pädagogische hochschule schwyz

Learning and Teaching in Tablet Classes

Summary of Main Findings

1. Interim Report Impact Measurement of Smart Classrooms in Switzerland

Conducted in 2015

Authors:
Doreen Prasse, Nives Egger, Nina Îmlig-Iten & Andrea Cantieni

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Contact:

Prof. Doreen Prasse

Schwyz University of Teacher Education
Institute for Media and Schools
Zaystrasse 42
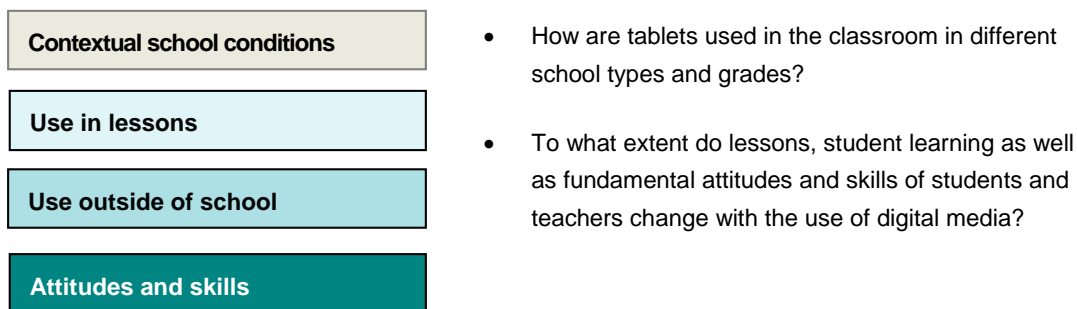6410 Goldau, Switzerland
doreen.prasse@phsz.ch

Summary

The use of mobile digital devices in schools has recently experienced a renewed upswing through the increased use of tablets or even smartphones, the specific consequences of which are being observed with interest by those responsible for education policy, educational research, and especially the affected teachers, parents and pupils (Karsenti & Fievez, 2013; Newhouse, 2014; Welling et al., 2014). A successful use of digital devices ultimately depends on the extent to which they support and innovatively enhance the learning and teaching processes of students.

Within the context of the Corporate Citizenship Programme, Samsung Switzerland equips entire school classes on the primary as well as the secondary levels I and II with Samsung tablets on a one-to-one basis for a period of three years. The primary objective of such equipment is not only to increase the availability of digital mobile devices, but also to integrate these in educational and teaching processes promoting learning and skill development. Consequently, a longitudinal impact measurement investigated the extent to which corresponding changes are actually observed in these classes. Questionnaire-based surveys are conducted repeatedly over the course of three years to document longitudinal changes in attitudes, self-described skills and both - in-school and out-of-school activities - over the course of the project.

This interim report is based on a comprehensive survey at the start of the project. It documents the descriptive findings of the initial surveys in June and October 2015. The following chart provides an overview of the basic areas of investigation:

Overview of the basic areas of impact measurement

Contextual school conditions

Use in lessons

Use outside of school

Attitudes and skills

- How are tablets used in the classroom in different school types and grades?

- To what extent do lessons, student learning as well as fundamental attitudes and skills of students and teachers change with the use of digital media?

Five school communities, 12 schools, 53 primary classes (including 30 tablet classes), 17 secondary classes I and II (including 12 tablet classes) as well as a total of 113 primary and secondary school teachers participated in the online survey. A total of 989 students in primary school grades 3-6 and 267 students in secondary schools I and II participated. The most important results of these descriptive analyses are summarized below. The sample also provides comparisons between tablet and non-tablet classes, which will be subject to further analyses.

The results show that the schools' good equipment situation is reflected in the generally positive assessment of the infrastructure by teachers in tablet classes. The majority of the teachers were satisfied with regard to the state of equipment and the range of basic software. In these as well as in other areas, e.g., digital learning materials, Internet connection/WLAN, pedagogical and technical support, the teachers in tablet classes evaluated the conditions significantly more positively than teachers in non-tablet classes. However, areas of potential improvement were also found in these areas, which relate especially to the intranet/internet connection as well as technical and pedagogical-didactic support.

In the tablet schools, teachers generally considered dealing with the topic of digital media/digital learning to be very important. Most teachers in tablet classes also appreciated and practiced an

intensive communication with their colleagues on issues of digital media in the classroom. However, this referred less to specific collaboration efforts and the actual shared preparation of ICT-related lessons. Although the attitudes concerning communication were generally positive, there were nevertheless some significant differences between schools, which had in some cases optimization potential. This is especially important because extensive communication and collaboration are extremely important for the development of professional knowledge specifically applicable in actual classroom situations.

Whether and how teachers use tablets and digital media in teaching in general depends essentially on what added value they ascribe to these for teaching and learning in their classroom and what concerns they have regarding the use of digital media (e.g. Petko, 2012 and Prasse, 2012). The results of this study show that the teachers in the tablet classes generally expressed many positive attitudes and had very few reservations about their use of ICT in teaching. If we consider the specific attitudes towards ICT-use in a more differentiated manner, the teachers expressed many positive expectations for a potentially more interesting and application-oriented design of lessons and consequently an improved motivation of students. Teachers at primary level were considerably more positive than their colleagues at the secondary level. Teachers on the secondary level also described reservations about a negative impact of tablet and computer use for the concentration and attention of students during studying. Teachers of all levels described a significantly positive impact for ICT-related skills of students (application and media skills). With regard to the potential benefits in the context of a stronger attention to individual learning processes, teachers expressed only cautious approval but were still to a large extent undecided about a potential effect. Teachers were also unsure concerning the added value of digital media for a more self-directed learning of students (e.g. planning activities).

For a successful integration of digital media into the classroom, teachers must have various technical and methodical-didactic skills (Petko, 2012) and above all possess a high degree of self-efficacy regarding the use of digital media in the classroom context to be certain that they can master the challenges they encounter (Prasse, 2012). The results show that the vast majority of teachers felt comfortable using various ICT applications, as well as with respect to the general use of digital media in their lessons. Teachers on all grade levels were relativly insecure with respect to some Internet applications, such as the editing of online texts, creating online learning materials, blogs and websites or moderating online discussions among students. On the secondary level I, teachers were increasingly concerned about challenges with regard to dealing with media education topics (e.g. safe and respectful behaviour on the Internet).

The vast majority of teachers in the tablet classes (82%) used digital media at least weekly in the classroom; 76% used the devices several times a week or even daily. As a result, the percentage of regular use in the classroom (at least once a week) was much higher than the international ICILS 2013 average of 62% in traditional classes (see Fraillon et al, 2014) and shows that the tablet classes already have an above-average frequency of use at the beginning of the project. The results of the student survey confirm this, but also show variation depending on grade. Digital devices are used most frequently on secondary level I.

Researching information, creating or editing texts, teacher presentations, and—especially at the primary level—learning with educational games/learning apps represented the most frequent classroom activities with digital media on all levels. However, on secondary level II, teaching programmes or educational games are hardly in use. Programming has had a very minor role on all grade levels up to now. Digital media were also little used by students for planning activities and the organization und management of learning content. Individual learning on a computer/tablet represented the most frequent activity in lessons on all grade levels. In agreement with the assessments given by the

teachers, the students on secondary level II used the tablet or computer somewhat more frequently also in group work.

The great majority of students (approximately 80%) in primary schools had a very positive attitude towards the use of tablets (computers) in the classroom and most (nearly 60%) also reported a positive impact on learning, manifested in greater enjoyment, increased effort and concentration, as well as improved collaboration with other students. However, these assessments could be influenced by the general enthusiasm the children have for learning with tablets. The vast majority (60-70%) of students at secondary schools I also evaluated learning with the tablets very positively, but expressed themselves slightly more cautiously with regard to the effects on effort and concentration when studying. The advantages here are seen more in a higher quality of collaboration with other students. On the other hand, the 11th graders on the secondary level II of our sample were relatively critical regarding the use of digital media.

The equipment available at home to the students in the tablet classes was generally very good, in particular concerning access to digital devices and the Internet. Virtually all students had access to the Internet and one or more digital devices at home. In most tablet classes, the digital devices were also used at home for educational purposes. In the lower grades of primary school, nearly one-third of the students used them at least once a week. Starting from grades 5/6, more than half of the students used computers or tablets at least once a week for school or studying and approx. 80% did so at least a few times a month. Internet research on all grade levels also represents the most common form of use at home for schools. The primary school students also used learning/skill and practice programs at home quite often. On the secondary levels I and II, digital media were increasingly used for communication with other students for studying and homework. Digital media also were an integral part of life in the spare time of students. Students in primary schools used digital media especially for viewing videos or playing computer games. On the secondary levels I and II, the various communication options, in particular social networks, increased considerably in importance.

Approx. two-thirds of third and fourth graders, three-quarters of fifth and sixth graders and the vast majority of the students in secondary levels I and II rated their own ICT skills in dealing with the most important computer and Internet applications as good or very good. The self-assessments of their skills to find, assess and integrate information and with regard to their dealing with the dangers and challenges of digital media were even higher for the students from the fifth and sixth grades upwards. Older students in the survey were also very optimistic (from grades 5/6 upwards) concerning their ability for a safe and responsible behaviour in the Internet. Only the younger students in the third and fourth grades were less confident here. With regard to these self-assessments, it should be clarified whether they are based on an 'objectively' competent way of dealing with the various aspects of digital media or are due to an overestimation of their own skills.

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