

# Scientists call for moratorium on digitalisation in kindergartens and schools

## **Summary**

Digitalisation is currently regarded as a modern solution to educational questions for all age groups in the education sector. But the effects and secondary effects of digital media on development, learning and educational processes are often scientifically unclear. In fact, there is growing scientific evidence about the enormous disadvantages and damages caused by digital media to the developmental and educational processes of children and young people. In line with the duty of caring for public educational institutions, we therefore demand a moratorium on digitalisation, particularly for the period of early education until the end of lower school (Year 6): First of all it must be possible to assess the consequences of digital technologies, before further experiments are carried out on children and young people in need of protection, with an uncertain outcome. They only have one life and one educational biography – we must not treat them carelessly.

In particular, questions of medical-psychological, educational-didactical and political-democratical implications need to be examined. The scientifically based objections include, for example, the statement presented by five professors from the Swedish Karolinska Institute. They warned against the negative effects of screen media on children's learning and language development. The U.S. Surgeon General warns against the consequences for the general mental health of children and adolescents due to longer periods of exposition and the ever-earlier starting age for watching screen media. This corresponds with studies by the German Society for Paediatrics and Adolescent Medicine and recommendations made by paediatricians and psychologists. Furthermore, in its "2023 Global Education Monitor" UNESCO criticises the fact that current IT concepts for educational institutions do not focus on learning and educational benefits, but rather on economic interests. In addition, more and more data processing systems are being used as "artificial intelligence" (AI) to automatize teaching and testing, in order to replace missing teachers. On the other hand the coronavirus pandemic has recently demonstrated the failure of such replacement experiences. In its recommendations on "AI and Education", the German Ethics Council therefore explicitly warns against replacing teachers with computer programmes, while UNESCO only recommends the use of AI from the age of 13.

It is therefore urgently necessary to revise this one-sided fixation on digital technology in kindergartens and schools, in order to discuss the role of IT and AI in educational institutions in an interdisciplinary and scientifically sound manner, with a focus on development, learning and educational processes. Education and teaching must focus on the well-being of disciples and the effectiveness of pedagogical action. To this end, we are

calling for a moratorium and public discussion on the necessary pedagogical premises for the application of digital media in educational institutions.

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## Scientists and physicians warn against screen media

The Scandinavian countries were pioneers in the digitalisation of educational institutions. However, in 2023 the Swedish government reversed its predecessor's decision to make digital devices mandatory in the country's preschools. The reason for the rethink was the statement presented by five professors from the renowned Karolinska Institute (Stockholm), who criticised the digitalisation strategy of the National Agency for Education as an incorrect measure. The supposed positive findings of that official instance were not evidence-based; instead, research had shown that "the digitalisation of schools has major negative effects on pupils' knowledge acquisition". The goals that had been promised (equal education and opportunities, improved teaching, social participation) were not achieved; quite on the contrary: "It is obvious that screens provoke major disadvantages for young children. They hinder learning and language development. Too much screen-time on the other hand can lead to concentration difficulties and blockade physical activity" (Karolinska Institute 2023). Mrs. Lotta Edholm, the liberal Swedish Minister of Education, subsequently stopped the use of tablets in primary schools: "Screens simply have no place in preschools," she said. <sup>1</sup>

Above all, the focus of knowledge acquisition should once again concentrate on printed textbooks and the expertise personally provided by teachers. Students who are used to a "self-organised" search for knowledge from freely accessible digital sources, as is currently the case in Swedish schools, lose a lot of time checking for accuracy, and only learn half as much as in regular presence lessons. There is also a risk that children may tend to read 'diagonally' and only skim texts, instead of searching for in-depth-knowledge: "Pupils become inclined to prioritise quick acquisition of information instead of in-depth analysis, which in turn can lead to a superficial knowledge that is lost more quickly" (ibid.).

The U.S. Surgeon General (the highest health authority in the USA) has published a study on the mental health of children and adolescents. It shows in detail how strongly young people are influenced by and addicted to digital media. The ever longer periods of use, and the ever earlier age of access to digital information, have consequences for the mental health of children and young people (including body discomfort, disturbed eating behaviour, sleep and concentration disorders, low self-esteem, depression and much more). The US authority calls on all parties involved (political decision-makers, technology companies, parents, educators, researchers) to protect the safety, health and private life of children and young people, regulate the access and usage times, and eliminate the addictive potential of these means, through design elements and functions, and organize technology-free areas and periods.

The German Society for Paediatrics and Adolescent Medicine has published comparable guidelines for the prevention of uncontrolled screen media use during childhood and

adolescence. Such guidelines are now supported by many professional associations in the fields of medicine, psychology and addiction prevention. The most important recommendation for all age groups is: Screen time reduction, no personal (self-owned) devices for children, and no uncontrolled/unaccompanied access to the internet. Parents, brothers and sisters should completely refrain from using screen media in the presence of younger family members. (DGKJ 2022, 3)

## UNESCO: IT in schools serves economic interests instead of learning processes

The UNESCO report "2023 Global Education Monitor" goes one step further, with the subtitle "Technology in education: A tool for whose benefit?" posing the crucial question: Who does it benefit? The result: current IT concepts for educational institutions do not focus on learning and educational benefits, but rather on the economic interests of IT providers and the data economy. Impartial findings on the impact of educational technology are in short supply, there is hardly any reliable evidence of the added value of digital technology in education, and much of the supposed evidence comes from those who are trying to sell it. The general rule is: "Not every change is progress. Just because something can be done, doesn't mean that it should be done. Technologies that were developed for other purposes cannot implicitly be expected to be suitable for all areas of education." The follow-up costs were criticised, with initial investments in educational technology only covering a quarter or less of the total costs (UNESCO report, p. 7).

This is not a general rejection of IT in schools, but a call for a new adjustment with the aim of educational and social justice, combined with a focus on lessons structured by qualified human teachers: "No screen can ever replace the humanity of a teacher." (UNESCO 2023a) Investments must be made in the qualifications of educators and teachers, in order to enable successful educational biographies and promote them at an early age.

The UNESCO report also refers to existing bans on private digital devices which already apply in almost a quarter of the countries analysed – trend rising. The reasons for this are the potential for distraction, which disrupts attention and concentration in classrooms, as well as the communication and direct interaction in lessons and during breaks. UNESCO only recommends using AI from age 13 (UNESCO 2023b). In France, for example, a ban on mobile phones in classroom was established since 2010. In 2018 it was extended to a complete ban on internet-enabled devices such as mobile phones, tablets and smartwatches in all classrooms and during school activities, including outside the school buildings. The Netherlands will introduce a smartphone ban in 2024 and Denmark is discussing the same issue. According to a report by the Karolinska Institute, in Sweden tablets have been removed from preschools and primary schools, with printed books ("Lotta Life" books) distributed instead. But the German federal state of Bavaria

is planning to provide 1.6 million pupils with tablets over the next five years (Zierer 2023). The German federal state of Baden-Württemberg even wants to make the use of digital devices mandatory through an amended school law, which among other things violates the teachers' methodological freedom. The Ministry of Education in Stuttgart strangely did not comment on the costs (Krauß 2023).

### Ethics Council position: AI should not replace teachers

The German Ethics Council has published an opinion on the impact of digital technologies on human self-image and interaction. The document suggests strict limits on the use of artificial intelligence in areas such as medicine (section 5) and education (section 6). Essentially, AI must not replace people, and the use of AI must improve human development, not diminish it: "Recommendation Education 10: A complete replacement of teachers runs counter to the understanding of education as outlined here, and cannot be justified by the simple critical fact that today there is an acute shortage of personnel and a poor educational situation in certain areas." (S. 186). According to Mrs. Alena Buyx, Chair of the German Ethics Council (Deutscher Ethikrat 2023a), software systems do not possess a reasoning ability, nor do they act on their own – and therefore cannot assume responsibility. The eleven recommendations on education prepared by the German Ethics Council are available separately in Infobrief 01/2023, since they have direct implications for teaching and the use (or non-use) of such technologies (see German Ethics Council 2023a). In addition, the contribution by Hamilton, William and Hattie on the future of AI in education systems should be considered, in which the authors make 13 suggestions "to minimise the damage" (Hamilton, William, Hattie 2013). This is because the destructive potential of AI is compared by its very developers (like the "Godfather of AI" – NYT commenting on Geoffrey Hinton) to the atomic bomb and viral pandemics (Böhm 2023).

### Compulsory digitalisation reinforces existing problems

From an educational, developmental or learning psychology perspective, the widespread equipping of schools with tablets (as was previously the case with children laptops or PCs) cannot be justified. Despite constantly increasing expenditures on IT and its application in teaching practice, the level of education has been falling for decades. Despite the presence of more and more qualifications and better grades, learning performance itself is constantly deteriorating (KMK 2022). Therefore, technology, instead of qualified teaching, was and is not a solution.

Scientific evidence supports the following conclusions:

- The benefits and added-value of digital media in the classroom have not yet been proven. Technology can not be an end in itself in education. Any method or didac-

tic medium applied in the classroom must be legitimised by their benefits and added-value for learners (Krautz 2020). The argumentation of digital providers, that one must "overcome the discussion about the added-value of digital media and tools for teaching and didactics" and instead adopt a fundamentally "open attitude towards the transformation of schools" (FBD 2021) reveals that such providers are not concerned with the well-being of children and young people, but rather with a "transformation" that primarily serves economic interests, and is neither scientifically justifiable nor democratically legitimised.

- Digital media reinforce and promote educational inequality, both nationally and internationally. The promise of easier access to education through digital provisions did not materialise. The digital abyss and inequality in access to educational opportunities are widening worldwide, and are associated with the familial and social environment (ICILS 2018).
- Successful teaching is not determined by technical equipment, but rather by qualified teachers, well-structured lessons, and a collaborative social learning atmosphere in the classroom. "No medium can replace the teacher as the person who structures and leads the lesson" (Dammer 2022).
- Early childhood development and educational biographies begin at home. Everyone involved in the upbringing, teaching and education process must take responsibility for ensuring that children and young people have enough time, space and opportunities to develop physical, mental and emotional abilities, in an age-conforming manner, even in a high-tech world with extensive media coverage. Parents also have a duty to contribute to this.

It would therefore be wiser to follow national and international practical experience and study results; and building on this, to draw conclusions, above all in terms of the personal rather than the medial-technical equipment of schools and training centres. It is essential to take in consideration ethical, social, developmental, pedagogical and didactic premises in order to responsibly shape the use of digital media in schools.

### Primacy of pedagogy instead of primacy of technology in schools!

We are therefore calling for a "moratorium on digitalisation in kindergartens and schools" so that children and young people do not suffer any disadvantages or damages that later could no more be counterbalanced. An interdisciplinary and multi-perspectival committee – composed by active school practitioners (!), as well as theorists from general pedagogy and subject-related didactics, including colleagues from the areas of ethics and learning-psychology, paediatrics (paediatricians and adolescent physicians) and media pedagogy, as well as manufacturer-neutral representatives of industry and digital protection specialists – must then discuss the prerequisites for successful educational processes in an open-ended (rather than technology-determined) manner.



Concrete proposals must be developed for humane and democracy-promoting educational and school structures that enable a self-determined life through education, as enshrined in national constitutions. In principle, the primacy of the pedagogy should take precedence over all supposed technical progress – Caution is an ethical duty in matters of upbringing and education. Children and young people need a human mirroring counterpart; their development and evolution must be at the centre of educational and teaching practice policy.

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