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Position paper on Digitalisation of Education

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Opening remarks

In the past years of technological development and more digitalization in education, we learned that for successful education in the digital age, the accessibility of the digital tools and services (e.g. tablets, wifi connection, etc.) is simply not enough. What needs to come first are measures such as proper teacher training settings and parents webinars that enable adults to navigate children and youth through the risks and benefits of digital technology of today and of tomorrow¹. The aim should be equipping students with knowledge and skills to adequately navigate digitised reality for their benefit in life, and not to digitise education *per se*.

The World Bank (2020) identifies a second digital divide in this way: *“The digital divide in education goes beyond the issue of access to technology. A second digital divide that is harder to bridge separates those with the skills to benefit from use of technology from those without.”* Commitment to develop digital competence of all learners thus must be in the centre. The goal should be to enable young people to acquire the knowledge and skills to become autonomous, sovereign and critical users of digital media.

Due to prevalent possibilities and risks of digital media, a successful ICT and media education enables all learners to make informed judgements on what goals are best achieved with analogue means, and for what goals the use of digital means is preferable, taking various factors into account. The common narrow focus on “digitising education” often lacks the holistic pedagogical vision and entails severe limitations to the health and well-being of all learners.

The Hattie Study² has shown that educational quality first and foremost depends on high-quality teaching and student-teacher interaction³, not on the tools and the media used in the teaching and learning process. Instead of pushing digital tools and technology-based education, we need a broad strategy on how to provide adequate quality in education in the digital era.

In order to make education systems, schools, teachers and learners ready for the digital era, we encourage the following practices and propose the following policy recommendations:

¹ Sets of knowledge, skills and attitudes for adults are defined under the section 4.3 Protecting health and well-being of the Digital Competence Framework for Citizens 2.2 that will be available from 22 March 2022 at the European Commission’s DG JRC.

² Hattie, John A.C. 2009. Visible learning: a synthesis of meta-analyses relating to achievement. Routledge. Oxon, UK.

³ European Parliament resolution of 25 March 2022 on shaping digital education policy (art. O)



1. What knowledge and skills do children and youth need to live and learn in the digital age?

Good practice 1.1:

Age-appropriate and development-oriented approach

Digital competences are best developed by means of a development-oriented approach that introduces digital technologies in a learner-focused and age-appropriate way. Such an approach builds on the good experience with using unplugged solutions to teach computational thinking and computer science before introducing digital technology in classrooms. It also emphasises personal contact between students and teachers, prioritises the well-being and healthy development of children and adult learners at all times preparing them for meaningful interactions and use of digital technology in their learning and adult life. Examples of such an approach can be seen in this [competence-based digital media curriculum for schools](#) and this [guide for teachers on age-appropriate media education in schools](#).

Policy recommendations:

- (1) Digital technologies should be introduced in a learner-focused, age-appropriate and development-oriented way; whereas digital learning strategies need to take into account research on the effects that an early use of digital technology may have on the development of young children⁴
- (2) Healthcare professionals, educational institutions, civil society and non-formal education providers, in partnership with parents, need to develop an age-appropriate curriculum to enable learners to make informed and appropriate choices and avoid harmful behaviour⁵

Good practice 1.2:

Basic transversal skills and Core capacities as a prerequisite

The development of digital skills and competences largely depends on the mastery of basic transversal skills, such as numeracy, critical thinking and social communication skills and Core capacities that lay the ground for meaningful use of digital media. Their thorough development in primary education should therefore precede the comprehensive development of digital competences in later years.

⁴ Ibid. (art. P)

⁵ Ibid. (art. 26)



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Policy recommendations:

- (1) Mastering basic transversal skills, such as numeracy, critical thinking and social communication skills, is a fundamental prerequisite for the acquisition of digital skills and competences⁶.
- (2) Setting the basis for further development of Core capacities⁷ in schools must come prior to introducing digital tools and competences.

Good practice 1.3: Information and media literacy

Information literacy as a precondition for digital literacy should be taught by analogue means first. At the age when children are not yet developmentally ready to interact with digital tools in a healthy manner, information literacy can be taught in an analogue way to give the needed basis for later use of digital media. This entails methods focused on awareness and detection of disinformation and on strengthening critical thinking.

Media literacy should be understood as the general term that enails various types of media, including digital media as one of them. Before the learner reaches a certain age and gains certain knowledge (described in this paper), the focus in the classroom must be on media education in its broader term, including storytelling, painting, singing, etc. Only after the learner reaches independence in analog media creation, is the right time to introduce different digital media tools.

Indirect media literacy education is equally important as direct media literacy education for reaching the needed media maturity level and the ability to make healthy use of digital media tools. The sequential and interconnected approach represented in the table below best reflects the developmental needs and learning capacities of different age-groups (basic, standard and advanced):

⁶ Ibid. (art. E)

⁷ UNICEF. 2021. What Makes Me?: Core capacities for living and learning



- 6 years | 1st seven years

7 - 12 years | 2nd seven years

13 - 18 years | 3rd seven years

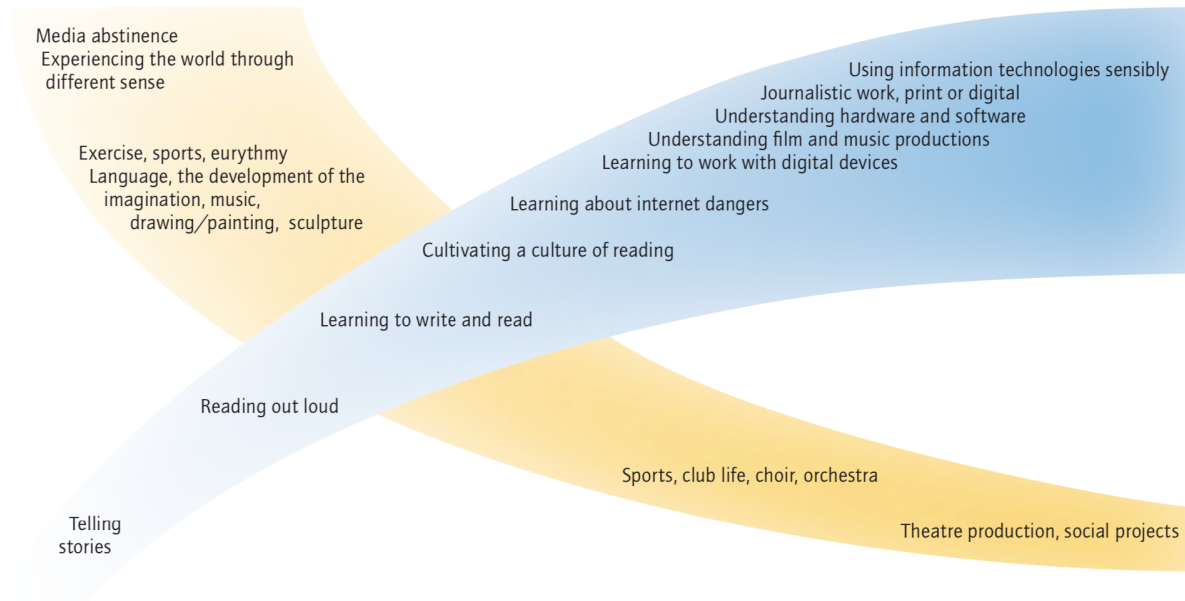
**Encounter the real world
through embodied experience**

**Practice
analogue techniques**

**Understand and master
digital technology**

Indirect media education

Direct media education



Media Education in Steiner Waldorf Schools, 2021. ([here](#))

Policy recommendation:

- (1) Information literacy and media literacy are prerequisites for successful digital literacy development in schools.
- (2) Indirect media education is equally important to direct media education. Both provide crucial ground for healthy and well-being centred digital media education.

Good practice 1.4:

Basics of computational thinking and critical data literacy

A basic understanding of computational thinking, in line with information and media literacy, is a prerequisite for adequate and sovereign use of digital tools. It helps keep the agency when interacting



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with digital technology in the hands of the user and not the device. Computational thinking lessons can start from primary education but - in the interest of promoting a more thorough understanding of its principles - should be introduced in an analogue way, without the premature exposure to screen-time and digital tools. Practical examples of such exercises are described in the [Computer Science Unplugged](#) collection.

This goes alongside with the basic critical data literacy skills that allow the user to make informed judgement when giving out or collecting data. More on what critical data literacy entails is described in the [Unblack the box](#) project brought together by education and computer scientists.

Policy recommendation:

- (1) Screen-free tools for teaching computational thinking and critical data literacy should be the preferred method of teaching in the early and primary school settings.

Good practice 1.5:

Media maturity and digital balance literacy

Healthy physical, emotional, social and mental development of a child is the prerequisite for skilful, independent and sovereign use of digital technology. The age-appropriate and development-oriented media education only introduces digital technology in classrooms after children demonstrate a significant degree of media maturity and are thus developmentally ready. This is of utmost importance because media maturity and the understanding of digital balance are key in preventing problematic screen media use that includes digital media addictions.

Problematic screen media use harms various strands of children's development. Even when immediate effects are not visible, long term effects include obesity, sleep problems/disorders, delays in motoric, language and cognitive development, attentional problems, loss of empathy, and other mental and physical health problems. Detected digital addictions types that contribute to Mental Disorders (MD) are Internet gaming disorder (IGD), Internet addiction, compulsive computer use, and Problematic Internet Use (PIU)⁸⁹.

⁸ Bleckmann, Paula. 2018. Toward media literacy or media addiction? Contours of good governance for healthy childhood in the digital world. In M. Matthes, L. Pulkkinen, B. Heyes, and C. Clouder (Eds.), *Improving the Quality of Childhood in Europe*, Vol. 7. Alliance for Childhood European Network Foundation. Brussels, Belgium. S. 103-119.

⁹ European Parliament resolution of 25 March 2022 on shaping digital education policy (art. O)



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Additionally, a variety of persuasive and motivational techniques, that children and youth are easy targets to, are designed into digital media to keep users returning. These techniques increase the risk of addiction and overuse. So it is crucial to acknowledge them in order to either avoid or build resistance to them. Healthy digital balance literacy refers to the ability to set clear lines for oneself or for others on the exposure to digital media to preserve one's health and well-being. When it comes to children and youth, it is up to their parents and teachers to detect and draw those lines using a variety of monitoring and limitation strategies, until they are mature enough to draw them themselves.

Policy recommendations:

- (1) Age-appropriate and development oriented digital media education helps prevent problematic screen media use and digital addictions, and should thus be strongly encouraged.
- (2) Media maturity is a prerequisite for sovereign, skillful and healthy independent use of digital media.
- (3) Digital balance literacy entails the ability to make informed judgements between healthy and harmful use of digital media and should thus be strongly considered when aiming for high-quality education on digital technology use.

2. How can teachers and schools ensure healthy, high-quality and inclusive digital media education?

Good practice 2.1:

Schools' own approach to ICT and digital media education, tailored to the local context

While policy-makers set the general framework of learning outcomes to be reached by the end of compulsory education, schools need autonomy to decide on when and how to introduce specific content and technology in classrooms. They should be encouraged to develop their own approach to ICT and media education, involving school leaders, teachers, parents, pupils and experts. Such a collaborative approach tailored to the specific needs and circumstances of a school is best suited for enabling the school to provide appropriate, relevant and inclusive digital media education.

The best way to reduce the digital and social divide is to avoid a one-size-fits all approach or curriculum. Pedagogical freedom, flexibility and diversity of approaches enable schools to be inclusive in its particular school community regarding socio-economic and cultural background of its students, teachers and parents.



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Policy recommendation:

- (1) Provide sufficient pedagogical freedom and support to schools to develop their own tailored ICT and media curriculum.

Good practice 2.2:

Quality teacher training

In order to prepare teachers for the challenges of teaching in the digital era, teacher training and Continual Professional Development settings must provide teachers with a thorough understanding of when and how digital competence and media literacy are best developed in the classroom. Instead of a rushed digitisation approach, existing teachers should be encouraged and upcoming teachers should be obliged to be trained on age-appropriate and development oriented methods of education for digital media literacy of their students in the broadest term.

Policy recommendations:

- (1) Teachers should be encouraged to learn about and create their own innovative teaching methods, including analogue and screen-free solutions, for age-appropriate and development oriented education in the digital age.
- (2) Investment should be put in teacher training programmes with a focus on age-appropriate and development-oriented ICT and media education.

Good practice 2.3:

Teachers' pedagogical freedom to innovate

Contrary to exaggerated claims of its potential, the COVID-19 pandemic crisis revealed the various limits of technology-based learning and the need to safeguard as much in-person learning directly from the teacher, particularly for young children. But another revelation of the crisis was that teachers do hold immense innovation potential, which came to light in the various emergency solutions that teachers put in place themselves when left to handle the new circumstances on their own¹⁰.

¹⁰ European Parliament resolution of 25 March 2022 on shaping digital education policy (art. 5)



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Thus, instead of forcing digital technology into classrooms from an early age by means of benchmarking, country-specific goals, reporting mechanisms and international assessment, governments should put more trust in teacher's ability, creativity and professionalism. Within the framework of a school's general approach and curriculum for ICT and media education, and accompanied with access to quality training programmes, teachers should be given a high degree of pedagogical freedom to choose the right timing, teaching methods and material in order to develop digital competence and media literacy of their students sustainably. Additionally, Pedagogical diversity between the teachers can then act as a catalyst for educational dialogue among teachers.

Apart from teaching methods, innovative, personalised, formative, summative and ipsative assessment methods¹¹ should be available to teachers to choose from regarding ICT and media education in their classroom. The agenda of digitising education often assumes as one of the greatest benefits the ability to run standardised tests through elaborate softwares and get clear data on the school success of the students. Such an agenda holds immense risks because it neglects diverse abilities and skills among the students in the classroom and threatens serious learning discouragements that can lead to school leaving.

Policy recommendations:

- (1) Teachers' freedom to choose the best combination of teaching methods and content should remain at the heart of the educational process¹².
- (2) Teachers should be given sufficient flexibility and autonomy to innovate and adapt to specific challenges of their students, classes and schools.

3. What are the other key factors for successful education in the era of growing digitalisation?

Good practice 3.1:

Interdisciplinary scientific research on digitising education

The focus of the education sector should not be solely to adapt to digital transformation, but to strive towards a critical assessment of opportunities and risks that digital technologies offer in a given learning

¹¹ Find 20 innovative assessment methods in the book *Assessment as Dialogue: Twenty Inspiring Practices from Classrooms and Schools Across Europe*. 2021. Available here: <http://personalisedassessment.ecswe.eu>.

¹² European Parliament resolution of 25 March 2022 on shaping digital education policy (art. N)



context and at a given age. Digital technology should only be used when there is clear evidence that it sustainably improves the overall learning experience and learning outcomes for the pupils involved. The negative impacts of premature or excessive use of digital technology in education must be known and understood by teachers and curriculum designers.

Thus, the call of the European Parliament for more interdisciplinary research in this field must be a key condition before making any large scale investments¹³. Only after the relevant research findings on benefits and harms of digitising education are analysed and carefully weighed, can policy makers provide teachers and parents with more elaborate development-oriented guidelines on using and not using digital technology in teaching and learning. Experiments with digital learning should not be made on children and pupils.

Before spending large amounts of money on digitising education, the assumption that an early use of digital technology in classrooms will significantly improve educational quality and student performance needs to undergo a reality check. So far, there is a lack of clear scientific evidence in this regard¹⁴. Such research should include comparison between the performance, neurological development and overall well-being of learners enrolled in “digitised education” and learners in a control group with an equally well-funded “analogue” control group over an extended period of time.

Thus, there is a clear need to invest into independent large-scale and long-term research into the various health effects of digital technologies. Education sciences, pedagogy, psychology, sociology, neuroscience and computer science need to be linked in order to achieve as deep an understanding as possible of how children’s and adults’ physical, mental and social health and well-being are affected by a digital learning environment, with a view to minimising physical, mental and social health risks of using digital technology in education.

Policy recommendations:

- (1) Conduct and fund independent, interdisciplinary and longitudinal research on physical, mental and social health effects of the use of digital technology in education.
- (2) Base curriculum reforms concerning digitalisation of education on the results of such research.
- (3) Understand the lack of evidence for widespread benefits for learning of digitalisation of education and before such evidence is available, do not force schools to undergo a heavy digitalisation process.

¹³ Ibid. (art. 13)

¹⁴ Balslev, Jesper. 2020. Evidence of a Potential: The Political Arguments for Digitizing Education 1983-2015. Department of Communication and Arts, Roskilde University. Roskilde, Denmark. Available here: <https://jesperbalslev.dk/evidence-of-a-potential-ph-d-thesis/>



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Good practice 3.2: Prevention of furthering digital divide

Before promoting large-scale educational reforms towards more investment in digital tools and internet access as a way to close digital divide, policy-makers should systematically map and better understand the nature and depth of profit-driven IT lobbyists and companies influencing school leaders and policy-makers and how this is rapidly transforming educational systems. It needs to be investigated how the peddling of high hopes is based on unsubstantiated claims and primarily fuelled by commercial interests.

Especially because the sole focus on providing access to digital tools has a strong potential of deepening the digital divide. Unsupervised and unskilled access to digital technology at a young age deepens the digital divide by reinforcing problematic patterns of use as socially disadvantaged groups are more frequently exposed to risks connected with digital technology (addictive use, cyber-bullying, exposure to violent content) and frequently lack well-informed parental guidance and supervision at home.

Policy recommendations:

- (1) Provide guidelines for parents, teachers and schools on high-quality and inclusive digital media education making sure that the basic prerequisites for health use of digital tools are reached before a pupil is encouraged to make direct and unsupervised use of digital media.
- (2) Keep the awareness of potential commercial influence when discussing digitising education and support decision-making on education independent of such interests.

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