



EUROPEAN  
COUNCIL FOR  
STEINER WALDORF  
EDUCATION

**Curriculum**

# **Digital Media and Computer Studies for Steiner Waldorf Schools**

**A good practice example with full coverage  
of the European DigComp Framework**

# Publishing information

**Publisher**

European Council for Steiner Waldorf Education A.I.S.B.L.  
Rue du Trône 194  
1050 Brussels  
Belgium  
[www.ecswe.eu](http://www.ecswe.eu)

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**Typesetting**

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**Translation**

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**ISBN**

9789464360905

1st edition, May 2021

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# Preface

The European Council for Steiner Waldorf Education (ECSWE) is closely following European policy making in the field of ICT<sup>1</sup> and media education. As part of this work, we provide our member associations and schools with good practice examples that are meant to help them adapt to ongoing policy reforms and prepare them for the national level implementation of the European Digital Education Action Plan 2021–2027.

This publication provides schools with a good practice example of a competence-based framework curriculum. While the material was initially developed for the Swiss context, it was purposefully designed in a flexible way that also allows for its wider usage. Its full mapping to the European Digital Competences Framework DigComp makes it a valuable resource, enabling Steiner Waldorf schools to develop a tailored, age-appropriate, and development-oriented ICT and media curriculum for their local school context.

Furthermore, it can support our national member associations in developing their own framework curricula. Its clean design and clear structure allow for tailoring it to the specific requirements of many national education systems. This also makes it a valuable communication tool allowing member associations to illustrate to national authorities how the specific needs of Steiner Waldorf schools can be brought into alignment with national regulations and curricula.

We would like to express our gratitude for the work of the Rudolf Steiner Schools of Switzerland and Robin Schmidt, as the author, for making this valuable resource available to our members.

Richard Landl

President

European Council for Steiner Waldorf Education



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**Introduction**

# **School in a digital world**

## **Entering the digital lifeworld**

Life in the industrialised societies is currently changing fundamentally and in an unforeseeable way. Along with climate change and migration, it is also digital transformation which is radically reshaping lifestyles and social orders.

Just as in the nineteenth century the early railways burst into the natural, rural lifeworld as something alien, but then became the technological foundation of the modern urban lifeworld, so digital devices have initially entered the largely urban lifeworld in a similar way. Yet gradually the technical elements are coalescing into a whole on which we are increasingly dependent. From food and power supplies to key jobs and leisure activities: they are directly or indirectly based on digital infrastructure. Furthermore, digital information and communication technologies (ICT), as devices and applications for everyday use, form the environment in which we spend large and important parts of our lives: work, relationships, entertainment and leisure.

It is becoming clear that we not only live in an urban society which is increasingly pervaded by digital devices and infrastructure but also live in a digital world. The digital world is becoming a new lifeworld in which we live and work.

## **The analogue world as the exception**

When compared with life in the urban or natural environment, this digital lifeworld is more and more seen as the place of actual, primary living. Being "offline" has become the exception for many people. As a result, what happens and is experienced in the analogue, physical and sensory present appears increasingly less as something that is naturally given. And the rest of the world is accessed from this digital lifeworld. Alongside the many political, cultural, social and ecological challenges and the alienation which go along with such a societal development, there is the further aspect that our present physical and sensory existence is asking to be grasped with the will and rediscovered in its value and meaning. Something that used to be naturally given is, in many places, becoming a task of education.

Just as through the Industrial Revolution in the nineteenth century the alienation from

nature and the social order of an estate-based society became an overriding problem and then also the starting point for an ecological and social movement, so similar fundamental questions arise through the societal consequences of digital transformation.

## **Digital change as a challenge for Steiner Waldorf education**

At the time of the Industrial Revolution, it took a long road of cultural and political work to improve the awful living conditions of the workers which had come about as the result of technological change. And modern education – including Steiner Waldorf education as a system of education for the children of the Waldorf-As-toria factory workers – originally saw itself as making a contribution to human freedom and educational justice in the precarious conditions of industrial lifeworlds. Only the smallest part of the changes in schools and education of the time was based on the integration and thematic discussion of the then technologies such as the steam engine and electricity and their bases in physics and mathematics. Of far greater consequence were the societal changes which accompanied the Industrial Revolution, such as the introduction of compulsory schooling, the separation of school and church, the attempt to compensate for social background, but also the factory-like organisation of the way schools were run.

A similar perspective is becoming apparent today as well: only a small part of the changes in society through digital transformation are of a technical nature. By far their greatest consequences can be seen in the changes in society, politics, the way we live together, but also our understanding of learning and the task of school. Accordingly, it is also becoming clearer at present that digital transformation for schools doesn't just mean familiarising pupils with the technology, the way it works and how it is operated so that they understand and can make sovereign use of it. On the contrary, schools are faced with the task of preparing pupils for the rapid changes in all subjects, at work and in social relationships.

Thus digital information and communication technologies have acquired a wholly new importance in the last twenty years. They have



long ceased to be merely for EDP (electronic data processing), of which school was supposed to teach a technical understanding, and knowledge of which represented a helpful, useful skill in the use of office applications. Today they directly or indirectly relate to almost all areas of work, everyday life, leisure and social life.

### **Pupils need new competences**

At the same time digital media have become a normal part of the lifeworld of children and young people and are no longer perceived by them as something special. On the one hand, children and young people often use the digital media themselves as something unremarkable, on the other hand they see how the adult world is decisively shaped by them. Pupils expect their school to include their lifeworld and make it understandable.

At the same time the classic canon of education is changing: pupils know that competences in handling ICT are required in practically all jobs and is assumed in vocational training or higher education. They expect from school that they are prepared for working life in this respect as well. On the other hand "non-digitisable" skills and activities such as collaboration, communication, creativity and critical thinking are becoming increasingly important particularly in a work context. Pupils know about the relevance of these key competences for their biography and expect to be able to acquire and practice them in school.

### **Digital media don't automatically improve learning**

Since PCs became generally available in the 1980s, there has always been the hope that their use would fundamentally improve school learning or, indeed, revolutionise school. But more than twenty years of research into the question as to how information and communication technology (ICT) could change teaching and learning have shown that the use of ICT alone does not bring any improvement in learning. It is equally true that simply equipping schools with ICT does not modernise lessons. When ICT is deployed in schools, it is the educational and methodological processes, the interaction between teachers and pupils, as well as the type of activity of the pupils that determine the quality

of learning. Even with the use of ICT, learning remains a process of human interaction and its success is essentially dependent on the way that this interaction is structured. It is necessary to determine in detail when and how ICT contributes to successful learning.

### **Digital transformation extends the school's mission**

Thus digital information and communication technologies are no longer just a subject in school dealing with technology and how to use it: they relate to the child's lifeworld as well as the world of work and they have become a way of organising lessons which is integral to each subject: from geography and history lessons through sports classes to learning foreign languages and in art. This means that the questions facing a school with regard to digital transformation have greatly expanded in recent years. It is these changes which the present "Digital Media and Computer Studies" curriculum addresses and it supplements the existing curriculum of the Steiner Waldorf schools. In doing so, it builds on existing practice.

### **Helping to shape digital transformation**

If it is the goal of education in Steiner Waldorf schools to contribute to an "education towards freedom" also in the digital lifeworld, it is important to ask what "freedom" means under these changed conditions. Handling ICT in a safe, meaningful and sovereign way certainly is a condition for acting in freedom. But what does human freedom in thinking and doing mean in this changed world? And how can education, school, learning and teaching contribute? Depending on the answer, basic educational and curricular questions have to be reframed. As private schools, Steiner Waldorf schools have the possibility fundamentally to change their curricula and school structures without much red tape, rapidly implement new educational ideas and publicly share and contribute experiences and "best practice". They could exercise their social role as progressive schools by actively being involved in shaping digital transformation. This task, however, lies beyond this curriculum which in the first instance aims at supplementing existing practice.

## Literature

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Brodbeck, H (2018): Rudolf Steiner Schule im Elterntest: Lob - Kritik - Zukunft: Ergebnisse einer empirischen Elternstudie an schweizerischen und liechtensteinischen Waldorfschulen. Norderstedt.

---

Genner, S (2017): Digitale Transformation: Auswirkungen auf Kinder und Jugendliche in der Schweiz - Ausbildung, Bildung, Arbeit, Freizeit. Zurich.

---

Honegger, B D (2016): Mehr als 0 und 1: Schule in einer digitalisierten Welt. Bern.

---

Hübner, E (2015): Medien und Pädagogik: Gesichtspunkte zum Verständnis der Medien, Grundlagen einer anthropologisch-anthropologischen Medienpädagogik. Stuttgart.

---

Internationale Konferenz der Waldorfpädagogischen Bewegung (2019): Erziehung in der digitalen Welt. [<https://www.waldorf-international.org/medienpaedagogik/charta/>; 14.1.2020].

---

Petko, D, Honegger, B D und Prasse, D (2018): Digitale Transformation in Bildung und Schule: Facetten, Entwicklungslinien und Herausforderungen für die Lehrerinnen- und Lehrerbildung. In: Beiträge zur Lehrerinnen- und Lehrerbildung, Issue 36.

---

---

Schmidt, R. (2018): Digitaler Wandel als Gesellschaftssituation - Herausforderungen für Mensch, Gesellschaft und Pädagogik. In: Lehrerrundbrief, Issue 107 (März).

---

Schmidt, R. (2018): Erziehung zur Freiheit im digitalen Wandel. In: Erziehungskunst, December 2018.

---

Schmidt, R. (2020): Post-digitale Bildung. In: Demantowsky, M; te Wildt, B; Lauer, G und Schmidt, R (Hrsg.): Was macht die Digitalisierung mit den Hochschulen? Einwürfe und Provokationen. Berlin/Boston.

---

Suter, L et al. (2018): JAMES - Jugend, Aktivitäten, Medien - Erhebung Schweiz. Zürich

---

Voogt, J et al. (Ed.) (2018): Second Handbook of Information Technology in Primary and Secondary Education. Cham.

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# Basics

### **What is a curriculum?**

Curricula describe the aspirations which schools as an institution have of themselves: where they see themselves as being engaged, what pupils should know and be able to do. Curricula for a long time described the content which teachers were expected to teach. In recent decades competence-based curricula have taken their place which describe what pupils should know and be able to do at specific levels. These are framework curricula: they describe competence goals which should be achieved in general – but not that all pupils always also have to achieve them. For this reason modern curricula do not give instructions as to teaching materials, specific lesson content, teaching methods, concrete implementation and specific points in time but they describe learning goals which are put into a meaningful conceptual and chronological order and which can be used as a guide in the lesson planning of schools and teachers. But they don't have to – in that case the curriculum helps to clarify the gaps or divergences which exist with regard to this consensus and turns these gaps or divergences into a decision which has to be educationally justified. In this way the intention of the curriculum is to contribute to the responsibility and imagination of each school and each teacher to find the ways and means out of their circumstances and specific concerns through which the pupils can acquire knowledge and skills.

### **What does competence-based learning mean?**

The present curriculum, too, sees itself as a framework curriculum and is structured in a competence-based way. This is done through formulating competences in four areas: "Prevention", "Media education", "Computer studies" and "ICT in subject lessons at upper secondary level". The idea of competence-based learning does not mean abandoning a deeply understood development of subject knowledge and culture: serious competence-based curricula are focused to a much greater extent on a deeper understanding, consolidation of what has been learnt in skills, deployment of knowledge and proficiency than curricula which prescribe concrete learning content for a given school level. In particular, competence-based curricula give the teacher greater leeway to select appropriate content, methods and curricular processes which enable pupils to develop skills in the specific school and individual situation.

### **What is mandatory? What is recommendation?**

The guiding considerations in each section are introductory and explanatory in nature. The recommendations for implementation in the curriculum should be understood as suggestions based on educational experience, the state of research in the field, and specific aspects of Steiner Waldorf education. The curriculum itself is intended as a help to plan implementation in schools and as a suggestion for structuring the main and subject lessons. It allows for specific learning activities and projects to be assessed from an educational, subject-related and age-appropriate perspective and ensures the acquisition of the aimed for competences. Timing, order and design of the elements should be determined by the teachers or faculties themselves in view of the respective school cultures and infrastructures as well as regional specifics and requirements.

### **How is the education of Steiner Waldorf schools taken into account?**

This curriculum was developed by experts in Steiner Waldorf educations and is guided by the principles of Steiner Waldorf education. It supplements the existing curricula of Steiner Waldorf schools with aspects of digital information and communication technologies (ICT). An integrative approach is adopted in implementing the acquisition of competences: the competences are, where possible, acquired within project lessons and main lessons in relation to the educational goals and subject-related teaching

methodology of the lesson concerned. Learning is, as far as possible, structured in meaningful units and contains theoretical, social and practical dimensions which are brought together in project form.

One key approach in media education in Steiner Waldorf schools consists of advancing media competence not just through the direct involvement with media but also through artistic activities, the activation and fostering of sensory activity as well as by largely dispensing with screen media in the lowest year-groups (“indirect media education”). However, listing all the aspects of media education in this indirect sense in the existing curriculum would have overloaded the present curriculum. The focus of this curriculum is on supplementing the existing curriculum with regard to digital media and computer studies.

### **Full Coverage of the European Digital Competence Framework DigComp**

The Annex provides a comparison of the competences described in the present curriculum with the competences of the European DigComp framework. It shows the correspondence for each individual competence in both directions. The present curriculum covers all of the competences of the DigComp European competence model.

For the comparison we used the latest version of the DigComp Framework (Version 2.1). But not only does the present curriculum cover the requirements of DigComp, it adds many specific concerns of Steiner Waldorf education in the field of prevention, media education, subject teaching and in the approach to computer science.

Note that the present curriculum does not specify the point in time when individual competences in the curriculum should be acquired. Determining and organising this remains within the responsibility of the individual school and the teacher. The recommendations for the curriculum are meant as a support for this.

### **Further development**

A thorough revision and the further development of this curriculum are planned for 2023, as soon as there has been some initial experience in its implementation. Also planned is the differentiated elaboration of the curriculum for upper secondary level (Year 10–12/13). It is also possible to predict at this stage already that the rapid developments in the field of digital media will necessitate constant adaptation, which is why we see the present curriculum as a first step and a work tool which will need constant development and which is dependent on productive feedback.

## Literature

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Brodbeck, H (2018): Rudolf Steiner Schule im Elterntest: Lob - Kritik - Zukunft: Ergebnisse einer empirischen Elternstudie an schweizerischen und liechtensteinischen Waldorfschulen. Norderstedt.

---

Genner, S (2017): Digitale Transformation: Auswirkungen auf Kinder und Jugendliche in der Schweiz - Ausbildung, Bildung, Arbeit, Freizeit. Zurich.

---

Honegger, B D (2016): Mehr als 0 und 1: Schule in einer digitalisierten Welt. Bern.

---

Hübner, E (2015): Medien und Pädagogik: Gesichtspunkte zum Verständnis der Medien, Grundlagen einer anthroposophisch-anthropologischen Medienpädagogik. Stuttgart.

---

Internationale Konferenz der Waldorfpädagogischen Bewegung (2019): Erziehung in der digitalen Welt. [<https://www.waldorf-international.org/medienpaedagogik/charta/>; 14.1.2020].

---

Petko, D, Honegger, B D and Prasse, D (2018): Digitale Transformation in Bildung und Schule: Facetten, Entwicklungslinien und Herausforderungen für die Lehrerinnen- und Lehrerbildung. In: Beiträge zur Lehrerinnen- und Lehrerbildung, Issue 36.

---

Schmidt, R (2018): Digitaler Wandel als Gesellschaftssituation - Herausforderungen für Mensch, Gesellschaft und Pädagogik. In: Lehrerrundbrief, Issue 107 (March).

---

Schmidt, R (2018): Erziehung zur Freiheit im digitalen Wandel. In: Erziehungskunst, December 2018.

---

Schmidt, R (2020): Post-digitale Bildung. In: Demantowsky, M; te Wildt, B; Lauer, G und Schmidt, R (Eds.): Was macht die Digitalisierung mit den Hochschulen? Einwürfe und Provokationen. Berlin/Boston.

---

Suter, L et al. (2018): JAMES - Jugend, Aktivitäten, Medien - Erhebung Schweiz. Zurich

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Voogt, J et al. (Ed.) (2018): Second Handbook of Information Technology in Primary and Secondary Education. Cham.

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# Overview

## Goal: safety

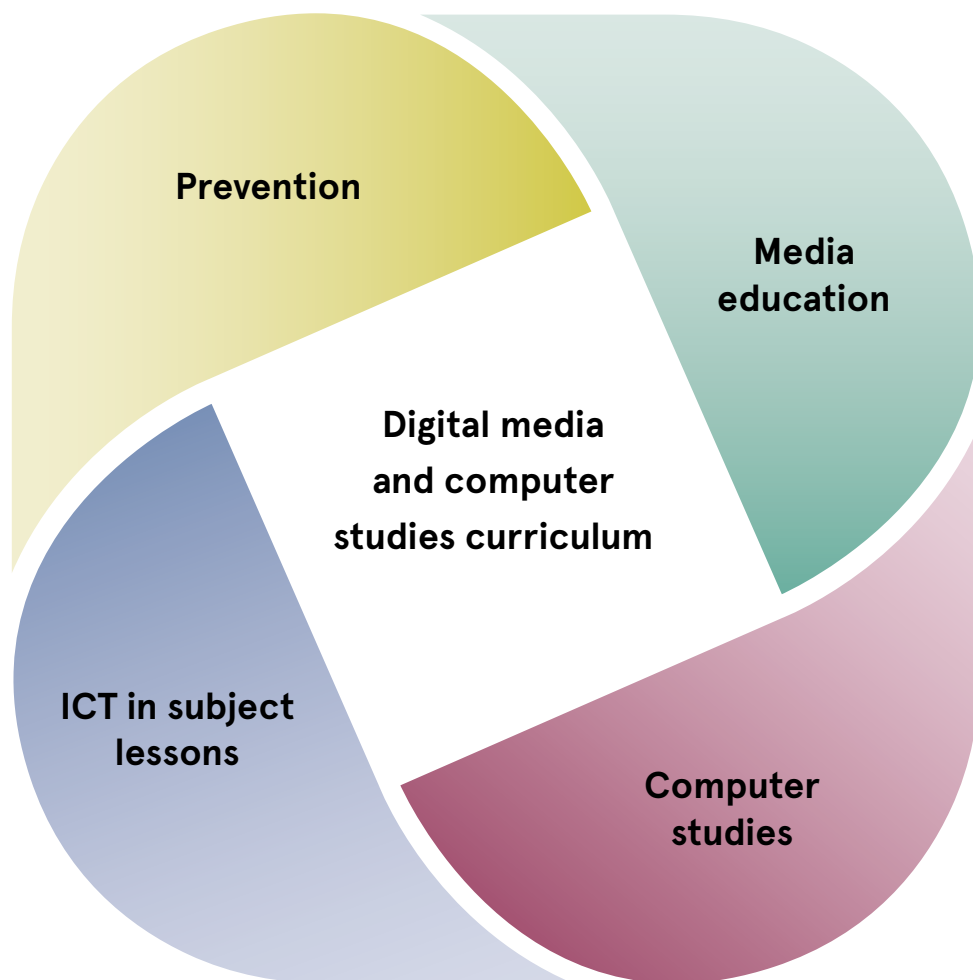
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The pupils know and take account of risks, observe the legal situation and etiquette when they use digital media.

## Goal: media sovereignty

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The pupils know the variety of analogue and digital media and can use them independently and as a group to create.



## Goal: subject competence

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The pupils know the consequences of digital transformation in the subject areas and can learn appropriately for each subject with digital media.

## Goal: understanding and use

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The pupils understand technical basis of computers and programs and can use them in school and at work.



# Curriculum Prevention

# Guiding considerations

## **Knowing and observing the law and knowing and taking account of risks**

The goal of the Prevention competence area is safety. The pupils should be in a position to know and observe the law and know and take account of risks and values in the use of digital information and communication technologies (ICT). They should acquire knowledge and skills in good time – before or at the time they start using these media themselves – which contribute to protecting them against risks.

This involves, in particular, education about

1. adverse influences such as e.g. fake news, political extremism, extreme self-presentation or externally determined ideals of beauty,
2. health risks, in particular addiction (pathological forms of gaming, chatting, shopping, gambling, sex), but also potential technical risks, e.g. from excessive electromagnetic radiation,
3. inappropriate and illegal sexuality, e.g. pornography and the risks of sexting (sending erotic selfies) and sextortion (blackmail with nude images),
4. violence such as e.g. cyberbullying (molestation, harassment or coercion via ICT) or “happy slapping” (humiliation through filmed and digitally distributed violence against fellow pupils),
5. theft such as illegal downloads and illegal sharing of films, music, etc. as well as the absence of active and passive data security and data sovereignty.

## **Building protection against risks**

Although the greatest threats in this field occur in connection with digital media, they do not necessarily originate there. The risk of addiction, violence, extremism, inappropriate or prohibited forms of sexuality are challenges which are part of society. The appropriate prevention is the task of social policy and social education – and school cannot alone be responsible for that. But it can make a significant contribution to avoiding problematic behaviour, protect against further-reaching risks and have a mitigating effect.

There are risks for children and young people that come with digital media which adults are not acquainted with from their own direct experience. Furthermore, the forms keep changing and perpetrators exploit the lack of knowledge about these things. Prevention is thus a central task of education which requires collaboration between experts, parents or legal guardians, teachers and pupils.

Prevention includes defending against risks through devices being made appropriately secure, access to problematic content being controlled, or access to devices being restricted. Beyond that, sustained prevention consists of the active, often indirect development of skills and knowledge, strengthening experiences, attachments and supportive relationships which protect children and young people inwardly.

In this sense it is not just the listed, explicit parts of the curriculum which make an important contribution to prevention but also many other educational and artistic activities, free play in kindergarten and at primary level, and the cultural and social life of a Steiner Waldorf school – even if they are not set out individually below.

## **Professionalising collaboration**

The Prevention competence area is not the task of the school alone but requires collaboration between various parties. Here it is substantially a matter of building trust between parents/legal guardians, teachers and pupils which goes beyond purely teaching concerns and which contributes to fulfilling such an extended educational mission of the school.

A professional approach is crucial here. In prevention in particular, inappropriate interventions from adults can make the problems of pupils worse. It must be judged when professional help or the police should be involved. Every school should select and train a teacher who is the contact point for school intervention experts and advice centres.

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## **Literature**

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Bleckmann, P (2016): Medienmündig: Wie unsere Kinder selbstbestimmt mit dem Bildschirm umgehen lernen. Stuttgart.

---

Bleckmann, P and Lankau, R (2019): Digitale Medien und Unterricht: Eine Kontroverse. Weinheim.

---

Bundesamt für Sozialversicherungen: Jugend und Medien - das Informationsportal zur Förderung von Medienkompetenzen. [[www.jugendundmedien.ch](http://www.jugendundmedien.ch); 30.6.2020].

---

Möller, C and Bilke-Hentsch, O (Eds.) (2015): Internet- und Computersucht: Ein Praxishandbuch für Therapeuten, Pädagogen und Eltern. Stuttgart.

---

Reckert, T (2016): Medienmündigkeit: Ein Leitbegriff für die Prävention. In: Kinder- und Jugendarzt 47/9.

---

Wampfler, P (2014): Generation «Social Media»: Wie digitale Kommunikation Leben, Beziehungen und Lernen Jugendlicher verändert. Göttingen.

---

Weinzirl, J, Lutzker, P and Heusser, P (Eds.) (2017): Bedeutung und Gefährdung der Sinne im digitalen Zeitalter. Würzburg.

---

te Wildt, B (2015): Digital Junkies: Internetabhängigkeit und ihre Folgen für uns und unsere Kinder. Munich.

---

ZHAW und Bundesamt für Sozialversicherungen (Eds.) (2019): Medienkompetenz. Tipps zum sicheren Umgang mit digitalen Medien. Für Eltern und Fachpersonen, Bern. [[www.jugendundmedien.ch](http://www.jugendundmedien.ch); 30.6.2020].

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# Recommendations for implementation in the curriculum

## **Interventions of external experts and lessons**

At primary and lower secondary level, external experts should regularly be invited to lessons to contribute to the understanding of pupils about risks, teaching them effective data protection techniques and acquainting them with the law. Classes with mentors or the class teacher supplement these measures as required or when urgently necessary.

One of first interventions is proposed for the classes at the end of primary level in the form of a project week or a day-long workshop: they should address risks, teach basic forms of self-protection and tell the pupils about information and advice centres. In addition, the class teacher, together with the media officer as necessary, should pick up on pressing media-related subjects (e. g. class trip, conflicts in the class). Here social dynamics, rules of communication and the school rules (e. g. rules for the use of mobiles) should be discussed.

A second intervention by experts in the classes at the start of secondary level (again as a project week or day-long workshop) should teach effective techniques for data protection, privacy protection on popular or own devices (e. g. passwords, encryption, data backup), discuss aspects of the law and deepen the subjects from the first intervention.

## **Working together with parents or legal guardians**

The importance of the imagination and sensory development, of reading aloud and telling stories, of role play as well as the verbalisation of primary experiences and media experiences by the children. The role model function of adults and the responsibility for education shared between the school and parental home should be broached. Current technical developments and how to deal with them in kindergarten, at school and at home should be discussed. Agreements can be made between the school and the parental home.

At least one parents' evening towards the end of primary level should be devoted to current developments in the field of digital media, the way they are used by young people, their risks, the educational implications, the statutory situation as well as the school rules in this regard.

Lecture and seminar events for parents/legal guardians and teachers with external experts and parents' evenings should discuss current media, the forms in which they are used and their risks.

## **Selecting one teacher and training them**

One teacher should be selected in each school to deal with these matters and to maintain contact with advice and help centres. They should be given the appropriate training.





# Prevention competences

- P** The pupils know the law, opportunities, risks and values in using ICT in their life-world and can observe them. They acquire knowledge and skills which contribute to protecting them against risks from digital media.
- P1** The pupils know the rules of etiquette in digital communication (netiquette) and are aware of the possible effects of their actions on others.
- P2** The pupils know which actions are permitted and prohibited and can judge the consequences of their actions. They understand clearly that actions in the digital space are subject to the law and have real consequences. They know the law.
- P3** The pupils know problematic and illegal behaviours such as cyberbullying, sextortion, illegal file sharing, addictive behaviour and can recognise and name them.
- P4** The pupils know basic forms of self-protection (e.g. not going to meet anyone they've met online, not sharing nude photos or private information).
- P5** The pupils know how they can protect their privacy in the digital space and know effective techniques to protect their own data on their own devices.
- P6** The pupils know where they can find appropriate help for themselves or their fellow pupils (trusted persons, external agencies and mandated teachers).

# Recommended curriculum

## Prevention

### Kindergarten, Years 1 and 2

Prevention 1	<b>Media Parents' Evening I</b>	Parents' evening (teacher and/or external experts): age-appropriate media experiences, importance of the imagination and sensory development, role model function of adults, shared responsibility between school and parental home	P1–P6
Prevention 2	<b>Media Parents' Evening II</b>	Parents' evening (teacher and/or external experts): current technical developments and the approach to them in kindergarten, school and at home	P1–P6

### Primary level, Years 3–6

Prevention 3	<b>Media Parents' Evening III</b>	Lecture or seminar events for parents/ legal guardians and teachers with external experts: current developments in the field of digital media, current forms of use among young people, risks, forms and signs of addiction, educational implications, the legal situation	P1–P6
Prevention 4	<b>Intervention I</b>	Intervention of external experts in class: risks, basic forms of self-protection, familiarisation with information and advice centres	P3 P4 P6
Prevention 5	<b>In class</b>	Repeatedly taking up media-related subjects on given occasions by the class teacher, together with the school's media officer if required	P1 P2 P6

### Lower secondary level, Years 7–9

Prevention 6	<b>Intervention II</b>	Intervention of external experts in class: deepening the education about risks, effective data protection techniques, privacy protection on popular and own devices, the law, school rules	P2 P5
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# Curriculum

# Media education

# Guiding considerations

## **Sovereign use of media**

The sovereign use of media of all different types is a prerequisite today for participation in cultural, economic, political and social life. Media sovereignty means using media consciously and responsibly. Media education today aims for the sovereign conduct of our life in a world that is increasingly determined by media – a world in which media in turn serve as the instruments for acquiring such sovereignty. Here it is a matter of being able to use the many different analogue and digital media in a focused way for our own requirements and work projects and, conversely, also ourselves actively to be able to create media content for others.

The many different ways in which media can be used in school also includes, alongside reading books and creating blackboard drawings, telling a story, role play with dressing up, the creation of own schoolbooks, the performance of a rehearsed piece of music, listening to a radio broadcast, the performance of a play or looking at an educational film, the use of social media, the design of a website, the playing of computer games and following a YouTube channel.

It must be learned how different media and content act on the person using them and on others. But media sovereignty also means being able to determine the use of our own media and to regulate them with regard to our own wellbeing and health, and being able to find a good balance between media and non-media activities.

## **Understanding the origin and development of media**

Which media formats are appropriate for which educational goals at which age is one of the central questions of media education. So far there have been hardly any guidelines in the curriculum of the Steiner Waldorf schools with regard to the question as to the use of specific media in a way appropriate for age and development. One approach is to relive and trace the cultural and historical development of media over the course of the curriculum. In learning to write, for example, care is taken to ensure that the pupils can in nuce follow the cultural and historical evolution of scripts and writing: the creation scripts out of the narrative image, the abstraction of letters out of the image. They learn writing out of painting and on being introduced to the fountain pen begin, for example, by finding out how to write with a goosequill. Accordingly, the way media education is structured is intended to ensure that the pupils can understand the various media in their origins and genesis and actively create or produce the most important media, at least by way of a few examples, through their own activity in the course of their schooling.

The curriculum of the Steiner Waldorf schools has been strongly determined by media education goals from the beginning. Currently the education at Steiner Waldorf schools faces the challenge of integrating the development of media and technology of the last decades into this approach. Here, on the one hand, it is a matter of doing justice to the changed lifeworld of the pupils as a result of digital media of various types. On the other hand, a further task presents itself in that today digital media frequently integrate the functions of various media that were previously separate (newspapers, television, theatre, cinema, radio, etc.) without their original task and way of working being clear.

### **Achieving media education goals directly and indirectly**

In the education of the Steiner Waldorf schools, media education from the beginning lies at the heart of the way learning is structured. Puppet theatre, the telling of stories, aesthetic blackboard drawings, learning to write through imagery, creating one's own learning media (main lesson books instead of textbooks), free presentation (poems, the verse found specially for each pupil by the teacher, presentations, school festivals), speech and musical movement games, rehearsing the performing arts, arts and crafts lessons and the performance of singing games, dances and eurythmy in the lower classes up to plays or musicals with professional aspirations in the upper classes have always formed a central element of the curriculum of Steiner Waldorf schools.

In creating the learning environment, a distinction is made between direct and indirect media education: indirect media education supports movement, sensory experiences, art and the imagination – activities which are intended to contribute indirectly to subsequently being able to handle media in a sovereign way. The intention of direct media education is to contribute to media sovereignty through the direct use of media and through learning about media.

Many elements of the current curriculum of Steiner Waldorf schools thus already contribute significantly to the goals of media education. The present curriculum cannot set out all of these diverse activities related to media education. It focuses mainly on those elements which are growing in importance through the digital lifeworld and highlights sections in the curriculum in which existing activities can be extended to aspects of digital media.

## Literature

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Baacke, D (2007): Medienpädagogik. Tübingen.

---

Bund der Freien Waldorfschulen (Ed.) (2019): Medienpädagogik an Waldorfschulen. Curriculum - Ausstattung. Stuttgart.

---

Herzig, B (2017): Medien im Unterricht. In: Schweer, M K W (Ed.): Lehrer-Schüler-Interaktion: Inhaltsfelder, Forschungsperspektiven und methodische Zugänge. Wiesbaden.

---

Honegger, B D and Merz, T (2015): Fachdidaktik Medien und Informatik. Ein Beitrag zur Standortbestimmung. In: Beiträge zur Lehrerinnen- und Lehrerbildung, Issue 33. p. 256-263.

---

Hübner, E (2015): Medien und Pädagogik: Gesichtspunkte zum Verständnis der Medien, Grundlagen einer anthroposophisch-anthropologischen Medienpädagogik. Stuttgart.

---

Hübner, E (2015): Indirekte und direkte Medienpädagogik. In: Waldorf Ressourcen. [<https://www.waldorf-resources.org>; 30.6.2020].

---

Hübner, E (2016): Waldorfpädagogik und Medien. Menschliche und technische Entwicklung im Kontrast. In: Schieren, J (Ed.): Handbuch Waldorfpädagogik und Erziehungswissenschaft: Standortbestimmung und Entwicklungsperspektiven. Weinheim, Basel.

---

Hübner, E (2019): Medien und Schule. Neun Thesen zu einer entwicklungsorientierten Medienpädagogik. In: Wiehl, Angelika (Ed.): Studienbuch Waldorf-Schulpädagogik. Bad Heilbrunn.

---

Hüther, J and Podehl, B (2005): Geschichte der Medienpädagogik. In: Hüther, J (Ed.): Grundbegriffe Medienpädagogik Munich.

---

Moser, H (2019): Einführung in die Medienpädagogik: Aufwachsen im digitalen Zeitalter. Wiesbaden.

---

Penert, K und Pemberger, B (2020): Medienerziehung in der Waldorf-Kindheitspädagogik. In: Wiehl, A (Ed.): Studienbuch Waldorf-Kindheitspädagogik. Bad Heilbrunn.

---

Schmidt, R (2018): Digitaler Wandel als Gesellschaftssituation - Herausforderungen für Mensch, Gesellschaft und Pädagogik. In: Lehrerrundbrief, Issue 107 (March).

---

Süss, D, Lampert, C and Trültzsch-Wijnen, C W (2018): Medienpädagogik: Ein Studienbuch zur Einführung. Wiesbaden.

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# Recommendations for implementation in the curriculum

## **Creating media experiences in an age-appropriate way**

Through creating media experiences in an age-appropriate way, teachers open up a learning and experience space in which the pupils become familiar with their lifeworld. Here the experience of self-efficacy, the development of the senses, and learning social interaction are the central media education goals of kindergarten and primary level.

In kindergarten, the teachers create the first media experiences through stories that are told and read out aloud, puppet play, music, eurhythm, and leaving time for free play for the pupils. They give the pupils the opportunity to express their media experiences. In the morning group, through role play and in personal interaction the pupils can also articulate and process their media experiences from their home environment.

In the first years of school, the teachers create age-appropriate learning environments through learning media such as blackboard drawings, stories, texts and picture stories. They encourage the pupils regularly through creative activities such as painting, doing craft work and making music to express their own experiences and support them in making their own learning media, particularly their school and main lesson books.

## **Integrating media studies in the main lesson**

In the final years at primary level and at the start of secondary level, media studies form a thematic focus at least twice as part of main lessons.

In the last years of primary level (Years 5/6), and integrated into literature or history main lessons, the teachers focus on the way that various media work in the lifeworld of the pupils (daily newspapers, freesheets, advertising, YouTubers/influencers, social media). The pupils work on the importance of media in historical and social processes with reference to their own (digital) media experiences. This takes place with reference to Intervention I of the Prevention curriculum or ad hoc in connection with a topical occasion, for example in continuation of the subjects in the classes of the Prevention curriculum.

At the start of secondary level (Years 7/8), forms and tasks of journalism are discussed as part of main lessons. The pupils follow a topical subject each day in a daily newspaper and in other media and discuss it. An excursion to a local newspaper or something similar gives them an insight into present-day media practices and production. The effect of advertising and political propaganda is also discussed. These elements should also be related to the content of the curriculum in other subjects such as history lessons, art lessons (graphic reproduction) or in craft lessons (printing technology, bookbinding). Media Project I is prepared in this way.

At the start of lower secondary level, the pupils further work on preparing and dealing with business correspondence by letter and email, netiquette on social media, and the professional design of application letters, minutes and reports (e.g. report on a work placement).

At upper secondary level (Years 10–12/13), media studies merge with the subject lessons. The separate subject of computer science and the ICT curriculum in subject lessons at upper secondary level pick up these themes from the perspective of the various subjects that are taught and place them in the context of society today.

### **Learning to do research and give presentations**

Always at the end of primary level, lower secondary level as well as upper secondary level, the pupils present a longer report or lecture and in doing so acquire fundamental competences in research, the verification of sources, presentations in text and word as well as competence in performing.

At the end of primary level (Year 5/6), the pupils present a longer report in front of the class (e.g. about an animal, a historical person, a book) as a contribution in a biology, history or literature main lesson. In order to do so, they learn about research and the acquisition of information in libraries (catalogue search, trip to the municipal library) and through selected online resources (such as Wikipedia). They discuss the advantages and disadvantages of the various types of sources. The presentation of the report is prepared and then discussed afterwards in the class in relation to content and presentation (feedback culture).

At the end of lower secondary level (Year 7/8), the pupils give a lecture in front of the parents about a project they have undertaken themselves (project for the year, biography work). As part of main lesson or other classes, they are instructed in how to research sources and materials themselves and learn about aspects from which to judge their quality. In preparing the presentation, they are familiarised with the relevant tools and techniques (preparing speaker's notes, board, poster, slides, PowerPoint). If needed, they practice speaking with the creative speech practitioner at the school and look at aspects of a competent performance.

At the end of upper secondary level (Year 12), the pupils give a lecture in front of the general (school) public in which they present the results of their work on their project for the year. Both in the way that they write and organise the lecture and in its presentation they acquire knowledge about academic research at a sufficient level for the subject (sources, interpretation, presentation), professional preparation of documents (structure, citations, layout), presentation (poster, PowerPoint), and language (rhetoric, performance) as part of the subject lesson.

### **Undertaking media projects from Year 7 onwards**

Integrated into existing elements of the curriculum, such as for example theatre, concert or musical performances, a media project is carried out each in the middle of lower secondary level and upper secondary level.

Media Project I (Year 7 or 8) provides for competence acquisition by means of a project involving the whole class: the class produces a viable print product, for example a special edition of the school newspaper or the programme for its own theatre production. What is particularly intended here is to bring together and apply competences from various subjects: for example elements of literature and language (researching sources, writing factual and information texts), computer skills (from Computer Workshop I: word processing, image processing, touch typing), art lessons (design of cover picture and preparation for printing) and applied mathematics (accounts: income from sales and advertising, expenditures for printing costs) or arts and crafts lessons (book-binding and printing technology).

In Media Project II (Year 10 or 11) the pupils produce a media contribution involving film, sound and Web individually or in small groups. The contributions can together form a whole and be shown to the general (school) public, for example a radio feature for local radio, reportages on current events, film interviews or a blog on an excursion, or an artistic short film. The key elements here are that they are embedded in a subject lessons and independently executed from planning (subject matter, concept, script) through to technical execution (digital sound and picture editing, Web resources) and performance or broadcast by the pupils with the help of specialist, if possible also

professional guidance. Lessons in which they can be embedded can include not just literature or history but also foreign language classes (e.g. film interviews in other languages), art lessons (image and film from an aesthetic perspective), music, geography or biology (e.g. ecological topics). In the subject lessons the pupils work on the subject itself, realise the media contribution together with a technically experienced teacher or external specialist (e.g. from journalism), and present it.

# Competences

## Media education

**M** The pupils can find their way around the media lifeworld, know about the many different analogue and digital media and can use them on their own and in a group for learning and to create things. They can express themselves through media contributions, present them in front of an audience, in doing so judge their effect on others, and take account of social and legal dimensions.

### **M1** Finding their way around the media lifeworld

**M1.1** The pupils can find their way around the direct material and social environment. They can distinguish direct experiences with and in this environment from fantasy experiences, stories, tales and media experiences (books, radio drama, films, games, etc.), can pick up direct and media experiences in play and discuss them with others.

**M1.2** The pupils know the various media in their lifeworld such as books, phones, television, newspapers, letters, smartphones and computers, can name them and understand their meaning. They can name the advantages and disadvantages of direct and media communication and justify their personal choice of the media used.

**M1.3** The pupils can distinguish between various content of these media (information, advertising, entertainment, news, arrangements, education) and reflect on their various effects (thoughts, feelings, messages). They can assess the intentions behind media contributions (e. g. advertising, political influencing).

**M1.4** The pupils know the importance of the media with regard to culture, the economy and politics as well as their tasks (e. g. creating the conditions for democratic participation) and their problems (media manipulation, ecology, social inequality). They know about the forms of organisation and financing of local, regional and global media. They know about the opportunities and risks of the increasing penetration of our everyday lives with information technology (e. g. automation, changing world of work, globalisation, unequal opportunities in access to information and technology).

### **M2** Learning and creating with media

**M2.1** The pupils turn their own thoughts, experiences, artistic impulses and knowledge into media contributions of various types alone and in group work (e. g. booklet design in text and image, games, artistic expression in painting, singing, dance, eurythmy and music, photography, film, lecture presentation, theatre performance, school newspaper, blog, social media channel) and present them in front of an audience.

**M2.2** The pupils can independently acquire, select and judge with regard to quality and usefulness information from various sources (e. g. books, magazines, learning sheets, play, websites, library, online resources). They can deploy this information, citing the sources, in the preparation and presentation of their work (e. g. exercise

book entry, report, lecture, school newspaper, class blog, radio drama, video clip).

**M2.3** The pupils can assess the effect of their own media contributions, take this into account accordingly in producing them and in doing so comply with the law, rules and value systems.

**M2.4** The pupils can prepare and deal with business correspondence, application letters, readers' letters and reports by letter and email, present themselves adequately, express themselves and observe netiquette.

# Recommended curriculum

## Media education

### Kindergarten, Years 1 and 2

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Media Education 1	<b>Exchanging media experiences</b>	Pupils received the opportunity and professional support so that they can replay their media experiences and discuss them with others in play and in discussion situations.	M 1.1 M 1.2
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Media Education 2	<b>Expressing media experiences</b>	The teachers regularly create age-appropriate media experiences and environments and encourage the pupils to express their own experiences creatively through artistic activities. They provide support in the making of own learning media, particularly exercise books/main lesson books.	M 1.1 M 2.1
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### Primary level, Years 3–6

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Media Education 3	<b>Media Studies I</b>	In literature or history main lessons the intentions and modes of operation of media in the lifeworld of the pupils are discussed. The importance of media in historical and social processes is worked on with the pupils in relation to their media experiences.	M 1.2 M 1.3 M 1.4
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Media Education 4	<b>Research and Presentation I</b>	The pupils prepare a report in main lesson and in order to do so learn to undertake research and acquire information in libraries and with online sources. The advantages and disadvantages of various types of sources are debated. The presentation is prepared and discussed afterwards.	M 2.1 M 2.2
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### Lower secondary level, Years 7–9

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Media Education 5	<b>Media Studies II</b>	Forms and tasks of journalism as well as media practice and production today are addressed in literature lessons. The effect of advertising and political propaganda is also investigated.	M 1.2 M 1.3 M 1.4
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Media Education 6	<b>Media Studies III</b>	In literature lessons the pupils learn to frame and deal with business correspondence, application letters, readers' letters and reports by letter and email. They reflect on netiquette on social media.	M2.1 M2.3 M2.4
Media Education 7	<b>Media Project I</b>	In Media Project I the pupils as a class produce a print product (school newspaper, programme) and in doing so use competences from various subjects such as literature, computer studies, art and arts and crafts (bookbinding and printing technology).	M1.3 M2.1 M2.2
Media Education 8	<b>Research and Presentation II</b>	The pupils give a lecture to parents about a project they have undertaken themselves (project for the year, biography work). As part of main lesson they are given instruction about researching sources and material. They acquire the corresponding tools and performance skills for the presentation.	M2.1 M2.2 M2.3

### Upper secondary level, Years 10–12/13

Media Education 9	<b>Media Project II</b>	In Media Project II the pupils produce a media contribution on a subject (e.g. radio feature, blog, short film), individually or in small groups, embedded in a subject class. The emphasis is on independent execution, from planning through to technical realisation and performance/broadcast, under specialist guidance.	M1.4 M2.1 M2.2 M2.3
Media Education 10	<b>Research and Presentation III</b>	The pupils give a lecture in front of the general (school) public in which they present the results of their work in their project for the year. Both for the preparation of the written work as well as for the presentation, they acquire, in the context of the subject lesson, competences in academic research, the professional preparation of documents and presentations as well as in performance.	M2.1 M2.2 M2.3





# Curriculum Computer studies

# Guiding considerations

## **Using ICT competently and responsibly**

The computer studies competence area is aimed at an understanding of the technical foundations of computers and networks and includes an introduction to the basics of computer science as automated data processing. It further comprises the acquisition of user knowledge so that pupils can use current information and communication technologies in their everyday lives, in learning at school and subsequently in their working lives in a safe and task-based way. This competence can be paraphrased as “digital literacy”: just as reading and writing as “literacy” enable participation in the life of society and taking responsibility for helping to shape it, so “digital literacy” comprises, on the one hand, the understanding of the technical foundations and, on the other hand, the competent and responsible use of ICT with regard to participation in society and working life.

## **Understanding the basics of ICT despite its complexity**

Other than was still the case at the start of the twentieth century, ICT today frequently can no longer be identified because it is invisibly integrated into the greatest variety of devices and objects (cars, ID cards, household devices, watches, etc.) and their use hardly seems determined any longer by the underlying technology. On the other hand complex computer systems and algorithms increasingly determine global political and economic processes. An understanding of the basics of these systems and the way they function is fundamental to participation in society and taking responsibility for being involved in shaping it.

But since the ICT which exists in today’s lifeworld has reached a degree of complexity which can hardly be dealt with at the level of knowledge at secondary level, it is important to make it accessible through the way it is taught such as to illustrate the way it functions and its basic principles for the pupils at lower secondary level. The methodology of teaching computer science has in recent years opened up many teaching materials and methods which are aimed at such a basic understanding. A deepening of these basics is then possible at upper secondary level.

## **Approaches of Steiner Waldorf education**

That pupils should understand the technology in their lifeworld was a central concern of Steiner Waldorf education from the beginning: no pupil should leave without having understood how the electric tram, the steam engine, the telephone or the automatic loom – the new technologies of the time – work. That pupils should be able to handle these technologies was also already provided for in the curriculum of the Steiner Waldorf schools in the early 1920s. Building on this, concepts have been developed to illustrate the functioning of computers from a technical and mechanical perspective: the pupils learn to understand, for example, the interface between mathematics (binary arithmetic, logic operators), electrical engineering in physics lessons (integrated circuits, electromagnetism, transistors) and automated information processing through building an electromechanical calculator, for example. In this way the technical side of digital data processing in its basic elements is to be made comprehensible in principle.

### **Learning to program – also “unplugged”**

In the methodology of teaching computer science there is a consensus today that the basic concepts of computer science can also be learnt without the use of a computer. The approaches of “CS unplugged” allow for the processes of data processing and data security as well as the structure of algorithms and programs to be learnt in the classroom without technical outlay in a vivid and activity-related way. Starting from the description and analysis of simple processes (such as controlling a movement through a limited number of commands), the pupils learn to find basic strategies for solving tasks and to describe them as algorithms. They learn to understand data as the symbolic representation of information and on that basis to apply the principles and methods of processing, management, evaluation and security of data. Such concepts were developed and put into practice also for education in Steiner Waldorf schools.

On the basis of this knowledge, visual programming languages developed for educational purposes (e.g. Scratch) then allow the application of what has been learnt at lower secondary level and for own programs to be created. Many things that have become a natural part of the lifeworld of the pupils can thus begin to be understood in their basics.

### **Using computers as resources for learning and work**

The second aspect of the computer studies competence area lies in the acquisition of fundamental user skills. Even if pupils often bring along an aptitude for handling ICT, this must not be allowed to hide the fact that they are mostly unfamiliar with the use of ICT as a resource for learning and work. This is about learning the basics of using PCs, handling operating systems and files as well as the use of current office software for their own learning and, later on, at work.

A key part of this competence area is the fundamental establishment of skills and the acquisition of a common basic level. Experience shows that elementary competences in applying these things cannot be taught on the side. They need to be introduced explicitly at least once, taking account of the heterogeneous prerequisites of the pupils. Here systematic file storage, structuring and designing presentations, texts or websites will be something new for almost all pupils. The introduction of touch typing is sensible since this ability pays off in many different ways later on in higher education and at work; experience shows that it is quickly learnt at lower secondary level.

The practical application and consolidation of the skills in this competence area as well as their subject-specific deepening are then provided for in the media projects of the media education competence area, in the subject lessons of upper secondary level and, to the extent that they exist, in computer studies lessons.

## Literature

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Buckingham, D (2008): Defining Digital Literacy. What do young people need to know about digital media? In: Lankshear, C und Knobel, M (Eds.): Digital Literacies: Concepts, Policies and Practices. New York.

---

Bund der Freien Waldorfschulen e.V. (Ed.): Waldorf-IT. Unterrichtsbeispiele für Informationstechnologie in der Waldorfschule. [<http://www.waldorf-it.de>; 30.6.2020].

---

Computer Science Education Research Group (2018): CS Unplugged. [<https://csunplugged.org/en/>; 28.12.2018].

---

Erziehungsdirektoren-Konferenz (EDK) (Ed.) (2017): Rahmenlehrplan für die Maturitätsschulen: Informatik. [<https://www.edk.ch/dyn/26070.php>; 30.6.2020].

---

Erziehungsdepartement Basel-Stadt (Ed.) (2017): Lehrplan Gymnasium - Leitlinien für den Bereich Informatik und ICT. Basel.

---

Honegger, B D and Hielscher, M (2018): Informatik ohne Strom. Schwyz.

---

Martin, A und Grudziecki, J (2006): DigEuLit: Concepts and Tools for Digital Literacy Development. In: Innovation in Teaching and Learning in Information and Computer Sciences 5/4. p. 249–267.

---

Penert, K (2019): Informatik in Bewegung: Computer Science unplugged. München, Ravensburg.

---

Senkbeil, M, Goldhammer, F und Bos, W (2014): Das Konstrukt der computer- und informationsbezogenen Kompetenzen. In: Bos, W et al. (Ed.): ICILS 2013. Münster.

---

Webb, M et al. (2017): Computer science in K-12 school curricula of the 21st century: Why, what and when? In: Education and Information Technologies 22/2 (March).

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# Recommendations for implementation in the curriculum

## **Separate computer studies lessons**

The acquisition of the computer studies competences is done as a separate subject. In general it seems most useful to integrate the competence acquisition in main lessons and projects. But the experience of many colleagues shows that an introduction to the basics and the teaching of application skills in a separate time container at lower secondary level create a more secure basis for further individual and joint learning.

To this end we recommend two computer workshops at lower secondary level. Currently they are often reasonably held in the time containers of arts and crafts lessons in the small groups available there.

Smaller Steiner Waldorf schools without the appropriate infrastructure can make use of BYOD ("Bring Your Own Device") concepts or of infrastructure in neighbouring schools or companies with an IT training room. High acquisition and maintenance costs can also be avoided by means of leasing services or companies which provide second-hand devices and maintain them remotely.

Making practical use of and consolidating the acquired skills is provided for in the media education competence area, namely in Media Projects I & II and the modules Research and Presentation I-III. It is left open here to decide the sequence in which the two computer workshops are held or whether their elements are acquired in connected lessons.

## **Computer Workshop I: Familiarisation with the technological foundations**

In connection with knowledge from physics lessons, all the pupils learn to understand the electrotechnical foundations of the computer, for example by building an adding counter. Using examples such as the production of a stop motion film, the analogue and digital representation of data is dealt with and current methods of their storage, organisation, processing and transmission are made comprehensible. Using practical examples, the pupils learn to formulate solution strategies for tasks in general terms and represent them as algorithms. By designing their own computer programs, they learn the basics of programming and the way programming languages work.

## **Computer Workshop II: Acquiring application skills**

Using appropriate examples, the pupils are introduced at the computer to the operation of basic functions and peripheral devices. Handling the school's own learning platform is introduced. A touch typing course requires its own time container and practice periods. Common office applications are introduced, using examples, and basic procedures are practiced so that the pupils can prepare, structure, store, print and send various documents (text, image, spreadsheet, presentation). Strategies for self-help and problem-solving are shown.

## **Computer science as a mandatory subject in Steiner Waldorf schools offering an academic upper secondary education**

Computer science is or will become a mandatory separate subject in many countries in upper secondary schools. Steiner Waldorf schools with an academic upper secondary level may have to set up a corresponding subject. Since Steiner Waldorf schools do not yet have their own concept for computer science at upper secondary level,

we reproduce here without change for information and guidance the competences of the Swiss computer science framework curriculum for schools offering upper secondary education. The competences basically correspond to the intentions of the present curriculum.



# Competences

## Computer studies

**CS** The pupils can understand the technical foundations of current digital information and communication technologies and use them efficiently in their everyday activities, in school and in view of their subsequent world of work.

### **CS1 Understanding the technical foundations**

**CS1.1** The pupils can follow the technical and mathematical foundations of automated information processing and know the components of a computer and their functions. They have an understanding of the performance units of digital devices in their lifeworld and can assess their relevance for how they want to use them (e. g. storage capacity, resolution, computing power, data transmission rate).

**CS1.2** The pupils know analogue and digital representations of data (text, number, image and sound) and can follow the conversion of images, texts and sounds to digital data and the reverse process. They know methods of storing and organising data (tables, databases) as well as common forms of data transmission (wired and common wireless technologies). They can reliably distinguish between different types of storage (e. g. hard disks, flash memory) and storage locations (local devices, local network, cloud) for private and public data and know their advantages and disadvantages. They are familiar with the basics of data backup (copying, backing up and versioning) and can effectively protect themselves against data loss.

**CS1.3** The pupils know the structure and functioning of computer networks in local, regional and global structures. They can distinguish the Internet as infrastructure from its services (e. g. WWW, email, Internet telephony, social networks) and understand the way that search engines fundamentally work.

**CS1.4** The pupils can transform tasks into simple algorithms (e. g. instructions, directions, mathematical solution path, sorting objects). They can analyse such problems, describe possible solution processes through logical operators, conditions, loops, variables, etc. and implement them in simple programs they have written themselves. They fundamentally understand the functioning of programming languages as well as the structure of software and algorithms.

### **CS2 User skills for learning and work**

**CS2.1** The pupils can switch a PC on and off, organise open windows as well as opening, minimising and closing applications and handling their menu structures. They can reliably distinguish between the operating system, applications, documents and file formats. They can log on to a local network or the learning environment of the school with their login. They can navigate a folder structure, set up their own folder structure, copy move and store documents in it in such a way that others can also find them again.

**CS2.2** The pupils can reliably operate a keyboard, touchscreen and mouse of a PC and



laptop and, if available, a whiteboard, visual presenter and projector in the classroom. They can touch type at a sufficient speed.

**CS2.3** The pupils can reliably use office applications for writing, spreadsheets, presentations and Internet research for school learning (reports, project work, media projects) and for basic work activities (application letters, business correspondence, email, budgets, presentations). When there are problems with devices and programs, they can apply the appropriate solution strategies (e.g. Help function, research, tutorials).

### **CS3 Computer science, upper secondary school, competences from the computer science framework curriculum at Swiss upper secondary schools**

#### **CS3.1 Basic knowledge**

- Knowing different types of coding and representation of information
- Understanding relations and differences between symbols, data and information
- Comprehending forms of organising larger data quantities
- Understanding basic concepts of a programming language
- Knowing the modular construction of computer systems from components and interfaces
- Having an insight into the most important technical background of computer networks or the Internet
- Comprehending differences and relationships between reality and its models, e.g. through simulating processes
- Understanding security aspects of digital communication, e.g. encryption, authentication, status of metadata
- Recognising the advantages and difficulties entailed in exact working

#### **CS3.2 Basic skills**

- Formally describing and critically analysing own and others' solution paths
- Designing and assessing algorithms and implementing them in a programming language
- Determining causes of problems and errors systematically and purposefully
- Assessing computer science solutions with regard to correctness, efficiency and security
- Applying computer science knowledge practically in a project
- Handling different abstraction levels
- Assessing security risks in digital communication and taking appropriate measures
- Assessing the interests and possibilities of various participants (private persons, companies, states) with regard to digital data records
- Recognising the extent of the influence of computer science and placing it in its social and historical context

#### **CS3.3 Basic attitudes**

- The desire not just to use computer science resources but also to understand them
- Displaying perseverance, care and creativity in working out solutions
- Planning and acting in a structured way
- Being willing to undertake team and project work as well as to engage in inter-

disciplinary dialogue.

- Critically assessing and questioning computer science solutions
- Developing a personal view of problems of computer science also in respect of basic ethical standards
- Openly responding to new developments in computer science, e. g. wanting to know about new areas of computer science

# Recommended curriculum

## Computer studies

### Lower secondary level, Years 7–9

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Computer Studies 1	<b>Computer Workshop I (Technical foundations)</b>	Electrotechnical foundations of computers; data, files and storage; networks; algorithms and programming in theory and practice	CS1.1 CS1.2 CS1.3 CS1.4
Computer Studies 2	<b>Computer Workshop II (User skills)</b>	Use of current operating systems, directories, logins; use of peripheral devices and touch typing; office applications, email, browser and problem solving	CS2.1 CS2.2 CS2.3

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### Upper secondary level, Year 10–12/13

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Computer Studies 3	<b>Computer science Mandatory subject in some schools</b>	Lessons in accordance with the computer science framework curriculum	CS3.1 CS3.2 CS3.3
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**Curriculum**

# **ICT in subject lessons at upper secondary level**

# Guiding considerations

## **Addressing digital transformation in subject lessons**

Digital transformation affects large sections of society, of professional and private life today. It is changing the occupations and academic disciplines in a sustained way. Digital transformation therefore affects all school subjects, not just the mathematical and scientific ones, but also the cultural disciplines, languages, handwork, the arts, sport and philosophy/ethics. The content and methods for these subjects must be supplemented and adapted, as necessary, in the light of the developments of recent years.

## **Example: teaching digital transformation in history**

In historical scholarship, historical representations are often today based on digital technologies and historical sources are digitally processed. The influence of these technologies on historical representation and interpretation must be taken into account today. Digital technologies also exercise an ever greater influence on historical and political processes such as protest movements or elections, something that should be addressed in history classes as much as, for example, the election propaganda of totalitarian regimes.

Furthermore, the image of history among pupils today is mostly determined to a much greater extent by digital media than through school lessons or books. This can be used as a reason to discuss these representations of history in the lesson and to work on the perspective of historical interpretation. The same applies correspondingly in the other subjects.

It is expected of teachers that they should extend their knowledge of and skills in their subject and its teaching methodology with regard to questions of digital transformation in the same way as is expected of them also with other cross-sectoral topics such as gender equality, inclusion or ecological sustainability. Competence models for teachers such as TPACK describe these additional requirements.

## **The respective goals of the subject being taught are definitive**

This course of action does not fundamentally change the goal of the lessons: specialists in teaching methodology emphasise that although objects and teaching resources should be adapted and extended through ICT, the core of the original educational goals have not changed. Thus history lessons continue to be about developing a “competence in perceiving change over time” or about the “competence to exploit historical sources and accounts”. It is merely the objects and resources with which these goals are achieved that have to be extended and updated.

The deployment of ICT and addressing it in the subject thus arise from the respective goals of the subject being taught. It makes sense for the teacher, in planning the lesson, not just to proceed from the existing curricula but also from the possible future relevance of the subject matter in the further biography of the pupils.

## **How ICT continues to develop in subject teaching**

In the view of education scholars and media education experts, the further development of the subject field of digital media and computer studies will lead in future to the associated competences being acquired also at the lower levels largely through integration in the individual subjects. But here the teachers trained with this in mind,

sufficient experience in schools and a systematic extension of the relevant competences in the subjects are still absent. It must, furthermore, be taken into account that presumably the full extent of the changes in digital transformation relevant for schools will only emerge in the coming decades and that there will continue to be ongoing change. All of this makes it unlikely that lasting, stable, competence-based curricula will come about in this field.

Perspectives for subject lessons at upper secondary level are nevertheless set out here. They are intended to allow for digital transformation to be taken into account now already in existing subject lessons because they are extremely relevant for pupils today and touch on their future working lives. In collaboration with teachers in the respective subjects and with education experts we plan to work out more concrete proposals in the future and update them regularly.

#### Literature

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Bernsen, D and Kerber, U (Eds.) (2017): Praxishandbuch Historisches Lernen und Medienbildung im digitalen Zeitalter. Opladen, Berlin, Toronto.

---

Demantowsky, M and Pallaske, C (Eds.) (2015): Geschichte lernen im digitalen Wandel. Berlin.

---

Gesellschaft für Fachdidaktik e.V. (2018): Fachliche Bildung in der digitalen Welt. Positionspapier der Gesellschaft für Fachdidaktik. [<https://www.fachdidaktik.org>; 30.3.2019].

---

Hattie, J (2015): Lernen sichtbar machen: Überarbeitete deutschsprachige Ausgabe von «Visible Learning». Hohengehren.

---

Herring, M C, Koehler, M J and Mishra, P (Eds.) (2016): Handbook of Technological Pedagogical Content Knowledge (TPACK) for Educators. New York, London.

---

Herzig, B and Grafe, S (2011): Wirkungen digitaler Medien. In: Albers, C et al. (Ed.): Schule in der digitalen Welt: Medienpädagogische Ansätze und Schulforschungsperspektiven. Wiesbaden.

---

Kelly, T M (2013): Teaching History in the Digital Age. Ann Arbor.

---

Niess, M L and Gillow-Wiles, H (Eds.) (2015): Handbook of Research on Teacher Education in the Digital Age. IGI Global.

---

Petko, D (2014): Einführung in die Mediendidaktik: Lehren und Lernen mit digitalen Medien. Weinheim.

---

Petko, D, Honegger, B D and Prasse, D (2018): Digitale Transformation in Bildung und Schule: Facetten, Entwicklungslinien und Herausforderungen für die Lehrerinnen- und Lehrerbildung. In: Beiträge zur Lehrerinnen- und Lehrerbildung, Issue 36.

---

Schmidt, R (2020): ICT-Professionalisierung und ICT-Beliefs, Professionalisierung angehender Lehrpersonen in der digitalen Transformation und ihre berufsbezogenen Überzeugungen über digitale Informations- und Kommunikationstechnologien (ICT). Basel.

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# Recommendations for implementation in the curriculum

## Three dimensions of ICT in subject lessons

ICT should not only possess the role of a learning resource in subject lessons at upper secondary level or illustrate lesson content, but above all it should also serve the educational goals of the respective subject. The relevance of ICT for subject lessons is reflected in three dimensions: as a learning and teaching resource (learning with ICT), as content of the subject (learning about ICT) and as a learning object (learning through ICT). This will be illustrated below using the example of history lessons and applies correspondingly to all subjects.

The diversity of the subject matter set out in the curriculum does not mean that a lot of lesson time need necessarily be spent on it. Rather, it is a matter of providing sample insights which mostly require few classes. At the same time that also frequently allows the teacher to look in a new way at its relevance for previous content with the pupils: for example, a discussion of the dynamics of social exclusion on social media can lead the pupils to understand how these dynamics were also at work in history.

## First dimension: learning with ICT

ICT brings new educational possibilities, some of which extend beyond the possibilities of textbooks, images and films. Research has repeatedly shown that the use of ICT as a learning and teaching resource does not in itself lead to better learning outcomes but that successful learning is dependent on the quality of the educational setting, making learning “visible”, and social interaction. There should also not be any expectation that teaching with the use of digital tools makes lessons permanently more interesting for the pupils. Furthermore, high quality educational teaching settings in a subject with ICT are in the first instance more time-consuming for the teacher – there should therefore no more be an expectation of saving time than of a longer-term motivation boost among the pupils. Learning with ICT (as a learning tool) should be legitimised by an improvement in subject-specific learning or through the achievement of specific educational goals.

## Example: digital maps, smartphones and blogs as a teaching and learning resource

The pupils can acquire historical content from various perspectives using online resources which go beyond the perspective of a textbook. Using collaborative tools, blogs or short films they have made themselves, they can present their learning results to the class or together make a digital “textbook” on the subject. Such an extension of the perspectives on a subject matter also allows reflection on the respective sources of these perspectives.

Digital, multi-tiered historical maps or virtual reality simulations of historical sites allow for additional perspectives on historical content. Smartphone apps can contribute to extending learning at learning locations outside school, for example by the historical exploration of their own town. Some apps allow pupils to create their own historical learning stations.



### **Second dimension: learning about ICT**

Here ICT becomes the topic in its subject dimension. How have computers and information technologies changed the world? Here it is not a matter of completeness but of giving a sample insight into current changes in subject areas and work through ICT.

#### **Example: how computers influenced the Cold War**

In history lessons, the Industrial Revolution and its social and political consequences is a standard topic. In a similar way this can also be done for ICT in that, for example, the influence of ICT on political events with an historical dimension is made apparent: how computers influenced the Cold War, how they are transforming global working conditions, the role which Twitter and Facebook have played in extremism, public protests or elections.

### **Third dimension: learning through ICT**

In this dimension of subject-specific learning, the aim is to make use of popular or socially established ICT uses to address their influence on society, life, politics and people and in this way to contribute to the goals of the respective lessons. Thus the material of popular and cultural uses of ICT among young people can be turned into the object of subject lessons to learn central competences of the respective subject lesson through them.

#### **Example: discussing the issue of the representation of history in computer games**

Computer games with historical references exercise a strong influence on the way pupils see history today. Educational experts in history teaching point out that, for example, the image of the Second World War is more thoroughly shaped by computer games and the perspective, interpretations and values communicated there than by history lessons. They therefore recommend using such games to learn about critiquing sources and the perspectivity of historical interpretation. Even if increasingly historical games and virtual reality simulations are available which have been designed for history lessons, they do not recommend teaching with them but learning through them.

# Competences

## ICT in subject lessons at upper secondary level

For the reasons set out, the general competence requirements for the pupils do not fundamentally change in the individual subjects at upper secondary level. Unfortunately, as described at the beginning, there is still too little experience available for the competence-based supplementation of the subject-related dimension. Hence we do not set out any separate competence goals for the individual subjects here. The formulated requirement relating to competence development remains general for the time being: the aim is to extend teaching methods through the appropriate deployment of ICT and to extend the content by topics of digital transformation, i.e. subject-specific learning with, about and through ICT.

The following proposals and examples will be improved and systematically expanded progressively up to 2023 on the basis of the experiences of subject teachers.

- S The pupils can deploy ICT as a tool for subject-specific learning in the various subjects and acquire an understanding of the role of ICT in the respective subject and/or the underlying disciplines and occupations. The competence goals are determined by the competence goals in the respective subjects.**

# Recommended curriculum ICT in subject lessons at upper secondary level

Upper secondary level, Examples of  
Years 10–12/13

- A. learning with ICT
- B. learning about ICT
- C. learning through ICT

Biology	<ul style="list-style-type: none"> <li>A. Personal learning blog about an ecology excursion</li> <li>B. Computer-assisted methods of DNA analysis, AI simulation of complex ecological systems</li> <li>C. Problems and opportunities of plant identification with apps</li> </ul>
Chemistry	<ul style="list-style-type: none"> <li>A. Visualisation of chemical compounds with interactive 3D models (e. g. ChemPad)</li> <li>B. Chemistry of accumulators</li> <li>C. Relationship between model and reality: creating and reflecting on simulations of reaction processes (e. g. with programs such as Molecular or Workbench)</li> </ul>
Literature	<ul style="list-style-type: none"> <li>A. Preparing a BookTube (review of a book in the form of a short film)</li> <li>B. Specific characteristics, dynamics and problems of online slang and online communication</li> <li>C. Analysis and risks of artificial intelligence in journalism, methods of the digital humanities for textual analysis</li> </ul>
Philosophy/ethics	<ul style="list-style-type: none"> <li>A. Discussion of ethical problems using “Moral Machine” or materials from e. g. “Filosofix”</li> <li>B. Ethical implications of AI applications (such as self-driving vehicles)</li> <li>C. Staging and efficacy of cultural difference on social media</li> </ul>
Eurythmy	<ul style="list-style-type: none"> <li>A./B./C. Qualities and expression of live performance v. digital reproduction of movement, music and poetry</li> </ul>
Foreign languages	<ul style="list-style-type: none"> <li>A. Chats with native speakers</li> <li>B. ICT specialist terminology in the foreign language and slang in digital communication</li> <li>C. Functioning and quality of digital translation tools or language trainers</li> </ul>
History	<ul style="list-style-type: none"> <li>A. Deployment of interactive, multi-tiered historical maps</li> <li>B. The role of social media in public protests</li> <li>C. Analysis of the presentation of Greek antiquity in “Assassin’s Creed”</li> </ul>
Geography	<ul style="list-style-type: none"> <li>A. Preparation of a noise map of the neighbourhood with a smartphone (e. g. with “phyphox” and “OpenMaps”)</li> <li>B. Ecological and social aspects of the mining of rare earths for ICT</li> <li>C. Cartography and geopolitics of GIS (geographical information systems) and GPS and their ecology (incl. satellites)</li> </ul>
Handwork	<ul style="list-style-type: none"> <li>A./C. Preparing personalised patterns via app</li> <li>B. The origin of digital machine control in power looms (Jacquard loom), present-day digital fabric design and production</li> </ul>

Art, visual design	<p>A Design of a graphic or advertising poster with professional graphics software</p> <p>B. Forms of contemporary digital art</p> <p>C. Discussion of current artistic criticism of digitalisation dynamics (e. g. "Mediengruppe Bitnik")</p>
Mathematics	<p>A. Visualisation programs (e. g. "GeoGebra") to visualise parameter changes in equations</p> <p>B. Mathematics of the binary system and the logic of operators</p> <p>C. Coding calculators to solve equations</p>
Music	<p>A. Notation/composition with composition software</p> <p>B. Origins and present-day forms of serious and popular electronic music</p> <p>C. Analysis of AI-generated music (e. g. in the style of Bach) compared to the original</p>
Physics	<p>A. Measurement and analysis of experiments with smartphone sensors (e. g. with "phyphox")</p> <p>B. Physics of wireless technology, screens, memory</p> <p>C. Models of quantum computers, digital control technology with minicomputers ("Arduino")</p>
Political education	<p>A. Deployment of interactive political maps</p> <p>B. The influence of social media on elections, social discrimination through unequal access to ICT resources or social score systems</p> <p>C. Functioning and critique of a voting advice app</p>
Sport	<p>A. Analysis of motion sequences or the course of a match (e. g. with "Hudl", "Kinovea")</p> <p>B. Professional deployment of instruments for performance and fitness measurement</p> <p>C. Issues of digital measuring, recording and storage of training and health data</p>
Crafts	<p>A./B./C. Use and programming of CNC machines for e. g. furniture making; prototyping with and functioning of 3D printers</p>





**Curriculum overview:**  
**Recommendations**  
**by levels**

## Kindergarten, Year 1 and 2

Prevention 1	<b>Media Parents' Evening I</b>	Parents' evening (teacher and/or external experts): age-appropriate media experiences, importance of the development of the imagination and the senses, role model function of adults, shared responsibility between school and parental home	P1-P6	
Media Education 1	<b>Exchanging media experiences</b>	The pupils received the opportunity and professional support so that they can replay their media experiences and discuss them with others in play and in discussion situations.	M 1.1 M 1.2	
Prevention 2	<b>Media Parents' Evening II</b>	Parents' evening (teacher and/or external experts): current technical developments and the approach to them in kindergarten, school and at home	P1-P6	
Media Education 2	<b>Expressing media experiences</b>	The teachers regularly create age-appropriate media experiences and environments and encourage the pupils to express their own experiences creatively through artistic activities. They provide support in the making of own learning media, particularly exercise books/main lesson books.	M 1.1 M 2.1	



## Primary level, Years 3–6

Media Education 3	<b>Media Studies I</b>	In literature or history main lessons the intentions and modes of operation of media in the lifeworld of the pupils are discussed. The importance of media in historical and social processes is worked on with the pupils in relation to their media experiences.	M1.2 M1.3 M1.4
Prevention 3	<b>Media Parents' Evening III</b>	Lecture or seminar events for parents/legal guardians and teachers with external experts: current developments in the field of digital media, current forms of use among young people, risks, forms and signs of addiction, educational implications, the legal situation	P1–P6
Media Education 4	<b>Research and Presentation I</b>	The pupils prepare a report in main lesson and in order to do so learn to undertake research and acquire information in libraries and with online sources. The advantages and disadvantages of various types of sources are debated. The presentation is prepared and discussed afterwards.	M2.1 M2.2
Prevention 4	<b>Intervention I</b>	Intervention of external experts in the classes: risks, basic forms of self-protection, familiarisation with information and advice centres	P3 P4 P6
Prevention 5	<b>In class</b>	Repeatedly taking up media-related subjects in view of events by the class teacher, together with the school's media officer if required	P1 P2 P6

## Lower secondary level, Years 7–9

Media Education 5	<b>Media Studies II</b>	Forms and tasks of journalism as well as media practice and production today are addressed in literature lessons. The effect of advertising and political propaganda is also investigated.	M 1.2 M 1.3 M 1.4
Computer Studies 1	<b>Computer Workshop I</b>	Electrotechnical foundations of computers; data, files and storage; networks; algorithms and programming in theory and practice	CS1.1 CS1.2 CS1.3 CS1.4
Prevention 6	<b>Intervention II</b>	Intervention of external experts in the classes: deepening the education about risks, effective data protection techniques, privacy protection on popular and own devices, the law, school rules	P2 P5
Computer Studies 2	<b>Computer Workshop II</b>	Use of current operating systems, directories, login; use of peripheral devices and touch typing; office applications, email, browser and problem solving	CS2.1 CS2.2 CS2.3
Media Education 6	<b>Media Studies III</b>	In literature lessons the pupils learn to frame and deal with business correspondence, application letters, readers' letters and reports by letter and email. They reflect on netiquette on social media.	M2.1 M2.3 M2.4
Media Education 7	<b>Media Project I</b>	In Media Project I the pupils as a class produce a print product (school newspaper, programme) and in doing so use competences from various subjects such as literature, computer studies, art and arts and crafts (bookbinding and printing technology).	M 1.3 M2.1 M2.2
Media Education 8	<b>Research and Presentation II</b>	The pupils give a lecture to parents about a project they have undertaken themselves (project for the year, biography work). As part of main lesson they are given instruction about researching sources and material. They acquire the corresponding tools and performance skills for the presentation.	M2.1 M2.2 M2.3

## Upper secondary level, Years 10–12/13

ICT in subject lessons	<b>ICT in subject lessons</b>	Integrated in all subjects: ICT as a learning and teaching resource (learning with ICT), as a subject-related topic (learning about ICT) and as a learning object (learning through ICT)	S
Media Education 9	<b>Media Project II</b>	In Media Project II the pupils produce a media contribution on a subject (e.g. radio feature, blog, short film), individually or in small groups, embedded in a subject lesson. The emphasis is on independent execution, from planning through to technical realisation and performance/broadcast, under specialist guidance.	M 1.4 M 2.1 M 2.2 M 2.3
Computer Studies 3	<b>Computer science</b> mandatory subject in some schools	Teaching in accordance with computer science framework curriculum for schools offering upper secondary education	CS3.1 CS3.2 CS3.3
Media Education 10	<b>Research and Presentation III</b>	The pupils give a lecture in front of the general (school) public in which they present the results of their work in their project for the year. Both for the preparation of the written work as well as for the presentation, they acquire, in the context of the subject lesson, competences in academic research, the professional preparation of documents and presentations, as well as in performance.	M2.1 M2.2 M2.3



**Annex:**

**The Coverage  
of the European  
Digital Competence  
Framework for  
Citizens – DigComp**

# Comparison Steiner Waldorf Curriculum to DigComp Framework

Curriculum Steiner Waldorf School

Modules  
Recommended  
Curriculum  
Steiner Waldorf  
School

Reference  
DigComp  
competen-  
ces

<b>P Prevention</b> <b>The pupils know the law, opportunities, risks and values in using ICT in their lifeworld and can observe them. They acquire knowledge and skills which contribute to protecting them against risks from digital media.</b>			
P1	The pupils know the rules of etiquette in digital communication (netiquette) and are aware of the possible effects of their actions on others.	Prevention 1	2.5
		Prevention 2	4.3
		Prevention 3	
		Prevention 5	
P2	The pupils know which actions are permitted and prohibited and can judge the consequences of their actions. They understand clearly that actions in the digital space are subject to the law and have real consequences. They know the law.	Prevention 1	3.3
		Prevention 2	4.2
		Prevention 3	
		Prevention 6	
P3	The pupils know problematic and illegal behaviours such as cyber-bullying, sextortion, illegal file sharing, addictive behaviour and can recognise and name them.	Prevention 1	4.3
		Prevention 2	
		Prevention 3	
		Prevention 4	
		Prevention 5	
P4	The pupils know basic forms of self-protection (e.g. not going to meet anyone they've met online, not sharing nude photos or private information).	Prevention 1	2.6
		Prevention 2	4.1
		Prevention 3	4.3
		Prevention 4	
		Prevention 6	
P5	The pupils know how they can protect their privacy in the digital space and know effective techniques to protect their own data on their own devices.	Prevention 1	2.6
		Prevention 2	4.1
		Prevention 3	4.2
		Prevention 6	
P6	The pupils know where they can find appropriate help for themselves or their fellow pupils (trusted persons, external agencies and mandated teachers).	Prevention 1	4.3
		Prevention 2	5.4
		Prevention 3	
		Prevention 4	
		Prevention 5	

<b>M Media Education</b>			
<b>The pupils can find their way around the media lifeworld, know about the many different analogue and digital media and can use them on their own and in a group for learning and to create things. They can express themselves through media contributions, present them in front of an audience, in doing so judge their effect on others, and take account of social and legal dimensions.</b>			
<b>M1 Finding their way around the media lifeworld</b>			
M1.1	The pupils can find their way around the direct material and social environment. They can distinguish direct experiences with and in this environment from fantasy experiences, stories, tales and media experiences (books, radio drama, films, games, etc.), can pick up direct and media experiences in play and discuss them with others.	Media Education 1 Media Education 2	1.2
M1.2	The pupils know the various media in their lifeworld such as books, phones, television, newspapers, letters, smartphones and computers, can name them and understand their meaning. They can name the advantages and disadvantages of direct and media communication and justify their personal choice of the media used.	Media Education 1 Media Education 3 Media Education 5	1.2 3.2
M1.3	The pupils can distinguish between various content of these media (information, advertising, entertainment, news, arrangements, education) and reflect on their various effects (thoughts, feelings, messages). They can assess the intentions behind media contributions (e. g. advertising, political influencing).	Media Education 3 Media Education 5 Media Education 7	1.2 3.2
M1.4	The pupils know the importance of the media with regard to culture, the economy and politics as well as their tasks (e. g. creating the conditions for democratic participation) and their problems (media manipulation, ecology, social inequality). They know about the forms of organisation and financing of local, regional and global media. They know about the opportunities and risks of the increasing penetration of our everyday lives with information technology (e. g. automation, changing world of work, globalisation, unequal opportunities in access to information and technology).	Media Education 3 Media Education 5 Media Education 9	2.3 4.3 4.4
<b>M2 Learning and creating with media</b>			
M2.1	The pupils turn their own thoughts, experiences, artistic impulses and knowledge into media contributions of various types alone and in group work (e. g. booklet design in text and image, games, artistic expression in painting, singing, dance, eurhythm and music, photography, film, lecture presentation, theatre performance, school newspaper, blog, social media channel) and present them in front of an audience.	Media Education 2 Media Education 4 Media Education 6 Media Education 7 Media Education 8 Media Education 9 Media Education 10	2.1 2.2 2.4 3.1 3.2 5.2 5.3
M2.2	The pupils can independently acquire, select and judge with regard to quality and usefulness information from various sources (e. g. books, magazines, learning sheets, play, websites, library, online resources). They can deploy this information, citing the sources, in the preparation and presentation of their work (e. g. exercise book entry, report, lecture, school newspaper, class blog, radio drama, video clip).	Media Education 4 Media Education 7 Media Education 8 Media Education 9 Media Education 10	1.2 2.1 2.2 2.4 3.1 3.2 5.2 5.3

M2.3	The pupils can assess the effect of their own media contributions, take this into account accordingly in producing them and in doing so comply with the law, rules and value systems.	Media Education 6	1.2
		Media Education 8	2.1
		Media Education 9	2.3
		Media Education 10	2.4
			2.5
			5.3
M2.4	The pupils can prepare and deal with business correspondence, application letters, readers' letters and reports by letter and email, present themselves adequately, express themselves and observe netiquette.	Media Education 6	2.1
			2.2
			3.1
			3.2
			5.3

**CS Computer Studies**  
**The pupils can understand the technical foundations of current digital information and communication technologies and use them efficiently in their everyday activities, in school and in view of their subsequent world of work.**

**CS1 Understanding the technical foundations**

CS1.1	The pupils can follow the technical and mathematical foundations of automated information processing and know the components of a computer and their functions. They have an understanding of the performance units of digital devices in their lifeworld and can assess their relevance for how they want to use them (e. g. storage capacity, resolution, computing power, data transmission rate).	Computer Studies 1	1.1
			1.3
CS1.2	The pupils know analogue and digital representations of data (text, number, image and sound) and can follow the conversion of images, texts and sounds to digital data and the reverse process. They know methods of storing and organising data (tables, databases) as well as common forms of data transmission (wired and common wireless technologies). They can reliably distinguish between different types of storage (e. g. hard disks, flash memory) and storage locations (local devices, local network, cloud) for private and public data and know their advantages and disadvantages. They are familiar with the basics of data backup (copying, backing up and versioning) and can effectively protect themselves against data loss.	Computer Studies 1	1.1
			1.3
			4.1
			4.2
CS1.3	The pupils know the structure and functioning of computer networks in local, regional and global structures. They can distinguish the Internet as infrastructure from its services (e. g. WWW, email, Internet telephony, social networks) and understand the way that search engines fundamentally work.	Computer Studies 1	1.1
			1.3
CS1.4	The pupils can transform tasks into simple algorithms (e. g. instructions, directions, mathematical solution path, sorting objects). They can analyse such problems, describe possible solution processes through logical operators, conditions, loops, variables, etc. and implement them in simple, programs they have written themselves. They fundamentally understand the functioning of programming languages as well as the structure of software and algorithms.	Computer Studies 1	3.4



<b>CS2</b>	<b>User skills for learning and work</b>		
CS2.1	The pupils can switch a PC on and off, organise open windows as well as opening, minimising and closing applications and handling their menu structures. They can reliably distinguish between the operating system, applications, documents and file formats. They can log on to a local network or the learning environment of the school with their login. They can navigate a folder structure, set up their own folder structure, copy move and store documents in it in such a way that others can also find them again.	Computer Studies 2	1.1 1.3 2.3
CS2.2	The pupils can reliably operate a keyboard, touchscreen and mouse of a PC and laptop and, if available, a whiteboard, projector and presentation remote in the classroom. They can touch type at a sufficient speed.	Computer Studies 2	2.1 2.2 2.3 2.4 5.3
CS2.3	The pupils can reliably use office applications for writing, spreadsheets, presentations and Internet research for school learning (reports, project work, media projects) and for basic work activities (application letters, business correspondence, email, budgets, presentations). When there are problems with devices and programs, they can apply the appropriate solution strategies (e. g. Help function, research, tutorials).	Computer Studies 2	2.1 2.2 2.3 2.4 5.1 5.3 5.4

## **S ICT in Subject Lessons**

**The pupils can deploy ICT as a tool for subject-specific learning in the various subjects and acquire an understanding of the role of ICT in the respective subject and/or the underlying disciplines and occupations. The competence goals are determined by the competence goals in the respective subjects**

# Comparison DigComp to Steiner Waldorf Curriculum

Competences  
DigComp

Reference  
Curriculum Steiner  
Waldorf School

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## 1. Information and data literacy

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1.1	Browsing, searching and filtering data, information and digital content	CS 1.1 CS 1.2
	To articulate information needs, to search for data, information and content in digital environments, to access them and to navigate between them. To create and update personal search strategies.	CS 1.3 CS 2.1

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1.2	Evaluating data, information and digital content	M 1.1 M 1.2
	To analyse, compare and critically evaluate the credibility and reliability of sources of data, information and digital content. To analyse, interpret and critically evaluate the data, information and digital content.	M 1.3 M 2.2 M 2.3

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1.3	Managing data, information and digital content	CS 1.1 CS 1.2
	To organise, store and retrieve data, information and content in digital environments. To organise and process them in a structured environment.	CS 1.3 CS 2.1

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## 2. Communication and collaboration

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2.1	Interacting through digital technologies	M 2.1 M 2.2
	To interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.	M 2.3 M 2.4 CS 2.2 CS 2.3

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2.2	Sharing through digital technologies	M 2.1 M 2.2
	To share data, information and digital content with others through appropriate digital technologies. To act as an intermediary, to know about referencing and attribution practices.	M 2.4 CS 2.2 CS 2.3

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2.3	Engaging in citizenship through digital technologies	M 1.4 M 2.3
	To participate in society through the use of public and private digital services. To seek opportunities for self-empowerment and for participatory citizenship through appropriate digital technologies.	M 2.4 CS 2.1 CS 2.2 CS 2.3

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2.4	Collaborating through digital technologies	M 2.1 M 2.2 M 2.3 CS 2.2 CS 2.3
	To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of resources and knowledge.	
2.5	Netiquette	P 1 M 2.3
	To be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.	
2.6	Managing digital identity	P 4 P 5
	To create and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments and services.	
<b>3. Digital content creation</b>		
3.1	Developing digital content	M 2.1 M 2.2 M 2.4
	To create and edit digital content in different formats, to express oneself through digital means.	
3.2	Integrating and re-elaborating digital content	M 1.2 M 1.3 M 2.1 M 2.2 M 2.4
	To modify, refine, improve and integrate information and content into an existing body of knowledge to create new, original and relevant content and knowledge.	
3.3	Copyright and licences	P 2
	To understand how copyright and licences apply to data, information and digital content.	
3.4	Programming	CS 1.4
	To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.	
<b>4. Safety</b>		
4.1	Protecting devices	P 4 P 5 CS 1.2
	To protect devices and digital content, and to understand risks and threats in digital environments. To know about safety and security measures and to have due regard to reliability and privacy.	
4.2	Protecting personal data and privacy	P 2 P 5 CS 1.2
	To protect personal data and privacy in digital environments. To understand how to use and share personally identifiable information while being able to protect oneself and others from damages. To understand that digital services use a "Privacy policy" to inform how personal data is used.	

4.3	Protecting health and well-being	P 1 P 3 P 4 P 6 M 1.4
	To be able to avoid health-risks and threats to physical and psychological well-being while using digital technologies. To be able to protect oneself and others from possible dangers in digital environments (e. g. cyber bullying). To be aware of digital technologies for social well-being and social inclusion.	
4.4	Protecting the environment	M 1.4 S
	To be aware of the environmental impact of digital technologies and their use.	
<b>5. Problem solving</b>		
5.1	Solving technical problems	CS 2.3
	To identify technical problems when operating devices and using digital environments, and to solve them (from trouble-shooting to solving more complex problems).	
5.2	Identifying needs and technological responses	M 2.1 M 2.2
	To assess needs and to identify, evaluate, select and use digital tools and possible technological responses to solve them. To adjust and customise digital environments to personal needs (e. g. accessibility).	
5.3	Creatively using digital technologies	M 2.1 M 2.2 M 2.3 M 2.4 CS 2.2 CS 2.3
	To use digital tools and technologies to create knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.	
5.4	Identifying digital competence gaps	P 6 CS 2.3
	To understand where one's own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.	







ISBN 9789464360905

