DigiPrim

UNIVERSITÄT BERN

DigiPrim – Digitalization in Swiss schools and its impact on educational trajectories: extent, opportunities and risks

The state of digitalization at primary school level

Short version

Jessica M. E. Herzing
Leo Röhlke

Keywords: Digital transformation, media education, school management, school principal questionnaire, primary school, survey, Switzerland.

Citation: Herzing, Jessica M. E. & Leo Röhlke. (2024). DigiPrim – The state of digitalization at primary school level. Short version. Version 1-0. Bern: University of Bern, Interfaculty Centre for Educational Research. DOI: 10.48350/197751.

Acknowledgements: We would like to thank François Delavy, Andrea B. Erzinger, Sandra Hupka-Brunner, Ben Jann, Thomas Meyer, and all involved partners for their valuable contribution and excellent cooperation. Special thanks go to the ÜGK/COFO/VECOF working groups data preparation, sampling, and context questionnaire, and the ICER team. We would like to thank the experts Christiane Caneva, Urs Dietrich, Franz Lam, Lorenz Möschler, Katrin Müller, Chantal Oggenfuss, Franziska Schwab, Thomas Wicki, and Stefan Wittwer for their valuable advice and support in the development of the report.

We would also like to thank the ÜGK/COFO/VECOF steering group (*coordination* staff for the application of the *intercantonal* agreement on harmonization of compulsory schooling in Switzerland [Kosta HarmoS]), as well as the participating school principals and parents for their cooperation and commitment.

Funding: This work was supported by the University of Bern in cooperation with BeLEARN, an initiative of the Canton of Bern, Switzerland.

Publisher: Interfaculty Centre for Educational Research (ICER)
Universität Bern
Fabrikstrasse 8
CH-3012 Bern

Web: https://www.icer.unibe.ch/
Contact: data.icer@unibe.ch

Photo credit front page: rawpixel.com / 68946

Content

1. Objective

Swiss schools are tasked with preparing students for life in a digitalized world (EDK, 2018). As part of this mandate, the promotion of digital skills has been successively included in the curricula. Ever since the adoption of the current curricula (such as Lehrplan 21 [LP 21], Plan d'études romand [PER], and Piano di studio della scuola dell'obligo ticinese [PdS]), Swiss primary schools have also been faced with the task of integrating digital technologies into lessons in all subject areas and teaching digital application skills as early as Cycle 1. However, in order for digital technologies to be used effectively in schools, a number of preconditions must be met.

In the Swiss education sector, there are already a number of studies on the digitalization of education that examine these preconditions and the use of digital technologies in the classroom at lower and upper secondary level. Projects such as DigiTraS II (Petko et al., 2022), the monitoring of the digitalization of education from the students' perspective (Oggenfuss & Wolter, 2021a, 2021b, 2023), the JAMESfocus report on the use of digital media in teaching at secondary level (L. Suter et al., 2019) as well as the international surveys ICILS (Bos et al., 2014) and PISA (Erzinger et al., 2023) and many other studies provide valuable insights in this regard.

For the primary school level, however, it is not yet known to what extent the preconditions for the use of digital technologies known from the scientific literature and educational practice are met, nor to what extent digital technologies are actually used (see the Educa report on digitization in education, Educa 2021). Until the publication of this report, there were no comprehensive, standardized surveys on the status of digitalization at primary level covering the whole of Switzerland. This is where the DigiPrim report is intended to make a contribution.

The primary aim of the report is to stimulate discussion and reflection on the digitalization of Swiss primary schools. It is intended to create a knowledge base and thus support evidence-based decision-making at education policy management levels on the one hand. On the other hand, it is intended to provide stimuli for school development in the era of digitalization. At the same time, the report indicates where important data gaps remain. It thus contributes to the further development of the integration of digital technologies in Swiss primary schools.

The present results are based on online surveys conducted between May and July 2022 in Swiss primary schools. These surveys were carried as part of an add-on study during the ÜGK/COFO/VECOF field trial at HarmoS level 4 (Herzing et al., 2023). School principals from 172 primary schools and parents from 2,736 students participated in the study.

2. Conceptual framework

The DigiPrim report paints a sample-based overall picture of the state of digitalization in Swiss primary schools for the first time. Three aspects were selected as the most important preconditions at primary school level, which have also been identified elsewhere in a similar way as central preconditions for digitalization at school level (e.g., in the Educa 2021 digitization report, see also Petko et al., 2018): Technical equipment, personnel resources and digital school culture

- «Technical equipment» refers primarily to the equipment of primary schools with hardware as a representative feature for all other facets of the technical infrastructure.
- "Personnel resources" includes the digital skills of teachers, the availability of ICT officers and the organization of technical and pedagogical ICT support.
- "Digital school culture" describes different aspects of organizational culture with regard to digital technologies (Educa, 2021, p. 35f.). This report specifically examines the existence of written pedagogical concepts for ICT integration, the attitudes of school leaders towards the potentials and risks of digitalization, pedagogical goals of ICT use by teachers, further training measures for teachers, forms of cooperation between teachers, and the time resources available to teachers to prepare for the use of digital devices in the classroom.

In addition, the report describes the use of digital technologies in the classroom at the HarmoS 4 school level, i.e. still within Cycle 1. All the aspects mentioned above are also examined with regard to systematic differences between the largest language regions (German-, French- and Italian-speaking Switzerland) and in relation to other structural characteristics of the municipalities and schools, such as urban-rural differences or school size. The report thus provides initial indications of which structural factors are associated with differences between elementary schools and in which areas these differences could potentially lead to challenges in terms of equity.

3. Summary of key findings

1) Great heterogeneity between schools:

Even after the end of the Covid-19 pandemic, some primary schools lack basic prerequisites for the use of digital technologies, while many other primary schools are already well advanced. This applies to technical equipment and personnel resources as well as aspects of digital school culture.

The state of digitalization in Swiss primary schools at the time of the survey between May and July 2022 is very heterogeneous. For almost all aspects of digitalization examined, there is a substantial proportion of primary schools that do not (yet) meet a certain prerequisite for the use of digital technologies. At the same time, for most of the aspects examined, there is a larger proportion of primary schools that, according to the school leaders, are already able to meet central prerequisites.

In contrast to schools at upper secondary level (Petko et al., 2022) there are apparently still fundamental technical hurdles in a substantial proportion of primary schools that can hinder the use of digital technologies. he Covid-19 pandemic has provided a digitalization boost in many schools, especially in terms of technical equipment (Oggenfuss & Wolter, 2023; F. Suter et al., 2023). However, as this report shows, even after the end of the pandemic (in spring/summer 2022), some primary schools still only have limited technical equipment. Nevertheless, the results show that the majority of Swiss primary schools now have what school leaders consider to be sufficient technical equipment.

The picture is also mixed when it comes to personnel resources: at the time of the survey, 91% of schools had appointed an ICT coordinator. However, the mixed assessments of ICT support by school principals, among other things, indicate a lack of sufficiently qualified staff for ICT support in many primary schools. At the same time, a large majority of the school principals surveyed consider the digital skills of teachers to be sufficient to use digital technologies in the classroom.

In terms of digital school culture, 26% of primary schools in Switzerland as a whole have not yet drawn up a written pedagogical concept for the use of information and communication technologies. While the majority of school principals are generally open to the integration of digital technologies at primary school level, other results indicate that many primary schools lack the (time) capacity to prepare digitally supported lessons or for exchanges between teachers. There is also a strong heterogeneity in the attitudes of school principals with regard to the potential and risks of ICT integration in the classroom.

2) Systematic differences between language regions:

For almost all preconditions for the use of digital technologies, German-speaking primary schools are on average better equipped than French- and Italian-speaking primary schools.

On average, German-speaking primary schools have more computing devices, more personnel resources and are more likely to have a pedagogical ICT concept available to them than French- and Italian-speaking primary schools. Primary schools in French-speaking Switzerland occupy a middle position with regard to most of the digitization aspects examined. In Italian-speaking primary schools, the prerequisites for the use of digital technologies appear to be the least advanced overall. However, there are also indications of greater development momentum in Italian-speaking primary schools in the years prior to the survey, for example regarding ICT coordinators.

The differences between the language regions in terms of technical equipment and the use of digital media in lessons largely correspond to the differences already reported elsewhere on the basis of cross-school level samples (Oggenfuss & Wolter, 2021a, 2021b, 2023). However, this report shows that the regional differences at primary school level, and particularly among younger pupils at HarmoS 4 level, are in some cases even greater compared to the secondary school level.

At the same time, there are some peculiarities in French-speaking primary schools: For example, cooperation between teachers with regard to lesson design using digital technologies is much less frequently encouraged than in German- and Italian-speaking primary schools. The French-speaking school principals surveyed were also significantly less satisfied with the available technical equipment and the digital skills of the teachers in their schools.

3) Only very few correlations between the level of digitalization and other structural characteristics of schools or municipalities:

The social assistance rate of the municipality is related to the time resources teachers have to prepare for the use of digital technologies in lessons. Cantonal differences cannot be investigated with the available data.

In addition to the strong differences between language regions, this report only provides occasional indications of correlations between the state of digitalization of primary schools and other structural characteristics of the municipalities (e.g. urban-rural differences) or the primary schools themselves (e.g. school size, average age of teaching staff). The reasons for the strong heterogeneity between primary schools, even within the same language region, can therefore only be partially explained by the structural

characteristics examined. With the available data, it is not possible to examine the extent to which the observed heterogeneity can be attributed to differences among cantons.

The social assistance rate is the only structural characteristic for which correlations with the state of digitalization are identified. Teachers in primary schools in municipalities with a high social assistance rate have significantly less time to prepare lessons in which digital devices are to be used. At the same time, there are a similar number of computers available in these primary schools, but fewer interactive whiteboards. The extent to which there is an actual problem here in terms of equity should be investigated in the future.

4) Regular use of digital devices in class:

According to school principals, the majority of Swiss primary schools already use digital devices regularly in class at HarmoS 4 level. However, it remains unclear what exactly the use of digital technologies looks like, as there is still a data gap at the level of teachers and ICT coordinators.

Digital devices are used at least weekly in the vast majority of schools at school level HarmoS 4 (based on the statements of the school principals). According to the surveyed parents, however, digital teaching and learning aids, such as educational software, games or online information searches, are usually only used sporadically in lessons at school level HarmoS 4. This finding coincides with the results of other surveys on the use of digital media in class at secondary level, which showed that digital media are often used primarily for the presentation of content by teachers, for example video or audio material (Petko et al., 2022; L. Suter et al., 2019).

However, the presented results on the use of digital media in the classroom should be viewed with some caution: As DigiPrim was able to survey school principals and parents, but not teachers, ICT coordinators or students, the actual teaching activities in many classrooms can only be assessed to a limited extent. This means that there remains a significant data gap at primary school level (Educa, 2021).

4. Outlook

Overall, the DigiPrim report provides precise and relatively up-to-date information across Switzerland for the first time. However, it does not claim to fully reflect the complexity of the topic. Among other things, this report lacks two important perspectives on the digitalization of primary schools, namely those of teachers (including ICT coordinators) and students. As a result, the analyses do not answer all open questions in this context (such as the efficiency of learning with ICT or the role of teachers in the integration of technologies in the classroom). Furthermore, the data does not allow for analyses at cantonal level, meaning that potential heterogeneity between cantons cannot be examined.

The presented results indicate that the state of digitalization in Swiss primary schools varies greatly. Some schools still have considerable development potential, while others are already quite advanced. This report is intended to serve as a guide for education policy stakeholders and the interested public in order to identify fields of action and advance the digitalization of primary schools in a targeted way. Future studies should focus in particular on the detailed analysis of cantonal differences and the inclusion of teachers' perspectives in order to paint a more comprehensive picture of the digital transformation at primary school level.

5. References

Bos, W., Eickelmann, B., Gerick, J., Goldhammer, F., Schaumburg, H., Schwippert, K., Senkbeil, M., Schulz-Zander, R., & Wendt, H. (Eds.). (2014). *ICILS 2013: Computer- und informationsbezogene Kompetenzen von Schülerinnen und Schülern in der 8. Jahrgangsstufe im internationalen Vergleich*. Waxmann.

EDK. (2018). *Digitalisierungsstrategie: Strategie der EDK vom 21. Juni 2018 für den Umgang mit Wandel durch Digitalisierung im Bildungswesen*. https://edudoc.ch/record/131564/files/pb_digi-strategie_d.pdf

Educa. (2021). *Digitalisierung in der Bildung*. https://www.educa.ch/de/themen/datennutzung/digitalisierung-der-bildung

Erzinger, A. B., Pham, G., Prosperi, O., & Salvisberg, M. (2023). *PISA 2022. Die Schweiz im Fokus*. pisa-schweiz.ch https://doi.org/10.48350/187037

Herzing, J. M. E., Röhlke, L., & Erzinger, A. B. (2023). *DigiPrim as an add-on study of the ÜGK / COFO / VECOF 2024 (HarmoS 4) Field Trial 2022: Study Description*. Version 1-0. University of Bern, Interfaculty Centre for Educational Research. https://doi.org/10.48350/183647

Oggenfuss, C., & Wolter, S. C. (2021a). *Monitoring der Digitalisierung der Bildung aus der Sicht der Schülerinnen und Schüler* (SKBF Staff Paper No. 22). http://www.skbf-csre.ch/news/details/news/monitoring-der-digitalisierung-der-bildung-1/

Oggenfuss, C., & Wolter, S. C. (2021b). *Monitoring der Digitalisierung der Bildung aus der Sicht der Schülerinnen und Schüler: zweite Erhebung: Vergleich der Ergebnisse der beiden Erhebungen Herbst 2020 und Frühling 2021* (SKBF Staff Paper No. 24). https://www.skbf-csre.ch/fileadmin/files/pdf/staffpaper/staffpaper_24_ergaenzung_digitalisierung.pdf

Oggenfuss, C., & Wolter, S. C. (2023). *Monitoring der Digitalisierung der Bildung aus Sicht der Schülerinnen und Schüler: Ergänzungsbericht* (SKBF Staff Paper No. 25). https://www.skbf-csre.ch/fileadmin/files/pdf/staffpaper/staffpaper_25_monitoring-der-digitalisierung-D.pdf

Petko, D., Antonietti, C., Schmitz, M.-L., Consoli, T., Gonon, P., & Cattaneo, A. (May 2022). *Digitale Transformation der Sekundarstufe II: Ergebnisse einer repräsentativen Bestandsaufnahme in der Schweiz*. https://www.zora.uzh.ch/id/eprint/223928/1/GH_2022_05_d.pdf

Petko, D., Prasse, D., & Cantieni, A. (2018). The interplay of school readiness and teacher readiness for educational technology integration: A structural equation model. *Computers in the Schools*, *35*(1), 1–18.

Suter, F., Maag Merki, K., Feldhoff, T., Arndt, M., Castelli, L., Gyger Gaspoz, D., Jude, N., Mehmeti, T., Melfi, G., Plata, A., Radisch, F., Selcik, F., Sposato, G. G., & Zaugg, A. (2023). *Erfahrungen von Schulleiter*innen in der deutsch-, italienisch- und französischsprachigen Schweiz im Schuljahr 2021/2022 während der COVID-19-Pandemie: Zentrale Ergebnisse aus der Studie S-CLEVER+. Schulentwicklung vor neuen Herausforderungen*. https://s-clever.org/wp-content/uploads/2023/04/S-CLEVER_2023_CH-Ergebnisbericht.pdf

Suter, L., Külling, C., Bernath, J., Waller, G., Willemse, I., & Süss, D. (2019). *JAMESfocus - Digitale Medien im Unterricht.*