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New Ways of Teaching Using Media Tablets – Lessons learned from Odder
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Do we really need technology in our classrooms in schools? Yes, and the article shows why. When Odder municipality in Denmark implemented iPads in their 7 schools (200 teachers, 2,000 pupils, preschool class to K-9) almost 2 years ago, the community was not sure how the project would go. Lise Gammelby, the project manager, looks back. The decision was made due to older laptops. „There was a need to buy new laptops“, Lise Gammelby says. Instead of laptops, the politicians in Odder discussed to use iPads. The head teachers, school principals and the local department of the teachers union were consulted to make sure that they agreed. Finally, the parties agreed. Within such a 3-years project, many questions came up. We, researchers from Umeå University in Sweden followed the project over the last years, and give answers.

Do the iPads affect students learning, how?
Yes and no. It depends on how you look on learning. And how you define what teaching is. Learning does not only take place on a surface levels like remembering facts. There is also a deeper learning approach like learning to be critical, reflective and learning to be creative and applying collaborative reflections. Learning is not only a cognitive effort and teaching is not only a tool to reach the cognitive dimension. Instead, teaching is rather an activity-driven design, and learning is an on-going activity of knowledge (co-)production and not just consumption.

It means that it is never technology alone that makes learning better or worse. It is how the teachers integrate the technology in their classrooms and in their didactical designs. A didactical design is a plan how to do teaching and how to support students learning. As any new technology, technology like the iPad itself does not lead to a better or worse practice, but the adoption of new technology matters and it changes how the process of learning is facilitated.

In Odder, we looked on the iPad as how it does fit to teaching objectives, learning activities, feedback (forms of assessment/evaluating students progress in learning) and social relations in the classrooms. In half of the ipad-classrooms the elements of the digital didactical designs were taken into account that really supports students learning. We can see this in the students learning products. Their products showed that the teaching aims have been accomplished. In other words, when the iPad is aligned into the didactical plan, then there is a progress in students learning. This was the case in 8 out of 15 classrooms. In addition, we made a survey among all teachers and the data confirmed the findings. However, in the other half of the observed classrooms, the digital didactical designs were not sufficiently planned nor sufficiently done and did not support learning. Some but just a few classrooms even restricted learning. It is important to know that it is not because of the iPads only. It is rather because of how a) teaching activities b) learning actions c) feedback activities and d) fostering social relations were planned and adjusted to each other.

In such a way the iPads do affect positively the student motivation at least in the beginning and we know from research studies that motivation is one of the most important issues to support a progress in learning.

Right now, we can’t say right whether the iPads have a positive effect on the student’s grade or not. On a long-term prediction, we argue that the digital didactical designs matter and the likelihood to enable learning increases. But it is not because of the iPads only, as said before. It is due to the teachers who made a change in their Digital Didactical Designs to a more students’ learning, reflective and multimodal learning approach.
For what purposes do the teachers use the ipads?
When we look on the classrooms, what we call innovative digital didactical designs and ipad-didactics classrooms, then we see some patterns.

a) New type of learning goals where more than one correct answer exists: The teachers in the ipad-didactics classrooms designed new learning goals beyond the curriculum drive goals: a) one aim that involved the subject aim (curriculum driven) e.g., to learn to write in a chronological order in Danish, or collaborative writing a review together, or knowing and analyzing a topic in physics; or learning the addition in math, and b) there was always a second aim beyond the curriculum. It can be called explorative learning where more than one correct answer exists and meta-learning: learning how to learn. The teachers create assignments for student reflections. The students got a task on reflecting their own learning practices.

b) Learning is a process: The teachers did focus on learning as a process where the students work together in teams to explore a topic or to co-produce something like creating a movie or a digital book about a historical person to learn to analyze text (not exams only). The iPads served as a booster to make learning visible in different products.

c) A choice of tasks - all fulfill the same teaching aims: In the ipad-didactics classrooms the ipads were used to make school learning visible in different products. The students got a choice of tasks. If a student group could not do the experiment because they were right now not creative or had no idea, the teachers helped them to start differently according to their personal needs and competence levels. The teachers gave them a choice for different possible starts for the learning tasks. For example, some students had ideas on how to do what kind of experiment in physics, others started first with creating a mindmap.

d) Beyond educational content apps, beyond device-based learning: The innovative teachers used iPad-apps that are primarily not built for education or schools. The teachers did not search for educational apps. This was not the way, it is actually the opposite way. The teachers first had an idea for how to support their teaching aims with what kinds of learning activities and then they started to search for an appropriate application (app). One year later, there were two applications Meebook and Showbie that can be named as an example for education apps but they are not content apps! Instead, both apps do provide a frame for support teaching and learning activity-driven designs. The two tools make it easier to distribute and to create learning activities; the teacher can add comments, create assignments and the students can easily read it. It is a kind of new Web 2.0 learning management platform: it is first rather empty, provides a structure which the teachers fill with their desired content, according to their digital didactical designs. This means that the‘ll easily change content when needed.

These principles illustrate that Digital Didactics in Odder helps to activate the students engagement and their doing and does not exist of didactical designs plus ICT; new Digital Didactics Designs and new types of constructive alignment emerged to boost surface and deeper learning.

What do the teachers think about the iPads?
Overall, the teachers are very positive. All interviewee’s said they really like iPads more than laptops. The problem with the laptops was that they often were out of energy or software was not updated or that bugs didn’t make it work. The majority of the teachers argued that the laptops wasted a lot of teaching time in classrooms whereas iPads reduced those problems. “I have more time for my students for individual guiding”, one teacher told us. Another teacher said “Now, with the iPads, I have more time for my students”. The Ipad is easier to use than a laptop. Almost all teachers pointed out “The iPad just works”, “You open it and it works”.


The challenge for the teachers is “We have to think new” on how to support student learning. The ipad and the Internet access give so many opportunities. But the ipad can become a limited device when there is not enough space for store and save data. Dropbox or Box are solutions but not for free.

The teachers mention challenges. They observed that the students see the ipads as a tool for playing and they didn’t accept it as a “working machine”. Some others are afraid that students do other things and do not focus enough on the assignments in the classroom. The ipad is easy to use for chatting like Facebook and other things during class. A teacher asked, “Is the iPad for note-taking or are they using Facebook?” The majority of the interviewees argued, however, that this problem of distraction was always a problem, even before the students got iPads. Years ago the students wrote letters on a piece of paper or just had oral chats.

iPads are not the only resource in the classrooms, a mix of different tools, books and materials are appropriate. It is not the question of „if“ to use the iPad or a book; it is rather a question on „when“ and „for what purposes“. The teachers moved from a “device-based learning” approach in the beginning of the project to a more learning-based approach. “In the beginning we focused on apps, now it is more a portal to other things”, a teacher said. The focus is back on learning situations and not on the device. The ipad is a window to the world but looking out is not enough; going out for learning needs still to be done.

**Is the iPad only good for younger students and not for older ones? For what ages are the iPads useful?**

This might be the wrong question. It does not depend on the age of a student; it rather depends on the learning activities. Our study shows that younger students in preschool classes and K-3 as well as older students in grades 7 and 9 use the iPads for different purposes within different activities but they all did support learning to reach the intended teaching aims. Whereas the younger students used Puppet Pals to create a story about a book they have read, the older students use the iPad for writing smaller text pieces like peer reviews, recording an own planed experiment in chemistry and look at the video why it went wrong, finding QR codes and answer questions online in a small group to learn about grammar, creating a movie based on text analysis, finding distances online, creating smaller and bigger presentations in collaboration, using different apps for the different assignments. The iPad might have its limitations when students shall write longer essays. For such assignments like writing many pages, a laptop might be more useful. Using ipads is depending on the learning activity and not on the age of students.

**Is the idea of BYOD (Bring Your Own Device) a good one for Odder?**

Based on our data, the idea of Bring Your Own Device into the classrooms in Odder schools is not a good choice, at least not now in Odder. The different devices on the markets have different functions and seizures, like smaller and bigger screens, the spaces to save data also differs and sometimes the apps are not available for all devices. The teacher in a BYOD classroom needs to create more than one digital didactical design at least a teachers would have plan A, B and C in their pockets. She or he would need different plans for different devices, and this can lead into a time-consuming technical lesson instead of focusing on the lesson and subject. BYOD perhaps can be applied in a couple of years when the technology is more or less tested in a pilot class first, but right now, we would not recommend to do it. A teacher says, “It is good to have the Ipad, they give us more opportunities but we do not want to become more technicians, we want to focus on our pedagogical tasks”.

**What are the opinions from the students?**

The students are really happy to get the ipads. However, we don’t have enough data so far to complete the big picture. To understand the student perspective in detail, we started a study with them. This study focuses on learning situations from the student perspective using the Stimulated Recall method. Further findings will come soon.
Finally, is there a change in Odder schools?
The nature of school learning is changing. Years ago we had a more curriculum driven approach in schools, planned learning with guided activities where a correct answer is known. But this is changing. Odder shows a new balance of how to follow the curriculum content but also how to embedding new ways of teaching, using the nature of learning in informal settings that is more curiosity driven and problem driven, where the way to learn, explorations, and the answer is not known, several answers are suited. We, researchers, did collect many very great cases. They all show new ways of teaching to help the students to be better in their learning progress and to foster the students to grow in what they do towards a diverse set of competence development. If you want to have a deeper look to the innovative ways of teaching, please request us or have a look at our material and presentations on our website.
The teachers see a change on the students learning practices. “The students are better producers now. They are this year so much better in performance and presentation”, a teacher told us. The pupils now have the choice in which form using different media (video, sound instead of just text) they present what they have learnt. And this is good. It is a risk to rely on text only since it restricts the pupils in showing what they have learnt. Pupils are diverse and so is learning. A multimodal learning approach, like in Odder, is a promising approach to address the diversity of learners to help them to grow in their learning.

The research study has been conducted and published by Isa Jahnke, Lars Norqvist and Andreas Olsson, Umeå University, Sweden. Get in contact: https://iml.edusci.umu.se/ictml/. 