or Danish children playing math games. In a series of reports UNESCO has mapped mobile learning in the world. Jan Hylén, one of the authors, provides a picture of opportunities and barriers to mobile learning.

Mobiles Turn the Old Truths about ICT in Schools Upside-down

Today there are 5.9 billion mobile phone subscriptions worldwide and 70 percent of these are in developing countries! Experts estimate that in Africa, the continent with the lowest mobile penetration, a majority of the population already has a mobile phone and more are purchased at record speed. 90 percent of the world population has access to robust cellular network and also in rural areas 80 percent of the population is reached by today's mobile networks. This means that children and young people who have no access to schools often have access to mobile technology.

This is in short the arguably most widespread information and communication technology in the world and has a huge potential to improve the



The best results were achieved when students were involved in practical problem solving activities, also extending beyond the school day.

quality and educational opportunities for billions of people.

UNESCO has taken an interest in this and commissioned a series of reports on mobile learning, ie learning by using various handheld devices such as mobile phones or tablets. The reports are mirroring the national initiatives and policies in different countries as well as descriptions of specific projects and support to teachers and students.

Many examples of mobiles in learning

There are countless examples of how mobile phones are used in the learning process in UNESCO reports. It could be how Pakistani women can train and maintain their reading skills, South African youth who chats about democracy and human rights, Danish children playing games or practicing math, English, or American college kids who use mobile data collection during the field trips. In developing countries where internet connections are still expensive,

memory cards loaded with content are often used. In the western world internet-connected mobile devices are used as a supplement where the computer is too large, unwieldy and slow.

Various forms of administrative services seem to be the most common use of mobile phones in schools and higher education. Students can check their homework and the tasks for the next day, check test results, if classrooms have changed or if the teacher is ill. In younger ages, it can instead be teachers and parents who communicate via sms with reminders to bring warm clothes for a school trip, the student has become ill or similar. Another application is when the school reports of student absences immediately by SMS to parents.

A more advanced form of use is when teachers put out podcasts, ie short movies with a discussion of a key concept or a mathematical exercise. This means that students can look at this review, whenever they want, how many times they like and for example with a parent to help



Children and young people with no access to schools often have access to mobile technology. Photo: Istockphoto

them with homework. It also means that class time can be used for other than general briefings. Broängsskolan in Botkyrka is one of the Swedish schools that successfully tested this concept. Another example is where students in a health project used a form of cell phone to continuously report when and what they eat and drink and how much they move. This data is then processed on the school computers and discussed jointly.

In Scotland a few classes with 6-7 year olds borrowed Nintendo games consoles with a virtual puppy that they would take care of. They were responsible for the dog got food, play and exercise. They could take it to exhibitions, win prizes and use the money to buy things, take your puppy to the vet, etc.

A Danish teacher's guide emphasizes that experience shows that mobile learning works best when the focus is more on problem solving than on teaching and transferring subject content to students. The best results were achieved when students are involved in practical problem solving activities, also extending beyond the school day.

Mobile has bad connotation among politicians

Since the series of reports covering the situation in the world is based on five regions, Africa, Asia, Europe, North respectively South America, obviously a very complex picture emerges. Furthermore, each author was asked to briefly describe the development of an entire region, in my own case of Europe, allowing for

superficial and sometimes sweeping descriptions. But there are some common themes across all reports.

One theme is the realization that mobile learning, in any case, the use of mobile phones in learning, often has bad connotations to both policy-makers and parents. Mobile phones are more often perceived as a disturbing element that distracts students during lessons and attract game and cyber bullying, than as a potential learning tool. France, one of the countries that went furthest along this impasse, by statute, has forbidden the use of mobile phones in their schools. In many other countries similar restrictions are introduced at the local level. This stigma must be worked out in order to be able to use the tools to their great potential.

One reason for the negative attitudes is the notion that there is no useful content, meaningful learning resources for mobile devices. This has been the case, but both countries and companies are rapidly developing new learning resources designed for both phones and tablets. As often in these contexts, Korea and Singapore are among the most ambitious countries. On the corporate side, there are interesting newcomers such as Mingoville in Denmark, alongside the major international publishers.

Another theme is that very few countries have a policy that encourages mobile learning. In North America, there are examples of local initiatives, but no mobile positive policies on the state or national level. In Europe, the situation is similar with a few exceptions. Denmark emphasizes the importance of mobile learning in its new ICT strategy for schools. Danish authorities have developed teaching guides and allocated funds to the development of new digital learning resources for mobile devices. Up to a few years ago Britain made great national efforts to increase the mobile learning. In crunch times, these disappeared and responsibility devolved, but it seems to have sown enough seeds for a positive trend to continue. The Netherlands also has



One theme is the realization that mobile learning, specifically the use of mobile phones in learning, often have bad connotations among both policymakers and parents.

Today's policy for ICT in school	Policy for mobile learning
Top-down approach	Bottom-up approach
The technology is expensive, fragile and often scarce	Relatively inexpensive technology
Focus on purchases and dissemination	Unregulated purchases, often by students and their families
Focus on formal learning, ie. what happens in schools	Focus on informal learning

a number of exciting projects implemented.

The reports were written in the autumn of 2011 when iPads/tablets began to triumph in the rich world schools. iPads/tablets will likely accelerate the development described, for example, how the mobile technology turns upside-down on traditional IT policies. The differences are described briefly in the table above.

The technology is in place

Bureaucrats are forced to completely rethink and abandon the control it means to equip schools with technology according to centrally made plans. Instead, they need to recognize that the technology is already at hand – in the pockets of the young and the teachers. Let the mobile learning into ICT policy, developing support materials for teachers as well as learning

materials, leaving the implementation to the teachers and students. Above all it is important to see how to support students' informal learning, ie, all the learning that takes place outside of school and is often linked to students' own interests and hobbies.

Mobile learning has a great potential, especially in order to bring together the informal and formal learning. More focus on informal learning would increase our pupil's experience of school relevance and create joyful learning.

JAN HYLEN

PhD Political Science and a consultant to government agencies, municipalities, universities, governments and international organizations

Suggested Reading:

Link to the UNESCO series of mobile learning:

<http://www.unesco.org/new/en/unesco/themes/icts/m4ed/mobile-learning-resources/unescobilelearningseries/>

The Danish teacher's guide is available here: Bjerre, S., Christensen, G. and Steinmüller, L. 2009th Vejledning af mobile e-læring - introduction til mobile e-læring. Temahæfte. May 2009. Aarhus, Denmark, eVidenCenter: The Nationale Vide Center for e-læring.

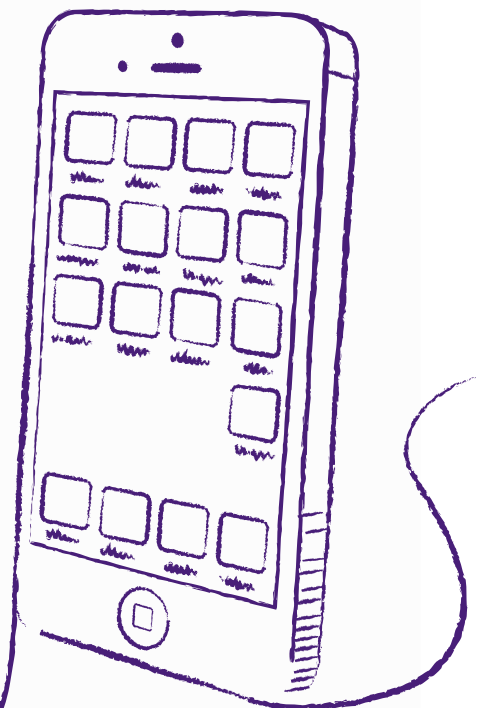
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Enklare, snabbare och bättre

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1. Ladda ner ett exempel på kommunikationsplan för en grundskola som använder både webben, sms och smartphones.
2. Ladda ner en översikt som visar 10 sätt att hantera IUP-processen.
3. Boka en webbvisning av vår lärplattform.



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