

Families and Digital Media

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Introduction

"Raising children is an uncertain thing; success is reached only after a life of battle and worry."

Democritus

Every generation of parents will find the time in which they raise their children the most difficult and challenging of all. Many parents feel overwhelmed by the dynamics of the digital transformation and do not feel able to adequately accompany their children in this process. However, technical innovations and social change have always existed, and all generations found a way to adapt to the new circumstances. However, the speed of change is new. Whereas parents used to have time to learn things themselves and make their own experiences before passing them on to their children, many things in today's family life are new to them too.

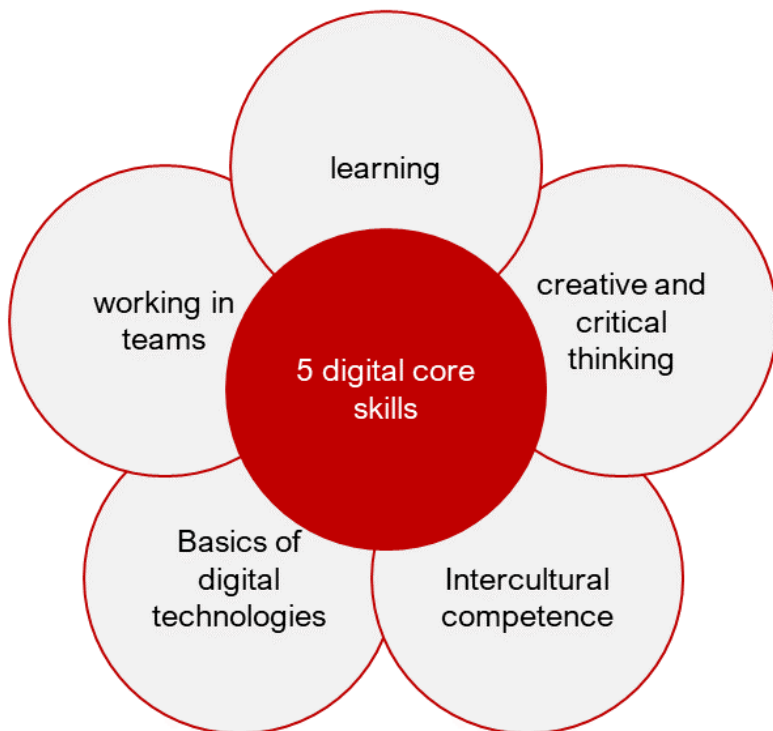
In this module, we will give parents the necessary basics for accompanying their kids well in the digital world. We will address future challenges in the area of media and digital competence of coming generations and how to accompany the use of digital media in everyday family life.



Part 1: Introducing Children to Digital Skills

"I want a better life for my child." - For a long time, this was the answer parents gave when asked what they wanted for their children's future. After the destruction of the wars in the 20th century, many people lived at subsistence level, with physical and mental injuries, in a completely devastated environment. Today, the majority of people in Europe live a life without elementary threats on a normal to upper standard. Thus, striving for "a better life" today means striving for a higher standard of living. But as we know a high standard of living comes at the expense of environmental and social costs. So, what do parents make the goal of their education today?

The digital transformation will find its way into more and more areas of life, and the professional world will continue to change as a result. Some professions will disappear, others will emerge. Anyone who wants to give their children a good start into their professional career should prepare them for these dynamics. Various disciplines have looked at what skills future generations will need to find their way in this new world. One model they developed is the 5 digital core competencies. The structure of the first part of this module is based on these core competencies.



5 digital core competencies (after Skoyo, 2020)

Part 2: Accompanying Children Using Digital Media

Although changing life circumstances have shaped the situation of many generations of parents, the digital transformation is confronting them with a new speed of change. In the past, parents could still seek advice from their parents on parenting issues, but today they face challenges that were not there before. In addition, there is a reversal of the knowledge advantage: Children and young people today usually understand new technologies before their parents do. This makes it difficult for parents to support and advise them. The second chapter of this module therefore deals with the basics of digital media usage and makes parents familiar with methods on how to support their children in this use. Some basic methods can be applied to all areas:

Einige Grundlagen ziehen sich dabei durch alle Bereiche:

- **Understanding technology before giving children access:** The question "When is my child ready to have his or her own smartphone?" should actually be "Am I, as a parent, ready to adequately guide my child with his or her smartphone?" It is imperative that parents are informed about risks and technical possibilities before allowing children access to digital media.
- **Understanding fascination of digital media:** Understanding the fascination of the digital world for children and young people makes it easier to talk to them about responsible usage and to establish rules for media usage in everyday life. Digital products address basic human needs, such as social contacts and recognition, which are particularly important for adolescents. Playing computer games together with kids offers good opportunities to talk to children and to build up a basis of trust. It also can be a strengthening experience for children to explain things to their parents where they are the experts.
- **Assessing risks:** In order to accompany their children well in the usage of digital media, parents must be able to assess risks. Many parents are unaware of risks and are therefore unable to protect their children from them.
- **Being a good role model:** Parents are a role model for their children, whether it is consciously or unconsciously. When it comes to using digital media and services, parents should therefore set a good example and comply with the things they expect of their children themselves. Basic rules on the use of digital devices should therefore apply to the entire family.
- **Finding the balance between control and independent use:** The goal of raising children is to enable them to lead an independent life. Parents find themselves in a continuous balancing act between guidance and granting children the freedom to try out things on their own. This balance must also be found in the digital world.
- **Every child is different:** Age ratings for movies, apps and software suggest that all children of the same age have the same maturity level. This is not the case. Every child develops differently and has their own needs. Parents must therefore decide which digital offerings are suitable for their child.
- **There is no 100% control:** No matter how much parents inform themselves and make efforts for securing their digital devices, there is no 100% guarantee

that children will not come into contact with content that is not suitable for them. The most important safeguard is therefore the support of parents. Children should not go online without them.

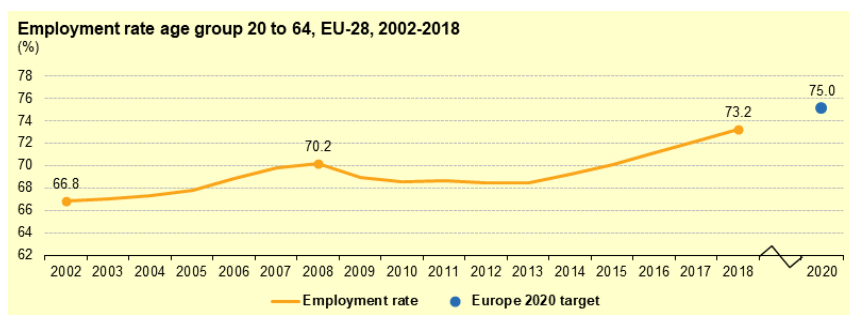
In the second part of this module, parents are taught the basics of the following topics:

- Age-appropriate media usage
- Online risks for children and young people
- Data protection and privacy
- Protection from sexual assault
- Learning how to use chats
- Learning how to use social media
- Learning how to use gaming



1. Introducing Children to Digital Skills

Parents play an important role, assisting their children in their education and career choices. It is therefore important for them to understand the new requirements that will result from the digital transformation in the future world of labour and business. With the term “digital revolution” we describe a process where digital technologies are finding their way into almost all areas of life. The world of labour and business will change massively as a result of this development. There is hardly any profession today that can do without digital aids. Often, large parts of the operational processes have already been digitised. Many people are afraid that they will lose their jobs in the course of this development but a lot of studies conclude that the need for employment will remain the same or will even rise. The employment rate in the European Union over the past 20 years shows this development.



Source: Eurostat (online data code: t2020_10)



Employment Rate EU 2002-2019, age 20-64 (Eurostat, 2020)

Introduce children to digital skills		
He / She knows the basic digital skills and is able to introduce children to the 5 core digital skills in a playful way, individually or in groups.		
Knowledge	Skills	Competence
He/she knows <ul style="list-style-type: none"> The effects of digital transformation on the future world of labour and business The digital core competencies Areas of application in everyday life and exercises suitable for children to train core competencies Software and tools for training the core competencies 	He/she can <ul style="list-style-type: none"> Set up and guide learning software and tools 	He/she is able to <ul style="list-style-type: none"> Introduce children to the 5 digital core competencies in a playful way in everyday life Select exercises based on children's prior knowledge Guide children individually or in groups in exercises and to give age-appropriate feedback

Job Profiles are Changing

The digital transformation will not destroy jobs, but the areas of work will shift (e.g. Zika, 2018). However, every major advance in history has brought about this change. The fear of losing jobs due to technological progress is not new either. For example, when refrigerators became affordable for private households in the 1960s, the profession of "iceman" disappeared. Until then, the iceman delivered sticks of ice that were used to cool food. Instead of the ice man's profession, however, many new jobs were created in the development, manufacturing and sale of refrigerators. In the same way, the digital transformation will also create new professions (Hansen, 2018).



Delivery of ice blocks in the 1930ies (Nationaal Archief, 1939)

Especially in areas where activities can be automated and mapped by digital systems, digital solutions can replace human labour (Frey, Osbourne, 2013). This includes:

- **Low-skilled jobs**, e.g. Warehousing and delivery activities, sorting work (since these are easy to automate)
- **Manufacturing professions** (as automation technology continues to improve and can also take on more complex manufacturing processes)
- **Transportation** (through autonomous transportation options and automation of planning)
- **Iterative office activities**, such as payroll, clerk, finance and taxation (as they can also be automated)
- **Activities that can be mapped using algorithms** (tax advisors, lawyers, judges, insurance brokers)

Most of the new professions that will emerge will require higher qualifications. Even today some jobs were not known a few years ago, examples include drone pilots, BIM managers (Building Information Modeling Manager - administrators of smart home systems) or specialists for data (data engineers, data strategists, data scientists) (Vogels, 2018). There are also new professions in areas that involve people's wellbeing, like "Feel Good Managers" who take care of the well-being of the workforce in com-

panies (Geiger, 2019).

Many of today's schoolchildren will take up a profession that currently does not even exist. So how can you prepare children today for their career choice and their later activities?

What Competencies Will be Required?

While in the past repetition of work steps made you an experienced worker, in the future the ability to adapt to new things will be what makes you an expert. This change might be particularly challenging for employees who value a stable work environment without the need for vast changes. Future generations of employees will grow into this dynamic work environment so there is no need to mentally adapt to a new situation.

So far, these skills have been trained in school to different degrees. While in some places, self-organized learning and social skills are already being promoted, there are still schools that stick to traditional models of teaching, like direct instructions, which prepares children poorly for the new challenges. In order to be well prepared, families should therefore give their children additional occasions to develop the necessary skills.

What skills will children need in the future? A team of educational researchers has identified the following competencies that prepare children for the challenges of the digital transformation (Nickel, 2016):

- **Ability to cope with changes** (accepting change as a necessary part of work)
- **Social skills on digital communication channels** (to be able to work together in distributed teams)
- **Media literacy** (to use digital media tools)
- **Analytical competence** (to be able to process large amount of information and to understand increasingly complex processes)
- **Self-organization** (to be able to work in mobile work environments without direct instruction or supervision)

Five core digital competencies for children can be derived from these overarching requirements (Scoyo, 2020).

- Teamwork
- Lifelong learning
- Creative thinking
- Intercultural competences
- Basic knowledge of digital technologies

We will go into the details of these core competencies in the following sections. There are also tips on how parents can playfully practise these skills with children. The exercises are based on the neuro-mechanisms defined by Vera Birkenbihl, which enable “brain-friendly” learning for different learning types (Birkenbihl, 2017, p. 27). With gamified learning, an optimum environment is created for the acquisition of new skills and knowledge. In this context, the book “Elternnachhilfe” (“Private Lessons for Parents”) by Vera Birkenbihl is highly recommended for parents, as it clearly and concisely describes how to optimally support children in their learning (Birkenbihl, 2019).



1.1. Working in Teams

Killing a mammoth, clearing a forest, defending against attackers - people carried out tasks in teams throughout all ages of history. The specialization of work started in the Middle Ages and made people increasingly alone. For several decades, however, teamwork has found its way back into the working world. In the course of digitization new huge tasks with increasing complexity require the joint work of a team. Children can practice teamwork already when playing together.

1.1.1 How Teamwork Developed

Throughout human history, teamwork has always played a major role. In communities, people did tasks together that one individual could not have done alone. Hunting in the Stone Age, heavy work in agriculture, and activities such as building houses or stables. All of these tasks were too difficult or too extensive to be done by one person alone (Hofert, 2015).



Jagd in der Gruppe. Jungsteinzeitliche Höhlenmalerei Algerien (Gruban, 2006)

Beginning in the Middle Ages people started to specialize in their professions. With the use of new tools and equipment, workflows have become increasingly demanding. Anyone who was trained in using the tools and knew the processes well developed into an expert in his field. From this specialization, professions developed that can still be found today, especially in handicrafts.

In the course of industrialization in the 18th century, the range of individual tasks was heavily reduced. The work of many people was reduced to a single operation on a machine in order to increase productivity. The monotonous work and the poor working conditions led to high physical and mental stress. Until today, such working conditions can be found in industrial production all over the world.

The flattening growth in industrial production in the 1970s and the emergence of new industries in electronics and IT resulted in improved production conditions. In the 1990s, for example, the automotive industry introduced a concept that replaced the monotonous assembly line work. Instead, production teams have been installed,

responsible for assembling entire components of a car. Employees regularly switch tasks and stations within their team (Hachtmann / von Saldern, 2009).

1.1.2 Teamwork in 20th Century Information Technology

In the second half of the 20th century, information technology replaced the previously dominant branches of industry. While the production methods were still quite similar in the early years, the increasing complexity and the spread of software components meant that the majority of efforts went into the development of new products and no longer into the production.

Development departments had a different way of working together. Due to the high level of complexity, products could only be developed in teams of specialists: hardware and software developers, people responsible for the infrastructure, database developers and a large number of staff in the areas of service, marketing, sales and project management. With the increasing number of actors, networking and exchange among each other gained in importance.

1.1.3 Why Teamwork is Becoming More and More Important

The benefit of teamwork reaches far beyond simply sharing tasks. Groups can achieve higher quality results and working together can lead to greater satisfaction for individual members. Edmond Lau summarizes the advantages of teamwork (Lau, 2013):

- **Feedback:** Who gets feedback can improve his work continuously. Results will improve, too.
- **Learning effect:** In teams, people benefit from the knowledge of others.
- **Reliability:** Projects that are developed in a team are more robust against failures because all members can complement each other.
- **Responsibility:** Being part of a team can increase the feeling of responsibility, not leaving others behind in the project.
- **Acceleration:** Team members can help each other. Working in a team gives people the feeling that they are making faster progress.
- **Mutual motivation and creativity:** Problems can be easier solved in a team. Groups come up with more creative solutions.
- **Celebrating success together:** Celebrating in a group reinforces all positive effects.

In agile software development, interdisciplinary teams work in short cycles of 2-4 weeks (so-called “sprints”), in which functional units are planned and implemented. Much of the responsibility rests with the team, who at the beginning of a cycle determine which functions they will implement. There are short, daily meetings (so-called “dailies” or “stand-ups”) in which the team members exchange information about upcoming tasks and obstacles. As a result, the whole team is continuously informed about the current status and problems can be identified early (Barnes, 2015).

For reasons of cost and efficiency, it is now common in many industries to put together teams from internationally distributed locations. This leads to additional challenges, which are discussed in more detail in Chapter 1.4 “Training intercultural skills”.

1.2.4 Training Teamwork Playfully

Children naturally learn teamwork when playing together in a group. If you watch children play, you will see that they are faced with similar challenges as in their later work environment:

- **Setting goals:** What do we play?
- **Methods:** How do we play?
- **Team building:** Who is playing with whom or what?
- **Negotiating compromises and conflicts:** I don't want to do that.

Playing in groups does not always run smoothly. Some conflicts will arise later as well in professional groups:

- Different views on how to solve a task – "But I want us to do it as we did last week."
- Questioning the goal – "I want to play something else."
- Questioning the decision-maker – "You are not the one to decide!"
- Role distribution problems "But I don't want to be the baby."
- Frustration when something doesn't work – "I don't feel like it anymore!"
- Communication difficulties: misunderstandings, blame, shouting, insults – "You're stupid", "You broke it", "You can't do it."
- Individuals or several separate themselves in a team – "Then I won't play anymore."

These situations prepare children for behavioural patterns that they will have to deal with later in their professional lives. In kindergarten and school, such situations should be used to analyse conflicts in the group and to learn about methods of how to solve such conflicts.

Video games, social media and chat groups are also a good place for children and young people to practice their teamwork skills. Young children should not be left alone interacting on these channels. Parents should always accompany them in order to monitor who they are talking with and assist in solving conflicts if necessary.

1.1.5 Team "Family"

In the past, children had more opportunities to practice teamwork because they grew up in larger families and played with many other children on the street. In the last few decades, these opportunities have become fewer and fewer. An increasing number of children is growing up without siblings, and families often live far apart. Playing on the street is also becoming less and less common because children are often involved in leisure or further training programs after school. Parents should therefore give children as many opportunities as possible to do things together with other children, e.g. in sports clubs, toddler groups or in religious communities.

Parents can assist their children in three ways (Deutscher Kinderschutzbund e.V., 2011, p.6):

- Leave room in the daily routines for playing together with other children.
- Support children when they cannot solve problems in the group on their own.
- Setting a good example yourself.

The following skills can be playfully incorporated into everyday situations.

Communication: Communication within the family shapes the way children communicate with people outside the family. Parents should therefore exemplify good communication in everyday family life. Some suggestions for parents on what constitutes good communication can be found in the guide from the Australian children's helpline "Kids Helpline".

Lesetipp für Eltern:

- Communication Tips (Kids helpline) <https://kidshelpline.com.au/parents/issues/communication-tips>

Anekdote: "Wir hatten den 5-jährigen Freund unseres Kindes mit im Auto. Auf einmal ging es an einer Kreuzung nicht weiter, weil ein Auto den Weg versperrte. Tönt es plötzlich vom Rücksitz: 'Dem muss wohl mal jemand zeigen, wo das Gaspedal ist!'. Ich fragte: 'Sagt das immer der Papa, wenn er Auto fährt?'. Der Junge meinte: 'Nein, die Mama, die schimpft immer ganz doll beim Autofahren.'"

Willingness to compromise: To make a compromise means to make concessions in order to reach an agreement with another person or a group. It may afford people to adjust their opinions, correct positions or adapt personal goals. We must be clear about the areas in which we want to make concessions and which positions are non-negotiable because they touch our personal values and principles. Parents can teach children important basics in everyday situations by clearly distinguishing in which areas they allow compromises (e.g. staying up late because school starts later the next day) and which principles they do not deviate from (e.g. don't lie, don't steal).

Reading Tip for Parents:

- The art of compromise (Family Times) <http://www.familytimes.co.nz/kids-compromise/>

Frustration tolerance: Frustration can arise from disappointed expectations, unmatched goals or unfulfilled wishes. The way and extent to which people react to frustration vary widely. Some people express their frustration by being angry or aggressive with others. Others tend to direct the frustration at themselves and are disappointed, bitter, demotivated, or even depressed.

Games help children to practice losing without a real loss (the game "Don't get angry" even has this in its title). Children learn this principle in video games too.

Talking to children about feelings enables them to deal with feelings and to find strategies for dealing especially with negative feelings or problems (e.g. "Why do I feel so bad at the moment?", "What are the effects of my behaviour?"). Children should also experience situations in which their wishes are not immediately fulfilled to train their patience (e.g. waiting for a present for Christmas).

Reading Tip for Parents:

- How to Help Your Child Manage Frustration (PBS for parents) <https://www.pbs.org/parents/thrive/how-to-teach-frustration-tolerance-to-kids>
- Dealing with mistakes and failures - mastering failures (mit-Kindern-lernen.ch) <https://www.mit-kindern-lernen.ch/lernen-kinder/mit-fehlern-und-misserfolgen-richtig-umgehen/142-misserfolge-meistern>



Practice defeats playfully (pixabay / 2396521, 2017)

Confidence and responsibility: Being responsible for something means accepting the obligation to take good care of something and to stand in for the possible consequences. It's not just about taking on a task but developing a motivation to do things right.

Even preschool children can be involved in simple tasks at home so they can experience what it feels to influence things (self-efficacy). Even if it takes longer when children are helping in the kitchen, tidying up their room or working in the garden, it is a valuable exercise to develop their self-confidence. Without self-confidence, they will not be able to take over responsibility.

Little by little, children can not only take on tasks but also take over responsibility for simple things and also learn what it means if responsibilities are not fulfilled. A simple exercise is to let them prepare the things they need for kindergarten or school on their own. Taking care of a plant, or later a pet, are the really big responsibilities children can assume. For parents, it is most important to see when a child is ready to take over responsibility without overwhelming them. When parents give responsibility to children it is a sign of trust into their abilities. Vice versa children learn how and when to trust others. (Juil & Jensen, 2004, p. 112 ff).

Reading Tip for Parents:

- 9 tips for teaching kids responsibility (care.com): <https://www.care.com/c/stories/5219/9-tips-for-teaching-kids-responsibility/>
- Wie viel Eigenverantwortung soll das Kind übernehmen? <https://blog.ta-gesanzeiger.ch/mamablog/index.php/83434/wie-viel-eigenverantwortung-soll-das-kind-uebernehmen/>



Taking over responsibility for pets (pixabay / Westfale, 2017)

Respectful interaction: Respect means that you approach other people with appreciation and respect. Courtesy, fairness and tolerance are among the characteristics that define a respectful approach. In contrast, disdain, condescension, humiliation, disregard, insults, and abuse are signs of disrespectful behaviour.

The term “respect” is used heavily in everyday language. People often do not question who or why someone is being respected. Often the reasons are monetary (respect FOR someone who earns a lot) or physical superiority (respect for someone who is stronger). Respect is closely linked to the question of values. Parents, consciously and unconsciously, pass on values to their children and thus determine who their children treat respectfully and who not.

These values become transparent when we are dealing with other people. Parents are an important role model here: How do I talk about my colleagues? Who do I treat respectfully? How do I communicate on social media (Köster, 2009)?

Reading Tip for Parents:

- Respectful children arise from a respectful upbringing <https://bessergesundleben.de/respektvolle-kinder-entstehen-aus-respektvoller-erziehung/>

1.2. Learning

By the middle of the 17th century, human knowledge doubled roughly every 100 years - in slow motion, compared to today's speed. Back then humans could keep up with the development of knowledge. Since the end of the 20th century, the production of knowledge has accelerated so rapidly that we talk about a "knowledge explosion". Knowledge now approximately doubles every 5 years (<https://de.wikipedia.org/wiki/Informationsexplosion>). It is no longer possible to acquire all new knowledge. Luckily at the same time, we have received many new tools that we can use to access all the information and knowledge that is stored worldwide. With a smartphone and Internet access, we have an endless library in our pocket.

This has a huge impact on today's learning. For many decades the school system in Europe was designed to put small portions of knowledge and skills into children. Today we are facing a new challenge. The amount of knowledge is so big that it can no longer be completely processed by a single person. It therefore becomes more important to learn about context and to acquire special knowledge on demand. Information technology plays an important role here.

How the Knowledge Explosion Changes Learning in School and at Work

With the accelerated development of new knowledge, researchers figured out early that learning at schools would have to change, too. At the end of the 1990s, there was already a large number of scientific papers dealing with how teaching should be redesigned with regard to this new situation.

"Looking especially at the flood of information, [...] flexibly applicable basic knowledge as well as contextual and orientation knowledge are becoming increasingly important." (Reinmann-Rothmeier & Mandl, 1997).

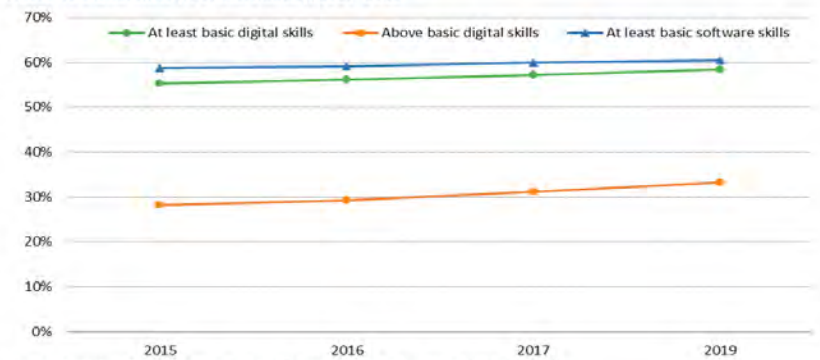
School must become a place where people work **cooperatively, actively, independently and constructively** to cope with the complexity of the tasks ahead. In 2000, the EU gave impetus to address these requirements all across the EU. The "Memorandum on Lifelong Learning" defined the following key points (EU, 2000):

- Giving people comprehensive and constant access to learning.
- Significantly increase investment in human resources.
- Developing effective teaching and learning methods.
- Improving methods for evaluating participation and success in learning, especially non-formal and informal learning.
- Better access to high-quality information and advice on learning opportunities.
- Creation of opportunities for lifelong learning close to the learners and, if necessary, the use of digital technologies.

AI has become indispensable in professional life to acquire new knowledge. It is no longer enough to learn a profession at a young age and retire with this knowledge. Instead, the continuous development of personal skills is required (Nuissl & Przybylska, 2014).

Although this situation is known for over 20 years now, not much has changed in the educational system in many countries. A key figure to indicate this is the only slowly growing digital competence in the EU countries.

Figure 46 Digital skills (% of individuals), 2015–2019⁽²⁵⁾



Source: Eurostat, Community survey on ICT usage in Households and by Individuals.

Entwicklung digitaler Kompetenzen EU 2015-2020 (EU, 2020)

However, school is not the only place where children can learn. A lot of skills can also be developed at home or with friends. Above all, children and young people must get a realistic assessment of how important learning will be for their later lives. Many people still believe that after school and vocational training, learning comes to an end.

Parents should talk about their professional environment and give their children examples where they still need to continue learning. Internships in companies can also help young people to understand the importance of learning. Ideally, parents manage to convey a positive image of learning to their children and help them find fun learning.

1.2.1 How does learning work?

There is no comprehensive scientific explanation of how people are learning yet. Research from fields like education, psychology, neurobiology and brain research offer only partial explanations.

Adults are forming a growing proportion of learners. Science is increasingly looking at this group and the special requirements they have for learning (the field is called “andragogy”). A major difference is that adults build on existing experience and relate new knowledge to their everyday life. As a result knowledge transfer to adults needs to be designed differently than for children (Friederichs, 2018).

Our brain processes impulses with the help of nerve cells called neurons. Neurons transmit electrical and chemical impulses to one another via so-called “synapses”. If a connection between nerve cells is stressed more often, it is strengthened. Signals can be processed more quickly on these paths. There are many examples where similar structures are formed, e.g. the patterns that arise when landscapes are settled: Where there is a regular exchange between communities, broad, solid paths emerge on which one can move faster.

Large amounts of signals are transferred to the brain via the human senses every split second. In order not to suffer from overload the brain filters this large number. The thalamus filters content that is considered relevant for the current situation. The hippocampus selects information that can be linked to previous experience (Deussen-Meyer & Hütter, 2012). These findings lead to two basic requirements for optimal knowledge transfer:

- Learners must recognize new information as **relevant**.
- New information is best saved when it is **linked to existing knowledge**.

Psychology provides further explanations for the conditions under which people learn well. One of the basic requirements is the feeling of security. In a situation of tension and fear, people can neither learn nor retrieve what has been learned, since the brain fully concentrates on averting the danger (Scheufler, 2013). Researchers also found out that there is not only conscious but also unconscious (“synthetic”) learning (Largo, 2013, p. 61). An example of this type of learning is the language acquisition of small children who learn neither vocabulary nor grammar and are still able to learn a language through everyday interaction and experience.

Different approaches examine the influence of social factors on learning. “**Model learning**” is a type of learning where individuals learn by observing others (Stangl, 2020). What sounds trivial has a complex scientific explanation. It is still unclear for example in which cases we adopt the behaviour of others and in which not. Much easier to explain is why group learning has a positive effect on the learning process. In “**collaborative learning**” situations, people exchange information, compare and supplement their knowledge (Schwabe & Valerius, 2001).

This is only a small excerpt from a large number of learning theories, which should show how complex the process of learning is. Additionally, everyone has their personal disposition on how to learn best. As schools often only offer a single learning path they fail to meet the requirements of a lot of children.

1.2.2 Teaching and Learning Methods

The results of the first PISA study in 2000 (Program for International Student Assessment - <http://www.oecd.org/pisa/>) gave a shock to a lot of countries around the world. It was the first time that a study compared school performance on an international level. Those countries who performed poorly in the study intensively started searching for the reasons for the bad results. But instead of finding one-dimensional explanations, a variety of topics were found that are influencing learning success. (Lister, 2016).

With the publication of the study results, the debate about educational issues and the school system no longer only involved experts but engaged a broad variety of groups. The experiences with distance learning during the Corona lockdown in 2020 further fueled this discussion. Due to the high complexity of the issue, finding a solution is not easy. Parents can nevertheless support their children with individual aspects. For example, when it comes to learning methods, there are many options that families can playfully experiment with at home.

One of the most popular concepts is Frederic Vester's four learning types, although they had been scientifically refuted years ago. Since their publication in the 1970s, they have undergone a large number of extensions and are still used today, mainly in the non-scientific area. Because of their simplicity, they are often used as a model for marketing tutoring offers (Looß, 2003). Vester distinguishes four types of learners:

- **Auditive learner:** learns through listening and speaking.
- **Visual learner:** learns through the eyes, e.g. by watching pictures or making graphs and notes himself.
- **Haptic learner:** learns best through practical exercises where he can touch things
- **Cognitive learner:** acquires knowledge by cognitive self-study (reading, analyzing, memorization, induction, deduction...).

Apart from the fact that some of Vester's assumptions have been scientifically refuted, oversimplified models often do not adequately reflect reality. People rarely correspond to a single learning type, but rather combine the characteristics of different types.

There are several placement tests on the web, based on this model. Although the results of these tests aren't very helpful, the questions themselves can be useful when parents answer them together with their child. The answers may reveal learning situations, in which a child feels most comfortable or may show which channels the child prefers for additional learning (e.g. training audio or video or illustrated repre-

sentations). Arden University provides a non-commercial test at <https://arden.ac.uk/what-type-learner-are-you>.

Parents who are looking for practical methods of accompanying their children in learning will find advice in the work of Vera Birkenbihl. There are numerous videos of her lectures on the Internet in which she explains how the brain works and where she introduces several learning methods (e.g. learning languages: Lingory, 2011). Birkenbihl derives her playful methods from the so-called “neuro-mechanisms” (Birkenbihl, 2017, p.27):

- Associative thinking (free thinking, making connections between things)
- Seek meaning
- Discover things
- Trying things out
- Imitation
- Incidental or random learning
- Recognize patterns
- Curiosity
- Play instinct
- Comparison

Reading tip for parents:

- In her book “Trotzdem lernen” Vera Birkenbihl presents a multitude of methods using these neuro-mechanisms to enable children and young people to easier learn (Birkenbihl, 2018).

How good people are learning is also influenced by their surrounding. The “Akademie für Lerncoaching” provides some practical tips on how to create an optimum learning environment that families can try out at home (Akademie für Lerncoaching, 2020):

- Try out new learning locations (a room where there is less distraction than in the children's room).
- Quiet instrumental music can help to focus.
- Working on long, complex texts:
 - Divide text into short sections.
 - Read a section.
 - Summarize the section in your own words.
 - Read the text again and check whether you have understood the relevant facts.
- Prioritize learning material according to importance (e.g. based on learning goals, old exams, information from older students) and make a plan of what to learn when.
- Take short breaks before you get tired.
- Motivate yourself with the 10-minute trick: just start working for 10 minutes and after 10 minutes decide whether to continue working or not (often the hardest thing is to start so this method brings you beyond this blocker)

- Work on learning content in different ways (hearing, seeing, be in motion, drawing, ...)
- Lerninhalte auf verschiedene Wege erarbeiten (hören, sehen, in Bewegung sein, zeichnen, ...)

There is a couple of things that negatively affect the learning process and should be avoided while learning:

- **Smartphones, tablets & other message devices:** Even if a smartphone doesn't ring or display a message, it weakens concentration because with half an eye and ear you are always waiting for a signal to come in. It is, therefore, better to have the smartphone out of sight and of course to turn it off (Bünthe, 2019).
- **Fast-paced video games** prevent content from deepening in the brain. For this reason, there should always be a break between learning and playing. Therefore, video games are also not suitable for occupation during study breaks. This effect can be positively used to treat trauma patients. Studies found out that fewer people involved in accidents developed a trauma when they were playing video games like Tetris immediately after the event (Roberts, 2017).

Overall there is no optimum learning method that serves everybody. People learn in very different ways. Schools should therefore make teaching material accessible in different ways. Here is an example of how a sixth-grade class worked on the stories of Baron Munchhausen:

- Read more stories from Baron Munchhausen at:
- <https://internet-maerchen.de/maerchen/muenchhausen01.htm>
- Listen to the story "The Bag of Lies" on the XYZ website and work on task 1 in the textbook, page X.
- Draw a comic strip about one of the Munchhausen stories on an A4 or A3 sheet.
- Work in groups: Pick a Munchhausen story and turn it into a 5-minute play.
- Work in groups: "Lies have short legs." - "If you lie once, you won't believe him." Choose one of the two proverbs and write a fable together.

The children can choose how to work on the topic: listening, visual channels, writing their own stories, individual work vs. group work and practical assignments. The variety of tasks addresses all kinds of learning types.

1.2.3 Media-Based Learning

Digital media and the internet offer a broad variety of new learning content and methods. There is an overwhelming number of learning materials on the Internet but finding the right one is often a problem. When during the Corona lockdown schools all over the world had to close and switch to distant learning another problem revealed: there was a big lack of methodological know-how on how to work with digital tools and learning materials.

Media didactics are a part of the discipline of media education, who deal with digital learning. Media supports learning in many ways (Witt & Czerwionka, p. 11):

- As a **learning aid** in classic lessons (e.g. accompanying research on the Internet, learning apps to deepen what has been learned, video recordings of complex experiments).
- As a **learning platform** for independent learning (e.g. to exchange weekly plans or results between teachers and learners or web-based training for self-learning).
- As a **communication platform** for teachers and learners (e.g. online question and answer sessions with teachers or digital learning groups).
- As a **design tool for learning content** for teachers (e.g. creating teaching videos or presentations of learning outcomes).
- As an **administrative tool** for teachers.

Using digital media highly motivates children and young people and enriches lessons in many ways. It makes it easier to provide the class with content on different learning levels and students practice the productive use of digital tools.

Media-based learning is still not as frequent as media usage in everyday life. A lot of teachers are still inexperienced in dealing with digital media. Some are also discouraged by the extra time that is initially required to bring traditional lessons to new teaching concepts (Troitzsch, Sengstag, Miller & Clases, 2006, p. 38).

1.2.4 Digital Teaching

The Corona lockdown forced most educational organizations to move overnight from classroom teaching to so-called “distance learning” and the use of digital tools. Various terms found their way into the public discussion, not all of them are always applied correctly:

- **Direct education:** teachers and learners meet for on-site lessons.
- **Distance learning or remote learning:** teachers and learners are spatially separated most of the time. The teacher monitors the learning progress.
- **Blended learning:** there is a mixture of direct instructions on-site and distance learning (an example is the “flipped classroom method”, in which learners prepare the theoretical part of a lesson at home and do exercises together in the classroom). https://en.wikipedia.org/wiki/Blended_learning

- **Homeschooling:** describes a form of teaching in which children are taught at home by their parents or a private teacher.

Other terms that are used in this context focus on the medium used:

- **E-learning or online learning:** a digital device is used for learning, not only at home but also in the classroom. Parts of the lesson usually take place in direct contact. E-learning is therefore a form of blended learning. <https://www.aese-education.com/blog/online-learning-vs-distance-learning>
- **Mobile learning:** is a form of distance learning in which mobile devices such as smartphones and tablets are used.

Regardless of which methodological approach is used for media-based learning, the content and tasks are often provided via a so-called learning platform (or learning management system - LMS). Learning platforms provide students with content and tasks, show learning paths and report results and corrections. Learning platforms can also have administrative functions with which everyday school or university life is organized. One of the internationally most popular learning platforms is the open-source software "Moodle". There is a public demo version of Moodle at: <https://school.moodle.net/my/>

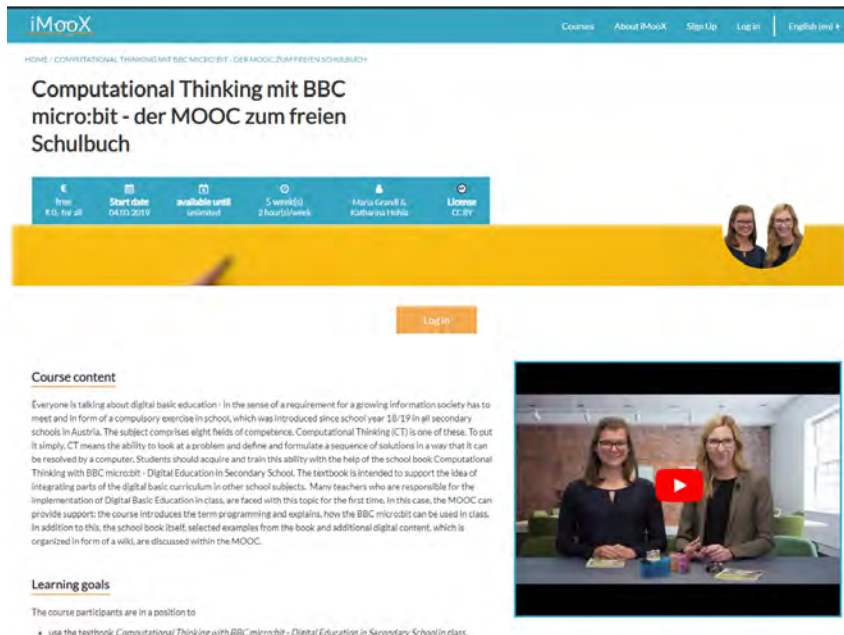
The screenshot shows the Moodle interface for 'Mount Orange School'. The user is logged in as 'Barbara Gardner'. The main content area is titled 'General' and contains a revision course description: 'This is a revision course where you will be consolidating your knowledge of chemical nomenclature, symbols and reactions using Moodle quizzes which will provide you with instant feedback. The quiz questions have been provided by members of the Moodle community'. Below the text is a chemical structure diagram of a polymer chain. There are also links to 'ChemVantage Atoms and Elements Quiz' and 'Announcements'. A 'Revision topics' section lists several quizzes: 'Balancing Chemical Equations (Rob Bright)', 'Type of chemical reaction (Rob Bright)', 'Molar mass calculations (Rob Bright)', 'Chemical Nomenclature (John Rodgers)', 'Chemical Nomenclature List 1a - From series (Sherry Brown)', 'Chemical Nomenclature List 1B - From Series (Sherry Brown)', and 'Chemical Symbols Nomenclature - (John Rodgers)'. Each topic has a checkbox next to it.

Screenshot Moodle Lernplattform

However, digital media is not only used when a teacher accompanies the learning process. A big advantage of media-based learning is the flexibility with which learners can work through lessons on their own, wherever they are and whenever they find the time for it. Digital learning is therefore especially suited for extra-occupational learning or for content that is not included in curriculums.

Children and young people are already making intensive use of video platforms to get information about gaming, fashion, cosmetics or sports. A positive effect for people from non-English speaking countries is that a lot of the content is only provided in English, so a lot of people train themselves in this language while looking for information or entertainment.

Digital learning can reach a lot of people. There are no restrictions on class sizes or spatial distances. Only bandwidth may become scarce if there are too many participants that actively take part in a lesson. So-called **MOOCs (massive open online courses)** aim to teach large groups of people through digital channels. MOOCs provide lectures or tasks for individual use but they also include interactive elements, such as group discussions and the use of social media. Examples of MOOC platforms are Edukatico (<https://www.edukatico.org/>), openHPI (<https://open.hpi.de>), iMoox (<https://imoox.at>).



Screenshot iMooX Plattform

MOOCs evolved from the **OER (Open Educational Resources)** movement. OER materials are published under a free license and can be used without charge. The term was introduced by UNESCO (United Nations Educational, Scientific and Cultural Organization) in 2002 for the idea that digital learning can ensure access to free education to all people around the world. The OER movement revived with the Corona school closings, as a lot of the material is also made for distance learning. There are various search engines for OER materials, such as OERhörnchen (<https://oerhoernchen.de>) or OER Commons (<https://www.oercommons.org>).

Video platforms such as YouTube and Vimeo offer an endless supply of learning and teaching videos. Finding good material is a big challenge and it is important to identify reputable sources. **Learning platforms** on the web make it easier to access material as they provide preselected lessons sorted by age, subject and levels. There are free offers like Khan Academy (<https://www.khanacademy.org>), WikiHow (<https://www.wikihow.com>) or TedEd (<https://ed.ted.com>). Better Suitable for children and young people are offers in their native language, such as Simple Club (<https://simpleclub.com/>) in German, Mundo Primaria (<https://www.mundoprimary.com>) in Spanish or Canopé (<https://www.reseau-canope.fr>) in French. School book publishers often provide digital material on their websites that exactly matches the topics at **school**.

Learning apps and learning software provide a playful approach to learning for all ages. In the math exercise program “TuxMath” students have to protect their spaceship by shooting asteroids by entering solutions of math exercises (https://en.wikipedia.org/wiki/Tux_of_Math_Command):



TuxMath Programm (Reschke, 2008)

Learning a language can be enriched by media-based approaches. Other than in a textbook, apps or software can not only provide written material but also provide audio or video elements and even process audio input from students. This simplifies learning and prepares better for the actual use of the language. To get started there are a couple of free offers, such as Duolingo (<https://www.duolingo.com>) or Memrise (<https://www.memrise.com>). These apps are also suitable for young people but they do not necessarily correspond with the lessons at school. A better support might be apps that are provided by school book publishers because they exactly match the content and vocabulary from the textbooks.

Whether it is a website, software or app, the range of digital and media-based learning opportunities far exceeds what one person can learn in his or her life. The big challenge is to find the right materials at the right time. Teachers should make use of these materials and include them in their teaching concepts and accompany students using these additional offers.

1.3. Creative and Critical Thinking

Mechanization in the 19th century replaced jobs with machines where machines could be constructed with reasonable effort to take over human tasks. In the same way, digital transformation will replace jobs where digital systems can be set up easily to complete human tasks. These professions have been highlighted in the preceding chapters.

There are two competences where people will keep their superiority over digital systems for at least the next couple of years: the first is creativity and the second is decision making. Already today insurance contracts can be recorded digitally and almost completely automatically processed but the majority of deals requires a final human review, as the decision-making processes are too complex to be mapped in a technical system.

Creativity requires one major thing that machines are not yet capable of: the ability to break rules and to take new paths. Why is this so difficult for machines and artificial intelligence? The reason is that all digital systems are based on software and software essentially consists of arithmetic operations and rules. Even if you want to teach a machine to be creative, you have to describe it in terms of rules and processes. The human brain, on the other hand, finds in often miraculous ways new thoughts and solutions. Since science does not yet have a comprehensive explanation of how human creativity works, it will not be possible to teach it to any machine in the foreseeable future.

It is just as difficult to teach a machine to deal critically with a complex topic. There are numerous attempts to create systems based on artificial intelligence, in order to get “better” unbiased decisions. But artificial intelligence is trained with data of existing human decisions, so human decision-making patterns form the basis of the technological solution. As a result, the decisions of AI systems are currently as biased and discriminatory as human decisions (Office for Technology Assessment at the German Bundestag, 2020).

For children and young people, this means that creativity and decision-making skills will keep them ahead of technology for quite some time. Already in the 1980s, concepts were developed to prepare children for these requirements. The “4C” competencies or “21st century skills” are (National Education Association, 2012):

- **C**ritical Thinking and Problem Solving
- **C**ommunication
- **C**ollaboration
- **C**reativity

These goals are also defined in the “European Qualifications Framework for Lifelong Learning” (European Commission, 2012, p. 3). But the situation for creativity and critical thinking is difficult. Studies have revealed that human creativity has declined significantly since the 1990s. Scientists suppose that one reason could be that there is less freedom at schools and universities for individual work but a heavily structu-

red curriculum with the goal of maximum transmission of knowledge. Also in private life, there are negative factors, like uncreative media consumption that prevent the development of creative ideas (Bronson & Merryman, 2010).sen kreative Freiräume beseitigt wurden, um Platz für die Vermittlung von noch mehr Wissen zu schaffen. Im privaten Umfeld verhindert unter anderem unkreativer Medienkonsum die Entwicklung eigener Ideen (Bronson & Merryman, 2010).

Critical thinking has also a hard time at schools and universities. The Bologna university reform was heavily criticised for bringing fixed curriculum and school-like structures to universities, taking away the opportunities for individual and critical discussions. In schools, critical thinking is also given little space (Kruse, 2010) although it is a necessary competence to get along well in the digital world.

Fortunately, everybody can learn creativity and critical thinking (Barras, 2014). As these skills are currently not very well trained in educational institutions, children can also acquire them in the family environment.

Sir Ken Robinson gave an entertaining and very profound speech about the current situation of creativity in schools in his 2006 Ted Talk: "Do schools kill creativity?".
https://www.ted.com/talks/sir_ken_robinson_do_schools_kill_creativity#t-1137264

1.3.1 What is Creativity?

Creativity is defined as the ability to create something new or original, which is useful or usable. Novelty contributes to a stronger perception of creativity than usefulness (Runco & Jaeger, 2012).

As far as usefulness is concerned, we are talking about the purpose that creativity serves. In a company, creative ideas usually find solutions for entrepreneurial problems or questions. In early childhood, it is about trying things and discovering new possibilities. Thus, children's play can also be seen as useful creativity.

How does creativity happen? One theory was developed back to the 1920s but is still relevant today. According to Graham Wallas creativity arises in 4 phases (Popova, 2013):

- **Preparation:** dealing with the topic or the question, analyzing as many aspects as possible.
- **Incubation:** the subconscious processes the collected material.
- **Flash of inspiration:** a solution appears in consciousness.
- **Confirmation:** checking the idea for its feasibility and refining it.

The distinction between “Big C” (creativity that brings about great inventions) and “Small c” (creativity that creates small innovations) should be neglected when talking about the development of children. With every new thing a child discovers or learns it creates something unique within their personal sphere.

For children, creativity is important to discover new things and develop problem-solving skills. An example for the connection of **pragmatic creativity** (solving an everyday problem) and **aesthetic creativity** (creating something artistic) can be found in Braun (2007). Kindergarten children investigated how earthworms look and how they live. They also painted fantasy apartments for earthworms but got stuck on the question “How do worms get to the earth’s surface?” Their creative solution was to add elevators to their imaginary earthworm dwellings.



Divergent thinking (also lateral thinking) offers methods for finding creative solutions or ideas. Instead of thinking within your normal patterns, you try to lead your thoughts to new paths. There are several methods for this, such as brainstorming, ABC lists or de Bono's 6 thinking hats model (Boos, 2010). Some of these methods have already been introduced in the learning chapter, as creativity inevitably leads to learning new things.



Crafting with recycled materials

1.3.2 What is Critical Thinking?

“Critical thinking” not only means questioning things critically but has a lot of further aspects and characteristics (Kruse, 2010). Critical thinking can mean:

- **Systematic conscious thinking:** collecting, structuring and processing information, developing arguments and communicating them.
- **Developing a sceptical mindset:** questioning things critically and checking them from a scientific point of view.
- **Self-reflection:** critically questioning one's thoughts and actions.
- **Characteristic:** when critical thinking is anchored in the personality.
- **Social process:** questioning things in a group through discussions and dialogues.

In everyday life, critique often comes with a negative connotation but the term originally did not include any judgement. Critique meant that assumptions, arguments and facts were looked at from another person's point of view and vice versa. It was a method to increase knowledge together. Jahn (2013) sees the following four levels of critical thinking:

- **Analysis:** analyze assumptions, check logic and evidence, check methods.
- **Perspective:** check other perspectives, relate your perspective, compare perspectives with each other.
- **Criticism of ideology:** is there anything influencing this perspective? Does anyone exercise power?
- **Constructiveness:** addressing open aspects, looking for solutions of identified problems, incorporating knowledge into one's point of view.



Practicing Discussions (mentatdgt [1])

Critical thinking may involve discussing in philosophical terms. Sometimes teachers feel uneasy to meet their students on this level as it means to meet them on an equal footing and respect each other's arguments. Anglo-Saxon schools and universities are much more open to this kind of discussion. They often have a vivid culture of debating

clubs since the 19th century.

Written examinations train personal critical thinking. Students practice the collection of pro and con arguments on more or less exciting topics and learn how to express their personal point of view. Usually, time and amount of material are scarce, so their analysis only scratches the surface of the topic. For real critical thinking, a deeper and longer study of a topic is necessary.

According to Willingham (2007) the lack of in-depth knowledge of students makes it difficult or impossible to teach critical thinking in schools. We would rather say that children and young people actually do have a lot of in-depth knowledge, however, these topics are never discussed at school. They are experts in a lot of aspects of the digital world. So schools should give them the opportunity to think critically about aspects like fake news, age restrictions, or the rules of the class chat.

An approach that addresses the lack of time and knowledge is **problem-based learning** (for an example see <https://www.youtube.com/watch?v=-hBZBTYRxuM> Problem Based Learning in Middle School). In this approach, a group of students does a detailed analysis of a problem or a question. Based on a specific problem, students research additional knowledge, discuss options and weigh up solutions.

1.3.3 Learning Creativity in Play

“Promote creativity: Parental restraint is the best form of encouragement” (Plück, 2020). Children have an innate curiosity and the willingness to learn new things. Expensive support programs or educational toys are not necessarily helpful, sometimes even counterproductive when they take away the freedom from children to try out their own things. Children develop creativity best when they play alone or together with other children. Parents should therefore restrain from keeping children nonstop busy and allow moments of boredom because this is where creative ideas arise. (Paul, 2019)



Toys Can Hinder Creativity (mentatdgt [2])

One of the most important tasks for parents today is securing their children's freedom by guiding their media consumption. Social media and video games in particular have a variety of built-in mechanisms to endlessly keep people busy with them. How much media usage is good for children at what age and what technical options there are for parents to limit media use will be explained in the next chapter.

Parents who still want to open up the possibilities of digital media to children should ensure that younger children do not use media alone and have the relevant knowhow to get along well in the digital world. Creative solutions are required in many computer games, creative photo and video editing in social media and even the search for technical solutions for using digital devices can generate creative ideas.

1.3.4 Learning Critical Thinking in Everyday Life

With the multitude of incorrect information on the Internet, critical thinking has become a core competence for the digital age. However, adults often find it just as difficult as children to properly judge information on the internet and are therefore no good role models. Under the time pressure and lack of energy in everyday life, families often do not find the time to adequately practice critical discussions.

Wherever possible, parents should take the time to discuss ambiguous topics with their children. Why do I have to go to bed now? Why can't I play this video game yet? Why do I get detention when others have started a fight? These questions can be discussed on a factual level and train critical thinking.

Just as important as thinking and questioning critically are, is learning where there is room for critical thinking and where not. Rules that organize everyday school life e.g. cannot be constantly questioned. Weighing up when to critically question a rule is a lifelong learning process. For children and young people, it is a valuable lesson to be involved when rules are being negotiated. It gives them the opportunity to bring in their point of view and to question the assessments of the other side.

There are a lot of arguments between children and parents when it comes to the usage of digital devices. Children have to learn (and adults have to make it clear) which aspects of the usage are negotiable and which are not. For example, children can choose a video game or movie that fits within the framework set by their parents (e.g. age rating or type of game) others (e.g. buying an expensive device) are up to the parents to decide.





Media consumption regularly leads to arguments in families (mojzagrebinfo, 2014)

As already mentioned, children learn very quickly how arguments work and what standards parents apply. The 11-year-old said: "I know that the game has an age restriction of 16 and you don't want me to play it but please let's watch some sequences of the game together. I think I can play it now because it's not as brutal as the other games." In fact, the game content was similar to the associated movie, which has an age restriction of 12, so that in this case parents were convinced. Listening to such arguments encourages children in their perception that they are respected (Nentwig-Gesemann, 2017, p. 77).

1.4. Intercultural Competences

The digital network has enabled the distribution of work all around the globe. In order to use capacities as efficiently as possible, teams work across borders and time zones. Digital communication solutions enable teams to meet online and make on-site meetings obsolete. Knowledge of foreign languages is still a necessary skill in business life, but translation assistants will make them superfluous in the near future (Voss, 2019). The focus shifts towards the knowledge of cultural characteristics and customs. Internationally working employees and managers are trained on these intercultural skills, like handing over business cards correctly as well as negotiation habits.

International relations have not only intensified in business life, people have also become more mobile in their private lives (Gamelen, 2020). Some move for professional reasons, others have to leave their countries due to war or devastating circumstances. Today there are hardly any areas in Europe where no people from other countries or cultures have settled. So instead of taking expensive courses or trips abroad, the opportunity to train intercultural skills lies in front of everybody's door. Children of different origins meet at kindergarten and school, so they benefit from contact and exchange with other cultures from an early age (Kucklick, 2011).



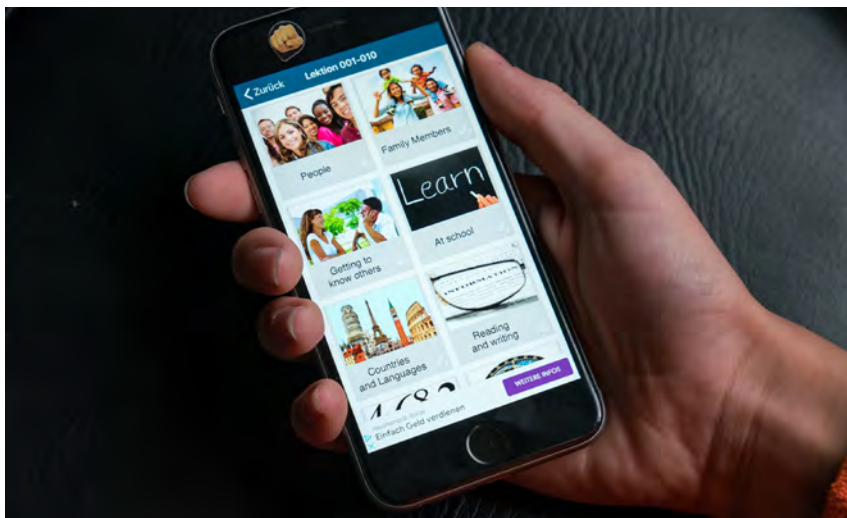
Kinder lernen interkulturelle Kompetenzen spielend (dimitrivetsikas1969, 2019).

1.4.1 Learning Foreign Languages Online

Working together with people from other countries who speak another language either requires sharing a common language or hiring an interpreter. Until now, foreign language learning has mainly taken place as guided language courses or with little interactive means of self-study. The Internet offers a multitude of additional interactive possibilities to make learning a foreign language easier and more vivid.

Anyone learning a foreign language today has access to an inexhaustible amount of materials in this language via the Internet: magazine articles, live streams of radio and television programs, videos and music. Many young people watch series and films on video and streaming platforms in the original language, which improves especially English skills.

On the Internet, there is a broad variety of language trainings, ranging from commercial learning apps (e.g. Babbel <https://www.babbel.com>) to free apps (e.g. 50 languages <https://www.50languages.com>) and also language courses on video platforms (e.g. Goethe Institut <https://youtu.be/PMj9kUPrnBk>). Textbook publishers often provide digital materials to accompany their printed books (e.g. <https://hueber.de/einfach-digital/interaktiv-zusatzuebungen>), many of which are also free.



Learning with language apps

The easiest way to learn a language is to use it in daily life. Finding people who speak the language can be found either on social networks or platforms such as Tandem-Partners (<https://www.tandempartners.org>).

1.4.2 Digital Exchange Between Children and Young People

Online games and social media enable young people to interact with each other no matter how far they are apart. Games often include chat functions that allow young people to contact each other. When kids are starting to use these functions parents should accompany them, as there are several points to consider with regard to security and privacy. When using these media properly, they offer a good opportunity to learn languages and meet other cultures.



Teenagers in a retro arcade (cottonbro, 2020)

Pen pals also still exist, but today kids mainly use digital channels for communication. Portals such as <https://www.epals.com> or the European Schoolnet <http://www.eun.org> are available for teachers to establish contacts between school classes worldwide. Young people can meet virtually using exchange programs such as “Seat at the table” <https://www.gng.org/seat-at-the-table/> or Global SchoolNet: <http://www.globalschoolnet.org>.

The possibilities for intercultural exchange are now more tangible and closer than ever before. Parents should open themselves to these opportunities and give their children the chance to learn important skills for their later life. An exchange on digital channels offers additional possibilities but is not absolutely necessary. When children and young people connect with others via the internet, parents should accompany this usage to ensure safety.

1.5. Basics of Digital Technologies

Many digital solutions are designed in a way that they can be used without much prior knowledge. Products from the entertainment sector are characterized by their ease of use so that they can be used by people of every age. Nevertheless, there are still situations in which a device or a program does not work as expected. It happens that the smartphone suddenly loses its internet connection. If I know that the device normally connects to the Internet via WiFi or mobile data access, I can check whether all these settings are correct and all necessary devices are working.



Adolescents using smartphones (natureaddict, 2016)

Many people have gaps in their basic digital knowledge. Those who are not interested in technology often limit themselves to using communication and entertainment offers without questioning how they work. It can be both a challenge and an opportunity for parents to further develop their digital skills together with their children. Video games and learning opportunities offer numerous playful options for this.

The basics of digital technologies include knowledge of:

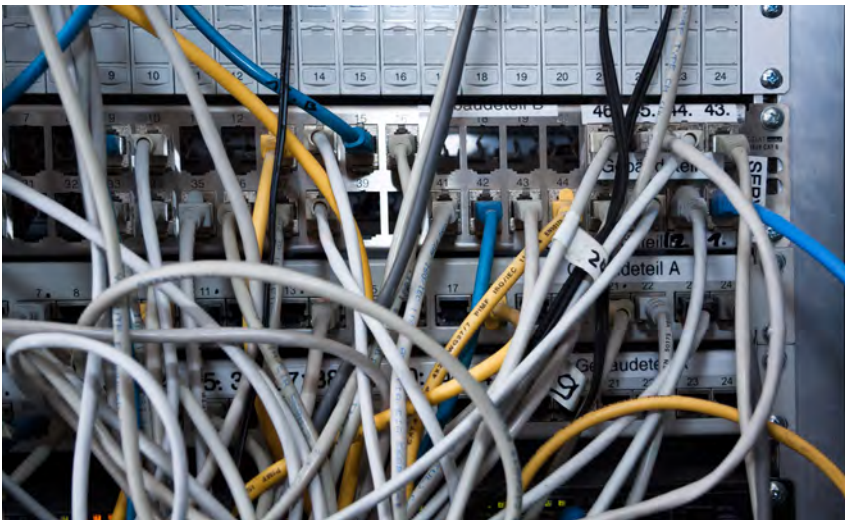
- Device types and how hardware works
- Digital networking
- Self-help with problems
- Fields of application of digital technologies
- Operation of basic programs such as office software, internet browsers, e-mail programs, image and video editing
- Basic understanding of data protection and data security
- Basic understanding of programming

The CUMILA curriculum includes the basic knowhow on all of these topics for adults. The following chapter explains how to introduce children and young people to these topics.

The “Digitization” page of the German TV show “Sendung mit der Maus” offers an easy introduction and many interactive games:
<https://www.wdrmaus.de/extras/mausthemen/digitalisierung/index.php5>

1.5.2 Device Types and Hardware Functions

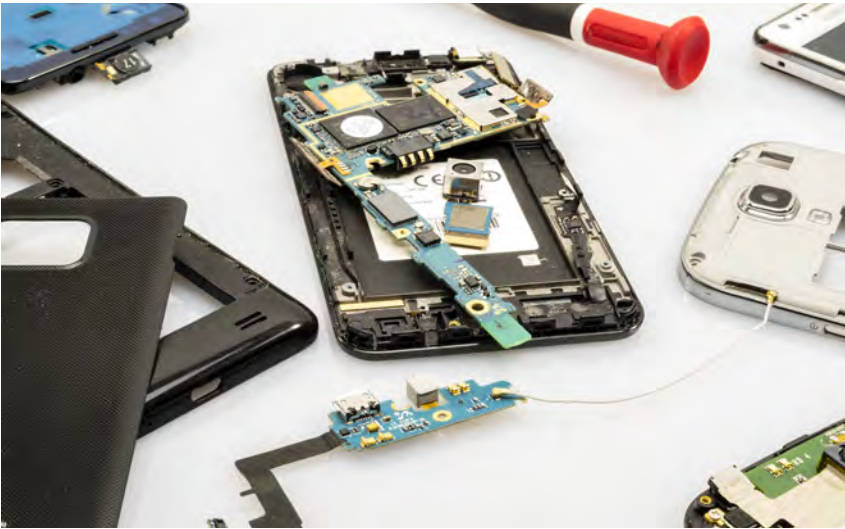
Children grow into the operation of digital devices from an early age on and quickly become experts who help parents and grandparents if they are not able to use their devices. While adults are often hesitant to try something new, children take over these challenges with an unbiased curiosity. They quickly transfer their knowledge to other areas, which can lead to odd situations, such as small children trying to turn pages of a book by a swiping gesture like on a tablet or smartphone (Harding, 2018). An easy way to familiarize children with the types of devices and how they work is to involve them in setting up devices. Parents should explain which devices are involved and what they are used for. Children learn that plugs and their associated sockets are often colour-coded or have a unique shape so that they only fit into one socket.



A network cabinet for professionals (stux, 2014)

Broken devices can serve as an exercise object. If parents are capable of repairing equipment, they should involve their children. Children learn about the inside of devices and how things work there. In order for children to learn about solution strategies, parents should “think out loud” during these activities and say everything that comes to their minds: How do I look for the mistake? How can I solve a problem? Which path do I consider and which not?

If the repair fails, children can disassemble the broken devices with the help of their parents and with appropriate safety precautions. Families together can try to identify the components and find an explanation of what they are there for.



Open smartphone (Bru-No, 2017)

All the pieces left after disassembling the device can be used for creative projects. On the website of the Digitalwerkstatt Karlsruhe, there are a lot of examples for what can be done with these things: <https://digitalwerkstatt-karlsruhe.de/category/missionkarten/>

Software Basics

Children are very curious when you give them the option to try out software even if it's the most boring office application. In elementary school, children make their first steps using search engines, text editing and drawing programs. Using digital tools can increase the motivation for learning and homework. In the chapter "Media-based learning" we introduced a couple of programs, which can make learning more fun.

Even entertainment software includes functions that can be used for productive purposes. A lot of children and young people today are experts in image and video editing because they know it from social media apps. Communication options in video games familiarize children with the operation of voice and video chats.

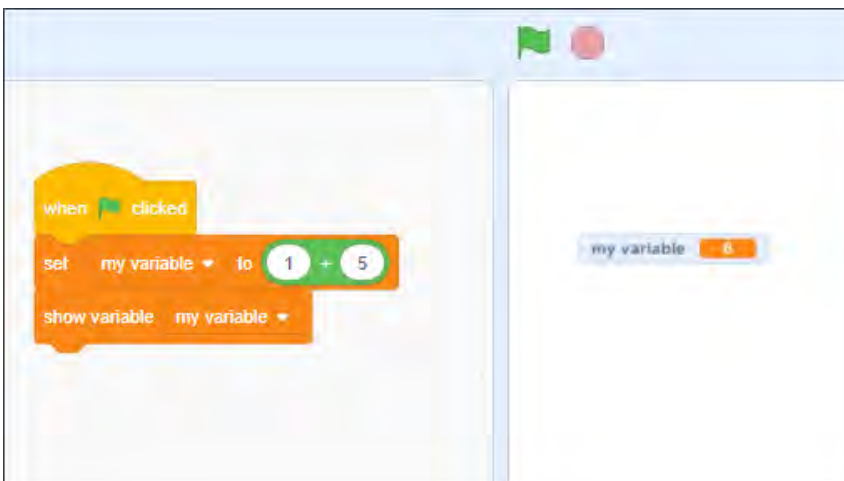
Programming

Even elementary school children can start learning to program. There are numerous applications that convey simple principles of programming in a playful way and with graphic elements. But what does programming exactly mean and how to explain it to children? Programming is about writing instructions (also called "code") in a language that a computer can handle. This code is written in a format that is known as a "programming language". As with a foreign language, you have to learn vocabulary and grammar to be able to talk to the computer in this language.



Programmingcode (Pexels, 2015)

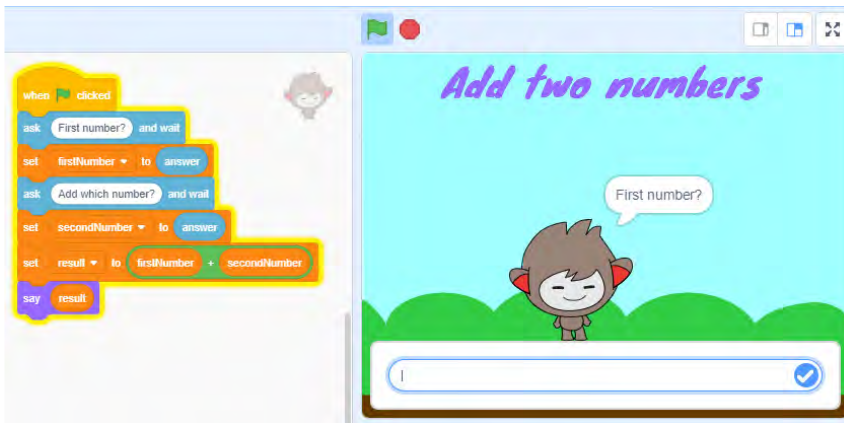
You cannot only write code as text, there are also programming tools for children that work with graphical puzzle-like building blocks. Scratch is such a tool and can be used in any browser: <https://scratch.mit.edu>. The following example shows how Scratch works. With these three blocks the result of $1 + 5$ is calculated and displayed:



Simple program with the Scratch tool

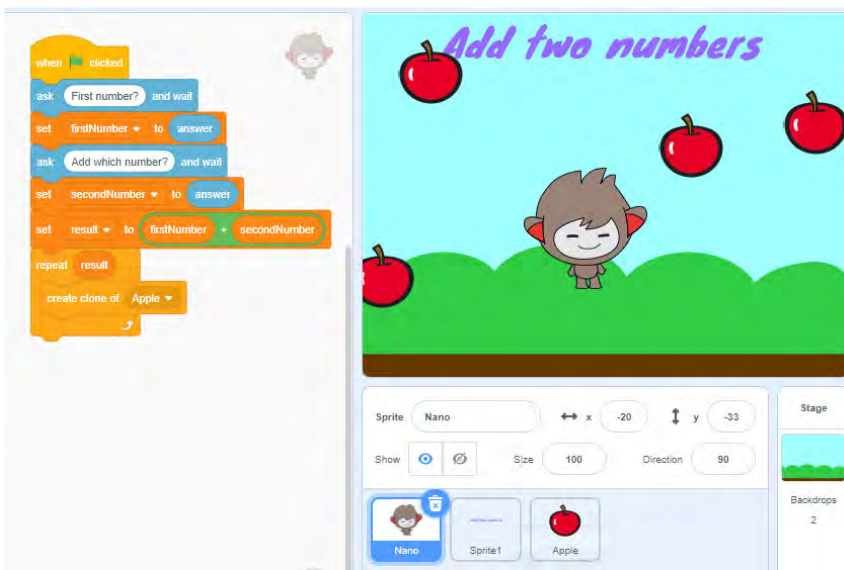
- The first yellow block starts the program when you click on the green flag above the box on the right.
- The second block fills the placeholder “my variable” with the result of “ $1 + 5$ ”.
- The third block shows the value of the placeholder “my variable”. The result can then be seen in the box on the right.

The main reason to write a computer program, however, is not to solve only a single arithmetic problem. Computer programs are designed to serve multiple purposes. In this example, the program calculates the sum of any two numbers.



Calculate the sum of two numbers

So far the program can still not do more than a pocket calculator. A computer program becomes a more versatile tool when you solve large calculations or do completely different things with it. With the calculated result from the example before, we could e.g. make the figure jump x times or, as shown here, to display the result as the number of apples.

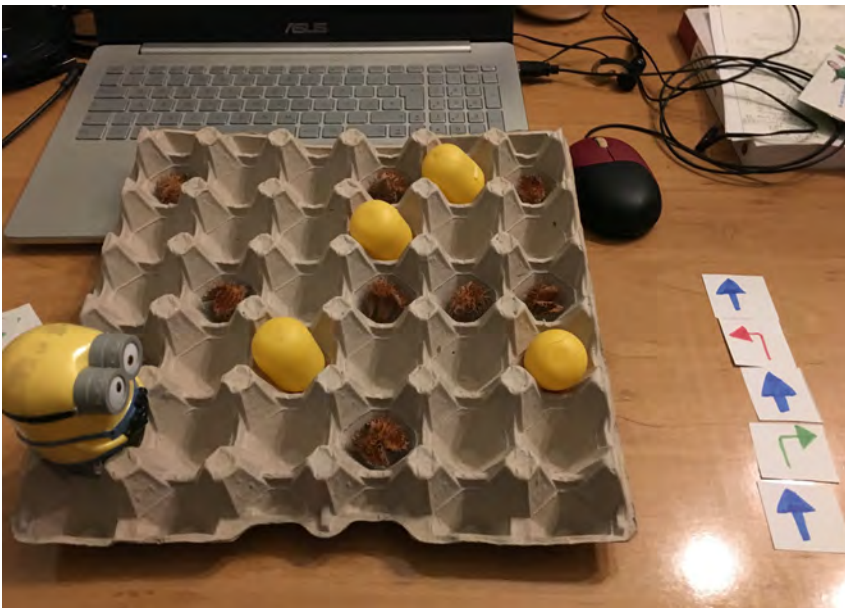


Display the calculation result as a graphic

With programming, children learn to analyze problems and to express them in a way that a computer can process them. One of the most important skills in programming is error analysis. Hardly any computer program is developed without any errors occurring. But finding these mistakes can be as exciting as solving a puzzle. Children receive a positive confirmation when they have solved the puzzle and at the same time train their frustration tolerance if it does not work straight away.

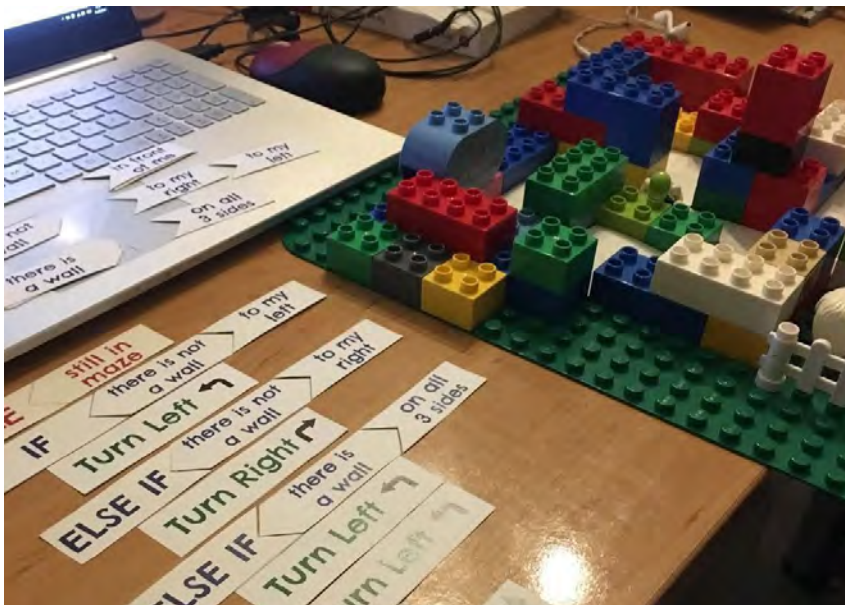
Even preschool children can solve simple programming tasks consisting of stepping and turning and practice basic mathematical, logical and spatial thinking. For these exercises, not even a computer is needed. In this example, an egg carton, various playing figures and natural materials are used to build a board. With the arrow cards, kids move the yellow figure to the fields with the yellow eggs and collect the contents. The

fields with the thorny oak tree seeds are blocked fields that the yellow figure cannot cross:



Analog programming game

Instructions for a simple programming game with building blocks and the appropriate printing templates can be found at: <https://researchparent.com/coding-a-lego-maze/>



Programming game with building blocks

“Scottie Go” is a programming set where you can use tiles and an app to guide a character through mazes and solve various tasks. The code is “written” by putting together the command cards and then take a picture of it with your tablet or smartphone. The app converts the cards into a program and moves the character through the maze according to the instructions. The “Lightbot” app (<https://lightbot.com>) works similarly but the code is set up with building block within the app.



Scottie Go - Programmieren lernen mit Kärtchen und App

1.5.3 Digital Educational Toys

More and more manufacturers of educational toys are also offering toys for training digital skills. Even traditional toy manufacturers have expanded their product range and added digital functions. Lego started to combine digital components with building blocks back in the 1990s. The Lego Robotics series “Mindstorms” is a rather complex set and therefore more suitable for young people and adults. The “Education” series was developed for being used in schools. The Lego “Boost” set has been available since 2017 for children over 7 years. The set includes all elements to build figures that can be controlled via an app and which can examine the environment using various sensors. Children learn the basics elements of construction, sensor technology and programming in a simple way (<https://www.lego.com/en-us/kids/boost>).



Lego Boost, controlled by app

The German inventor Artur Fischer developed the fischertechnik construction sets (<https://www.fischertechnik.de>) as a by-product of his industrial products in the 1960s. These construction kits were also expanded with electronic and digital components. Today there is a wide range of kits, from models for kindergarten age to simulations for vocational training at schools and universities. One of the latest developments is a set of building blocks combined with the “Calliope Mini” microcontroller (<https://calliope.cc>), with which you can build simple models such as traffic lights, barriers or fans.

Microcontrollers such as the Calliope Mini, Arduino (<https://www.arduino.cc>) or the BBC Micro: bit (<https://microbit.org>) are also suitable for being used by children and young people. They have numerous sensors (including temperature, brightness, humidity) and are quite easy to program. Further components are available but not necessary to start with. To program the microcontroller, you only need to connect it

to a computer via USB. The programming environments can be used via any browser without having to install additional software (e.g. <https://lab.open-roberta.org>)

There are numerous free project instructions on the web for all microcontrollers aimed at children and young people that can also be easily used by parents who are not yet familiar with these topics.



fischertechnik in combination with the Calliope microcontroller (fischertechnik, 2020)



Calliope mini microcontroller

EXAMPLES AND PROJECTS FOR THE CALLIOPE MINI

Use your mini in many creative ways!

EXPERIMENT FIRST STEPS SCHOOL GENERAL GERMAN MATH MUSIC SPORT EASY HARD MEDIUM

FROM 8 YEARS ON FROM 10 YEARS ON FROM 16 YEARS ON 15 MINS 30 MINS ADD. MATERIALS

W/O MATERIALS

<p>EXPERIMENT</p> <p>from 10 years on 30 mins</p> <p>GYM BAG WITH FLARE</p> <p>Read more</p>	<p>EXPERIMENT</p> <p>from 10 years on 30 mins</p> <p>CALLIOPE MINI HEART RATE SENSOR</p> <p>Read more</p>	<p>EXPERIMENT</p> <p>from 10 years on 30 mins</p> <p>CONTROL A DC MOTOR</p> <p>Read more</p>
<p>EXPERIMENT</p> <p>from 8 years on 15 mins</p> <p>CALLIOPE-SONG</p>	<p>EXPERIMENT</p> <p>from 8 years on 30 mins</p> <p>TRAFFIC LIGHTS</p>	<p>EXPERIMENT</p> <p>from 8 years on 30 mins</p> <p>AUTOMATIC SCOOTER LIGHT</p> <p>Cornelsen</p>

First projects with the Calliope microcontroller on calliope.cc

2. Accompanying Children Using Digital Media

Today, children grow up with the use of digital media from an early age. They often have their first contact with these media before kindergarten. Parents share videos on their smartphones with their children, listen to music together or install first video games. Before children can read, they often know which buttons to press to get to their favourite videos. Because the world of digital media is so fascinating, parents quickly are under pressure because their children want to use digital media more frequently. It's therefore important to agree on rules for the use of digital media in the family at an early stage and to apply them consistently. There is a wide range of technical options that make it easier for parents to control access to devices and services in an age-appropriate way without having to constantly monitor their children.

98% of young people in Germany between the ages of 12 and 17 own a smartphone and use it every day (Medienpädagogischer Forschungsverbund Südwest, 2020). Due to the intensive use of digital devices, parents should take enough time to introduce children to the usage of these media and accompany them step by step in becoming responsible users of digital services. This process can be compared to introducing children to road traffic: Parents first practice the route to kindergarten or school together with their children, showing them the safest route and what to look out for. Gradually, children become more and more confident in traffic. As they become more secure, parents can give their children more freedom. The same applies to guiding kids in the digital world: children learn best when parents are a good role model for them.



Understanding and Accompanying Media use by Children and Young People		
He/she can guide children in the use of digital media.		
Knowledge	Skills	Competence
He/she knows <ul style="list-style-type: none"> • The basics of age-appropriate media usage. • The risks for children and young people online. • The basics of data protection and privacy for children. • The basic functionality of chat, social media, and video games. • Security functions for children on devices and in apps. 	He/she can <ul style="list-style-type: none"> • Set up apps that control access to devices and apps in an age-appropriate way. • Configure devices to be age-appropriate for use. • Check privacy settings and adjust them to suit the age of the user. 	He/she is able to <ul style="list-style-type: none"> • Assess the development of children and young people and shape media use accordingly. • Gradually lead children and adolescents to independent usage of digital media. • Sensitize children to risks and work out options for action • Examine digital offerings for children.

Mit zunehmender Sicherheit können Eltern ihren Kindern mehr Freiräume geben. Wie im Straßenverkehr, gilt auch in der digitalen Welt für Eltern: am meisten lernen Kindern, wenn man ihnen ein gutes Vorbild ist.

To prevent the topic of media usage from becoming a permanent nuisance in families, it is important for parents to develop an understanding of the role digital media plays in the lives of children and young people. The smartphone combines many functions that are important both in leisure time and at school: communication with others, searching for information, entertainment through music, videos, social media and games but also services such as school planners, digital learning or ticket apps. Because of this broad variety of use cases, the amount of usage should be appropriate to the needs of children and young people. Strict bans or withholding certain offerings can have a counterproductive effect on the development of media literacy. It is much more important that children and young people learn to use the offerings together with their parents. By the age of 16 at the latest, young people should be able to navigate the digital world independently. Up to this age, it remains a constant challenge for parents to find the right balance between guidance and restrictions and independent and free use. Even after that, the further development of media competence will remain a challenge that even many adults fail at.



Finding safe paths together (Olichel, 2015)

The following chapter provides parents with the most important background information and methods for competently accompanying their children in the digital world:

- **Age-appropriate media usage:** How long should children use digital media and what options do parents have to make usage age-appropriate?
- **Online risks:** What are the risks of using digital media and how do I protect my child from them?
- **Data protection and privacy:** Why is the protection of personal data so important and can parents ensure that their children's data is not misused?
- **Protection from sexual assault:** What types of assaults are there in the online world and how to protect children from them?
- **Use of chat programs:** What is good communication on the net and how to introduce children to the use of chat programs?
- **Use of social media:** When and how should children be introduced to the use of social media and which offers are suitable?
- **Accompanying video games:** Which games are suitable for which age and how to accompany the use of video games?



2.1. Age-appropriate Media Usage

Talking to parents the question "How much media usage is good for my child?" often arises. Parents hope for an answer that gives them exact time frames, such as "Up to age 6, we recommend 15 minutes; up to age 12, 30 minutes." Often they are disappointed when the answer is "That heavily depends on your child, you'll have to determine for yourself."

Since children differ greatly in their development and personalities, and the educational goals of families also vary heavily, it is indeed impossible to make universal recommendations. In the past, when professionals used to give exact times of usage recommendations, they were often far from what families actually used. Rather than being helpful these recommendations left parents with a feeling of guilty conscience instead of giving them helpful guidance.

Much more relevant than the actual duration of usage is the type of services and apps children and young people use and for what reasons they do so. The following section will therefore focus on the following topics:

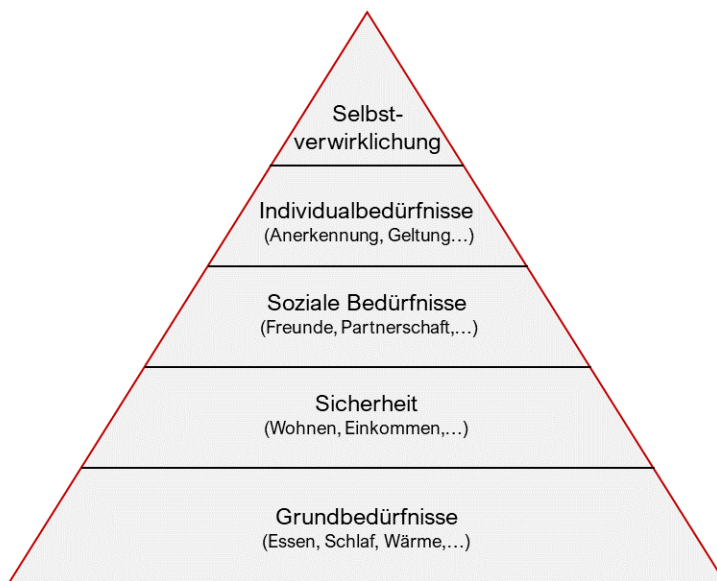
- **Digital media and human needs:** Why is digital media so fascinating?
- Addiction, escape or passionate hobby? How can parents correctly classify intensive media usage and detect addictive behaviour?
- **Rules for media use:** How can families find a good level of media use in everyday life.
- **Age groups and media usage:** How digital media influences kids at various ages and what parents should pay attention to.
- **Technical aids:** Which apps and other technical aids support families in maintaining a healthy level of media usage?

2.1.1 Digital Media and Human Needs

Within a very short time, digital media have captivated people of all ages all over the world. Digital devices and applications are useful and fun, and they are always available. However, this success has not happened by chance. If you take a closer look at apps and services, you will find elements and mechanisms that specifically address people's basic needs and thus lead to intensive usage.

Abraham Maslow's 1943 model of human needs explains what motivates people to do things with a certain priority. There are basic physical needs, such as eating, sleeping, and seeking shelter, that people try to satisfy first. After that people turn to needs on higher levels of the pyramid: social and individual needs and personal growth (McLeod, 2018).

Digital media influence almost every single one of these levels. However, the most significant influence is on social and individual needs. Chat programs, social media and video games satisfy many of the needs anchored here: you meet friends, find a partner, social media likes and player rankings give you recognition and status.



Bedürfnispyramide nach Maslow

People who cannot sufficiently satisfy their needs in these areas in non-digital life find a substitute in the virtual world. A lack of friends can be compensated for by online communities and a lack of confirmation via successes in video games or in social networks.

Children and young people are particularly sensitive to these needs. The development of their personality brings with it the desire to be part of a group and to receive confirmation and recognition. At the same time, young people are very insecure and are looking for orientation. When using digital media, parents should therefore pay particular attention to signals that indicate that children are withdrawing into the virtual world because of problems in the "real" world.

2.1.2 Addiction, Escape or Passionate Hobby?

There are probably few families in which children have ever said, "No, I don't want any media time right now". The fascination with digital media knows no limits and parents are in a constant struggle to make sure it doesn't become too much. But when is it too much? Parents quickly accuse their children of being addicted to "that online stuff". For most kids, however, this is not true. That's why it's important for parents to learn to distinguish between a positive, passionate use and a problematic usage.

The most important basis for this is to keep the conversation within the family alive and talk about digital usage. Children need to talk about their fascination with digital media. However, all family members should also have the opportunity to talk about their needs and wishes, as well as their worries and fears. If children are accompanied in their media usage from an early age, this learning process can progress as the child develops. The easiest way for parents and children to start a conversation is to use digital services together. When playing video games together or following social

networks, topics can be addressed directly and it is easier for parents to understand their children's fascination.

In some cases, however, the child's intensive media usage can also be the cause of serious problems. How can parents recognize when the use changes from a positive one to a negative? Positively speaking, parents usually don't need to worry as long as the child:

- **Does not neglect commitments** (school performance does not decline, homework is completed regularly, adequate personal hygiene and sufficient sleep).
- **Regularly spends time with friends and family.**
- **Pursues other hobbies** (e.g. sports or music).
- **Can accept rules for media usage** (does not react strongly emotional when media time is over and does not suppress negative consequences for violations).
- **Is able to control the time and duration of usage** (e.g., does not sneak games at school or try to gain access outside the usage time).



Gemeinsame Mediennutzung schafft Verständnis füreinander (Morse, 2014)

If a child shows a conspicuous behaviour in one of these areas for a short amount of time, it does not mean that the child has developed an addictive behaviour. It is important to talk about these issues and observe the child over the longer term. Only if such behaviour occurs over several months and the media usage increases constantly, one speaks of addictive behaviour. Parents should try to find out whether there are difficulties, e.g. with friends or at school, that are causing the child to withdraw into the digital world. The parents' interest and offer to talk gives the child confidence and security in this situation. If parents recognize these signals early on and start talking about them, problems can often be solved without help from outside.

If a problem is more complex or there are conflicts within the family that prevent a conversation, external counselling services can help. In any case, parents should respect the child's wish to seek an outside contact to address the problems. It is often easier to talk to someone who does not have a close relationship. Family support and addiction counselling centres are available locally. Telephone and online services also provide an easily accessible point of contact where children, adolescents and parents can talk and get advice anonymously:

der, Jugendliche und Eltern anonym aussprechen und Rat holen können:

- Germany:
 - Nummer gegen Kummer Kindertelefon: <https://www.nummergegenkummer.de>
 - Nummer gegen Kummer Elterntelefon: <https://www.nummergegenkummer.de/elterntelefon.html>
 - Juuuport - Hilfe für Kinder und Jugendliche per Chat oder Whatsapp <https://www.juuuport.de>
- Austria:
 - Kindernotruf: 0800-567567 <http://www.verein-lichtblick.at/kindernotruf-3/>
- Spain:
 - Teléfono de Ayuda a Niños y Adolescentes <https://www.anar.org/necesitas-ayuda-telefono-ninos-adolescentes/>

2.1.3 Rules for Media Usage

Only few families manage to get by in everyday life without guidelines for media usage. The fascination with digital media is too big and the apps and services are optimized to maximize usage. Often enough, even adults fail to moderate their media consumption. To prevent that, the regulation of media usage becomes an extra burden in family life, communication and consistency are necessary.

For the family rules to have a lasting effect, the following aspects should be taken into account (Rogge, 2013, p. 152ff):

- **Negotiating rules together:** Families should agree together on the rules for media usage. If rules are negotiated at eye level, children and young people are more likely to comply with them.
- **Simple rules:** The simpler the rules, the easier it is to follow them in everyday life.
- **Agreeing on consequences is an important part of setting rules.** Consequences must be agreed upon before a rule is broken and parents must be able to enforce them.
- **Establishing free spaces:** Along with setting rules, free spaces should be defined where the rules can be suspended, such as during bad weather, when a new game comes out when friends are visiting, or after an extended walk. These free spaces must be transparent and reliable for children.

Simple rules and consequences should be practised already with young children. For children, the first contact with digital media is often television. Children should learn to use it in a targeted way at an early age, e.g. watch one bedtime story in the evening or a specific program at 5 o'clock, instead of just letting the TV run all day long. This leaves enough room for the kids in the media-free time to occupy themselves with other things. Children who develop interests alongside digital media find it easier to regulate their media consumption.



Developing interests besides digital media (Bob_Dmyt, 2019)

Smartphones bear a big potential for conflict in families. Families should agree on rules for the use of these devices that apply to all family members. For parents, this means that they may have to change their habits as well. In doing so, they set a good example for their children. Agreeing on **smartphone-free areas** is a simple first step that gives families time to talk, pay attention to each other, focus and stay safe. Smartphones should not be used in the following situations and should ideally be out of reach:

- At common meals
- While talking with others
- When sleeping
- In traffic
- While doing homework
- While watching television



Analogue alarm clock (PIRO4D, 2017)


Tip for parents

As a better alternative for the alarm function of the smartphone, is a conventional alarm clock - for the children's room and for the parents' bedroom as well.

For more comprehensive rules of media usage, there are numerous templates on the web that provide guidance and a basis for conversation::

- Mediennutzungsvertrag (deutsch) <https://www.mediennutzungsvertrag.de/>
- Family Media Agreement Printables For Your Electronics (englisch) <https://www.pandasecurity.com/en/mediacenter/family-safety/family-media-agreement-printables/>
- Pactos familiares para el buen uso de dispositivos <https://www.is4k.es/de-utilidad/recursos/pactos-familiares-para-el-buen-uso-de-dispositivos>

Family Media Contract: Cell Phones



I _____, agree to,

Time Limits

<input type="checkbox"/> I will be allowed to use my cell phone a maximum of _____ hours a day.	<input type="checkbox"/> I will shut off my phone at _____ o'clock and it will not be turned back on until _____ o'clock in the morning.
<input type="checkbox"/> I will not use my cell phone when at school unless _____	Additional stipulations: <input type="checkbox"/> After breakfast <input type="checkbox"/> After I am all ready for school
<input type="checkbox"/> These places are no-phone zones: 1. _____ 2. _____ 3. _____	<input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> Our family does not use our phones during: _____	

Appropriate Content and Sharing

<input type="checkbox"/> Apps that I am not allowed to access on my phone: _____	<input type="checkbox"/> I will not share any content that is too revealing. This includes posting or sending inappropriate photos or sexts.
<input type="checkbox"/> I will not be hurtful or mean to others on social media. This includes messaging, commenting, posting and liking mean or hateful content.	<input type="checkbox"/> _____ <input type="checkbox"/> _____
<input type="checkbox"/> If I am cyberbullied, I will be open and honest with my parents and tell them about the issue so that we can deal with it as a team.	

Media usage contract for families (<https://www.pandasecurity.com>)

Families found creative arrangements when it comes to using digital media. Some of them are:

- No digital media before breakfast or before school.
- Watch only two episodes of a series every day.
- X hours/minutes per day/week (children thus learn to regulate their media consumption independently).
- Digital media time only on weekends, but unlimited.
- As much media time as the children did something else (e.g. playing outside, making music,...).
- Using media together with the entire family does not count toward individual quota (e.g., playing video games or watching a movie together).

As mentioned at the beginning, it is important that the rules are simple enough for children to remember. Consequences for breaking the rules must come from parents reliably, otherwise, they will not be effective as a tool. Children learn at an early age how their environment deals with media, which is why parents have an important function as role models. What cannot be avoided is that children with older siblings come into contact with content that parents might not have allowed for older siblings of the same age, e.g. watching movies with a higher age rating. Parents should keep a close eye on younger children for signs of anxiety or overexposure; otherwise, it's also okay for rules to adapt as situations change in the family.

2.1.4 Age Groups and Media Usage

Parents significantly influence children's interest in digital media with their own media usage. If mom and dad are looking at their smartphones all the time, this device must be something important. This is how infants interpret the attention the devices get. Parents are also the ones who give their children access to digital media. The majority of factors for children's media consumption lie therefore in the hands of the parents.

As mentioned earlier, there are no universal rules for determining the age at which a child is ready for a particular type of media. Only by accompanying and closely observing children parents find out which media is suitable for their children.

Rough orientation is provided by the media ratings of organizations such as the PEGI (Pan European Game Information, www.pegi.info) at the European level or local organizations such as the FSK (Freiwillige Selbstkontrolle der Filmwirtschaft, www.fsk.de) or the USK (Unterhaltungssoftware Selbstkontrolle, www.usk.de) in Germany.



PEGI age ratings and recommendations

Babies and Toddlers

Even if babies do not operate digital devices themselves yet, they are aware of them in their surroundings. Smartphones in particular have become a constant companion for parents, who use them to pass the time while breastfeeding, going for a walk or while being on the playground. While this promotes interaction with other people, which is important for parents, the device also builds up a barrier that can lead to a disruption of the bond between parents and children (Maute, 2018). In addition, parents unconsciously arouse children's interest in digital devices with their intensive usage: if mom and dad are constantly looking at this thing, it must be something interesting. Parents should therefore refrain from using digital devices whenever possible when they are in direct contact with their children.

When it comes to the question of whether toddlers should already be using digital devices, the question should rather be: what should they actually need them for? At this age, anything that flickers, flashes and makes noise is interesting. Toddlers, however, are not yet able to process all these stimuli. They are just as satisfied with a box of building blocks, a toy that makes music, or a bowl and a wooden spoon (Zeit Online,

2020). So from the point of view of the child's needs, there is no reason to start using media at this age.



Smartphone as a barrier between children and parents (Fotios, 2019)

For parents, it may be tempting to use the smartphone as a "digital grandma," and give them to children e.g., while waiting in a restaurant or when talking to someone. However, parents are triggering a learning process that increases the child's need to use media, which leads to an increased stress level in the family: Kids are impatient and nag, parents give them the smartphone to distract them. Next time, kids have learnt that being naggy brings them what they desire: their parents' smartphone. In order

not to enter this vicious circle it is important for children to learn that their needs are not always met immediately and that they learn to keep themselves occupied. Instead of leaving the smartphone to the child, families may have a few toys with them for such situations, such as pens and paper, building blocks, small toys, picture books or balloons.



Games for on the road

Kindergarten and Preschool

Even at this age, children do not need digital media yet, as there are still new and exciting things for them to discover in the non-digital world. The development of motor, linguistic and social skills do not need digital aids; in the worst case, they can even hinder them.

Children already express the need to use digital offerings at this age is due to the fact that they are omnipresent in the family life through the use of parents, grandparents or older siblings. Parents should also be aware: the more frequently and intensively children observe the use of digital media by others, the more interesting they become.

At this age, children should not use media entertainment on multifunctional entertainment devices, i.e. not on smartphones, tablets or PCs. Once the child has the device in hand, e.g. to play music or a video, it is difficult for parents to prevent children from using the device further. It is easier when children use media on devices with only one function, such as conventional MP3 players or special music players for children.



Audio players for children (distelAPPArath, 2020)

At this age movies or videos should be watched via TV exclusively together with parents. Traditional TV programs have the advantage that they offer only a limited amount of content and the time is determined by the broadcasting plan. Once children have discovered that video-on-demand solutions provide an infinite pool of shows and videos, this will lead to higher demand and more discussions. Traditional broadcasting television is therefore a good starting point for children to learn that media usage should be targeted. The end of a TV show is a good point for parents to end media consumption. As a first step kids can be allowed to watch one short program per day. In Germany, this is traditionally the five-minute bedtime story, broadcasted at 7 p.m., which for a lot of kids is the signal to get ready for bed.

Elementary School

Entering elementary school is a huge step for children in their development. One of the most important things parents have to do now is to support children where they need help, but at the same time give them space where they can take care of themselves. Children learn to trust themselves, and mutual trust is strengthened when parents allow them free spaces. This process is not easy and can only succeed if one accompanies children attentively, observes them and remains in exchange with them.

In the same way as parents walk to school together with their child to find the best route and point out possible risks, parents should be accompanying and practice the use of digital media with their child.

In elementary school, digital media, such as games and videos, is one of the main topics among children. However, there is a wide range of experience within classes. Some children are not yet allowed to use digital media at all, while others have older siblings and are already expert users. For families that try to have moderate digital media usage, there is high pressure because children want to keep up with their classmates. For parents, three things are important to consider at this age:

- **Agree on family rules:** Regardless of how media usage is handled in other families, parents and children should define their family rules in a way that corresponds to their ideas and values. Children learn that there can be different standards and rules and that it is important to define and defend one's point of view.
- **Prepare children for content that is not age-appropriate:** No matter what rules apply in the family and how consistently they are observed within the family, it can always happen that children get into contact outside with content that is not age-appropriate. Parents should discuss such situations with their children in advance and develop strategies on how to behave in such cases. However, children are often caught off guard in such situations and do not dare not to look at unsuitable content. If parents notice signs that children have encountered something unpleasant or upsetting, they should calmly seek out conversation (Coulson, 2017).
- **Seek conversation with other families:** If friends or other family members allow children access to media that parents consider not to be adequate, they should address this issue and explain their expectations concerning media usage. In the same way, parents should be sensitive to what is appropriate for kids from other families. If in doubt, parents should talk to other kids' parents before allowing access to a certain type of media.

Parents often wish to be in contact with their children while they are at school and therefore provide them with a smartphone. A lot of parents are afraid that their children could be kidnapped or harmed in some other way. However, the perceived risks differ strongly from the actual risks, as a study in 2012 showed (Schmidt, 2012). What parents are not aware of is that smartphones themselves open up new risks. If parents leave their kids alone with smartphones at this age, they are exposed to risks

such as inattention in traffic, problematic photo and video recordings, cyberbullying or contact with strangers on the Internet can arise. If parents want to give their child a communication device at an early age it should be a push-button phone that can only be used for phone calls.

Parents of elementary school kids should accompany any use of digital media, such as video games, chat programs or social media. There are many age-appropriate games, which will be further examined in **section 2.7 "Accompanying gaming"**. Most chat programs are not yet suitable for children at this age but closed family groups can be an opportunity to practice the basics of digital communication in a safe environment. Elementary school kids should never use social media apps unattended. A good way to learn how social media works and what the risks might be is to start looking together at content. Children should not post their own content at this age.

Parents can promote the positive use of digital media by giving their children access to the numerous learning apps presented in chapter 6.1. Again, however, these apps should only be used together with an adult.



Using digital media in the family (Subiyanto, 2020)

Secondary School (from 10 years)

Many European countries have a school system where after elementary school children have to go to a different school, which often is another milestone in a child's school life. Secondary schools are often much bigger than elementary schools, so orientation is much more difficult. In the new class, there are a lot of foreign kids and everybody has to find his or her role and place. Group dynamics often include the comparison of experiences, especially in the use of digital media.



Das Smartphone ist für Jugendliche ein ständiger Begleiter (StockSnap, 2017)

At this age, a lot of children get their own smartphone. Since smartphone rates are no longer expensive, parents often buy a high volume internet tariff for the new phone. They are unaware of the consequences this unlimited use may have. First, parents lose control over the amount of use, second, children can use their smartphones unattended by adults. Children should therefore start with a limited data plan (e.g., a prepaid card) when they start using a smartphone. Problems such as usage during school hours, excessive use of chat and video services, posting inappropriate photos and videos can be partially prevented with a limited plan.

Using digital media begins to change at this age. Children want to use the devices on their own without being accompanied by their parents. Parents must decide when kids are ready for this next step. They should be aware of the risks that arise from unattended usage, such as challenges, the dissemination of private content, bullying or pornography, and should also discuss these issues with their children.

At the age of 15-16, most teenagers are ready for unaccompanied online use. Whether a child is ready for this can be deduced from competencies in the analogue world: Mit 15-16 Jahren ist ein Großteil der Jugendlichen bereit, sich unbegleitet im Netz zu bewegen. Ob ein Kind schon bereit ist für die unbegleitete Nutzung kann man anhand von vergleichbaren Kompetenzen aus der analogen Welt ableiten:

- Ability to manage contacts with strangers
- Mastering unexpected situations alone
- Assessing risks
- Protecting oneself in case of threats or danger



Well-prepared, young people can navigate the web safely on their own (Ferrero, 2020)

If parents trust their child has all these competencies, the child is most likely ready to get along on their own in the digital world. Using digital media on their own can be compared to situations in everyday life, like visiting a larger city alone or going to a party where older people and strangers are present.

2.1.5. Technical Aids

There are a number of technical tools and aids to support parents accompanying their children using digital media. Various tools make it easier for parents to limit access to age-appropriate content and amount. If a smartphone switches off automatically after 30 minutes of use, parents don't have to constantly monitor their children and it's often easier for children to accept the automatic restriction imposed by the device.

Restricting Device Access

Parents should secure all devices with an **access code or password**, so that no unaccompanied access is possible (this also protects the devices from being used by strangers). Some people find it annoying to type in a PIN code on their smartphone but most smartphones and tablets today can be easily unlocked with a fingerprint scanner or other sensors. Smart TVs, game consoles or PCs should also be secured in this way.

Installing digital devices in **shared family rooms** prevents unattended usage especially with young children. A TV or game console in a child's room makes it difficult to keep track of usage. The same applies to smartphones and tablets. These, too, should not be in the child's room, especially at night. A shared place where all family members leave their devices overnight ensures distraction-free sleep.



"Smartphone bed" - all the family's smartphones can be stored here overnight

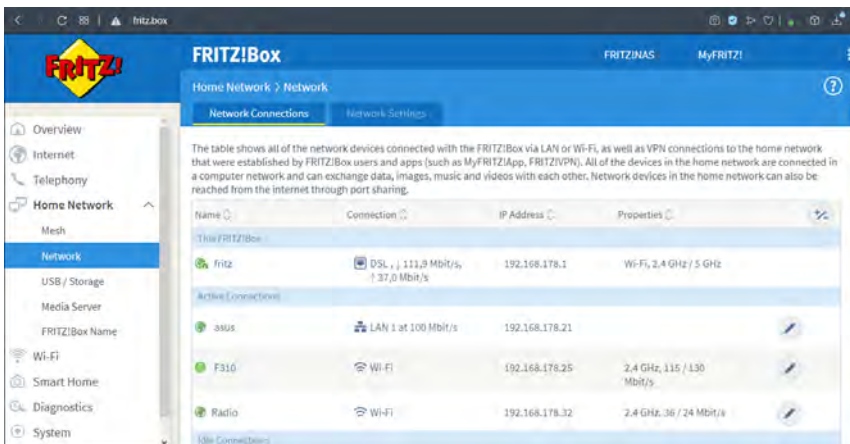
Limiting Internet Access

Many digital media services can only be used with Internet access. The central Internet access device is the Internet router.



Internet router (OpenClipart-Vectors, 2013)

Most Internet routers have functions for kids' safety. Access profiles for usage times and content filters can be set up. Parents should secure access to the router's settings with a password. All Internet routers provide an overview of the connected devices, where parents can see which devices are currently online:



Device list in the Internet router

In the router settings, access profiles can be defined, which include the duration of use, usage times and content filters. To ensure a good sleep, Internet access should e.g. be blocked at bedtime. Individual pages or so-called "blacklists" can be blocked to limit access to adult content.

Many Internet routers have a switch or button on the device to quickly turn off the entire WLAN or even the entire Internet access. However, this "emergency stop" switches off access for all devices in the household that are connected to it.

If parents are not comfortable with securing the router via the settings but still want to completely disable Internet access, they can either physically lock away the device or the necessary accessories such as power or connection cables or take it with them if they are leaving the house.

Note

The Internet router is a device that provides Internet access at home. Devices can be connected to the router either via LAN cable or wirelessly via WLAN. Further details can be found in our modul "Technology".

Attention

Content-based filters never provide one hundred percent protection and should only be used as an additional security function!

FRITZ!Box FRITZ!NAS MyFRITZ!

New Access Profile

On this page you can set up and edit the access profile.

Name

Time Limit

Here you can specify when (period) and for how long (time budget) internet use is allowed for network devices with this access profile. Enable the "shared budget" option if all devices to which this access profile is assigned are supposed to share the available online time.

Period

always

never

restricted

Time Budget

unlimited

restricted

Click on the color of the operating mode you would like to specify for a period within the schedule. Then select the desired periods by clicking and dragging in the diagram.

Select the tool with which you would like to edit the schedule:

Internet use allowed

Internet use blocked

Mo	0	2	4	6	8	10	12	14	16	18	20	22	24	Mo	24 h	00 min
Tu	0	2	4	6	8	10	12	14	16	18	20	22	24	Tu	24 h	00 min
We	0	2	4	6	8	10	12	14	16	18	20	22	24	We	24 h	00 min
Th	0	2	4	6	8	10	12	14	16	18	20	22	24	Th	24 h	00 min
Fr	0	2	4	6	8	10	12	14	16	18	20	22	24	Fr	24 h	00 min
Sa	0	2	4	6	8	10	12	14	16	18	20	22	24	Sa	24 h	00 min
Su	0	2	4	6	8	10	12	14	16	18	20	22	24	Su	24 h	00 min

shared budget

Use of guest access blocked

Network devices with this access profile are not allowed to use the internet via the guest access. Enable this option to prevent users from circumventing their time restrictions when the guest access is enabled.

Filters for Web Pages

Here you can specify whether websites are filtered for this access profile, and which ones.

Filter web sites

Filter Lists

Permit web sites (whitelist) (Show list)

Only the web addresses included in the whitelist can be accessed.

Block Websites (Blacklist) (Show list)

All web pages included in the blacklist are blocked. Calls via IP addresses are also blocked. (Display exceptions)

Block web sites with adult content (German BfJ/M module)

The web pages indexed by the German federal government (BfJ/M) will also be filtered.

Note:

The whitelist and blacklist can be read and edited under "Internet -> Filters -> Lists".

Set up restricted usage profile in Internet router for children

Controlling Smartphone and Tablet Usage

These security measures also apply to smartphones and tablets. Usage times and duration, as well as age ratings, can be controlled via the operating systems or special apps. Since kids will also use their smartphones when they are away from home without being attended by their parents, mobile device usage should be practised step-by-step:

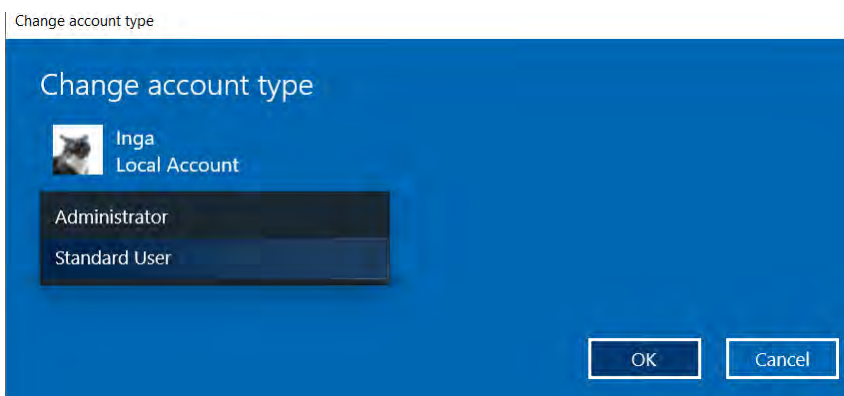
- **Accompanied use on the parent device:** Accompanied by their parents, children can use the device to for example hear radio plays, watch movies, use video telephony with family members or play simple games. Since parents are with their children all the time, when they are using the device there is no need for special technical protection. If parents do occasionally let their child use the smartphone unaccompanied, access to the device's functions should be restricted. There are functions built into the operating systems, such as Android Screen PIN (<https://unsplash.com/photos/LIaLQ2SIQuk>) or Apple's Guided Access (<https://support.apple.com/en-us/HT202612>), which make it possible to restrict access to only one certain app.
- **Cell phone:** A classic cell phone with a prepaid card and without too many fancy functions can be a good way to provide kids with a first communication device. The device does not serve as a status symbol, nor does it offer functions that lead to risky behaviour or excessive use. Children learn that mobile communication comes at a price, and to establish an unemotional relationship with the telephone as a communication device.
- **Smartphone without or with very little data volume:** If children get their own smartphone, parents can control the amount of use outside the home by the data plan they book for their child. Kids can start with no data plan at all or only a very limited volume. Children can then take photos and videos, play offline games or listen to music, but internet access is not sufficient to watch videos, play online games or upload photos and videos. This prevents excessive consumption. The functionality of the smartphone should also be adapted to the age of the child via apps such as **Google Family Link** (Hindy, 2019) or **iOS Screen Time** (OSXDaily, 2020) (age ratings for apps and content, usage duration and times, total activities, purchase approvals...). Parents should be aware that many parental control apps store children's usage data, which is problematic from a privacy perspective. The app **TimeLimit** (www.timelimit.io) for Android works in a data-saving way but is not compatible with all device manufacturers.
- **Smartphone with flat rate:** Kids should only be given a flat rate when they are able to use digital media independently (see the previous section).

There are also numerous settings within smartphone apps, to make them appropriate to use at a certain age. These settings will be explained in the last three sections of this chapter.

Some apps offer the option of tracking the child's location via GPS. Many concerned parents see this as a value-added feature since they can constantly see where their child is. However, they do not consider that this function means a severe threat to the child's privacy. They should therefore refrain from using these functions. Furthermore, it can make children very insecure if parents by using such functions suggest that the world too dangerous to get along alone. If families do use this function, the child must be informed about it and should also be given the opportunity to object to its use.

Controlling PC Usage

In every operating system, there is a way to **restrict the access of users** to functions of PC administration. Only an administrator has full access to functions, while normal users have only limited rights. Children should start with a user profile with limited user rights so that they cannot install programs on their own or make deep changes to the system. Under Windows, the settings for user rights can be found under Settings > Accounts.



Simple user rights under Windows 10

However, this basic setting offers only limited protection. Children and teenagers still have access to content and functions that are not age-appropriate. Additional parental control software is necessary for this. Similar to smartphone parental controls, most programs record children's usage behaviour and parents can view this data. If families use such software, children should definitely be informed about these functions before use and also have the opportunity to opt out of using them (in this case, access to the PC can only take place in the company of parents).

Those who use Microsoft 365 can use the "Microsoft Family Safety" function. Here, usage times and duration, app privileges, and much more can be set up (Shah, 2020). For iOS devices, there is the "Parental Control" function (Hanchar, 2020). Parental control programs are also available as separate software, e.g. as part of antivirus programs, such as Kaspersky Safe Kids (<https://www.kaspersky.de/safe-kids>) or standalone applications, such as JusProg (<https://www.jugendschutzprogramm.de/en/home-2/>) or Salfeld (<https://salfeld.com/en/>).

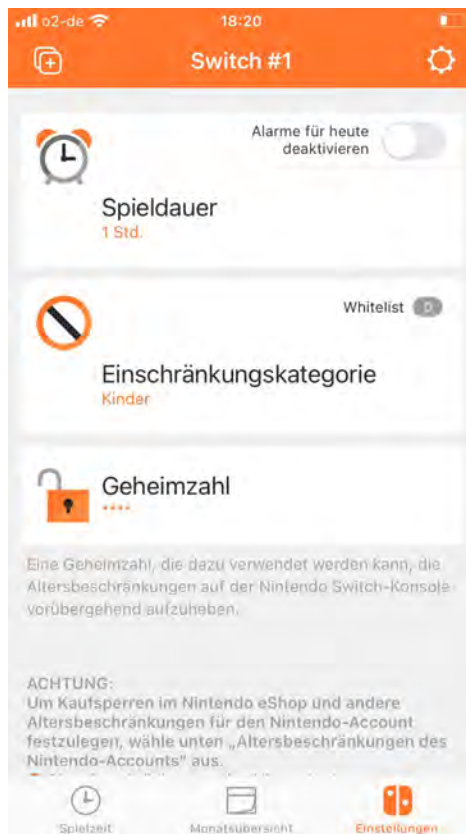
The PC should, of course, meet all basic security requirements and have up-to-date virus protection and system updates. But again, technical solutions do not offer one hundred percent protection. Children should always be accompanied in their initial use and prepared for what they can do if they unintentionally come across content that is not appropriate for their age.

Controlling game Consoles

The manufacturers of game consoles have realized that usage times and access rights are an important issue for families. Accordingly, there are numerous options for parents to configure access for children in an age-appropriate manner on all popular game consoles.

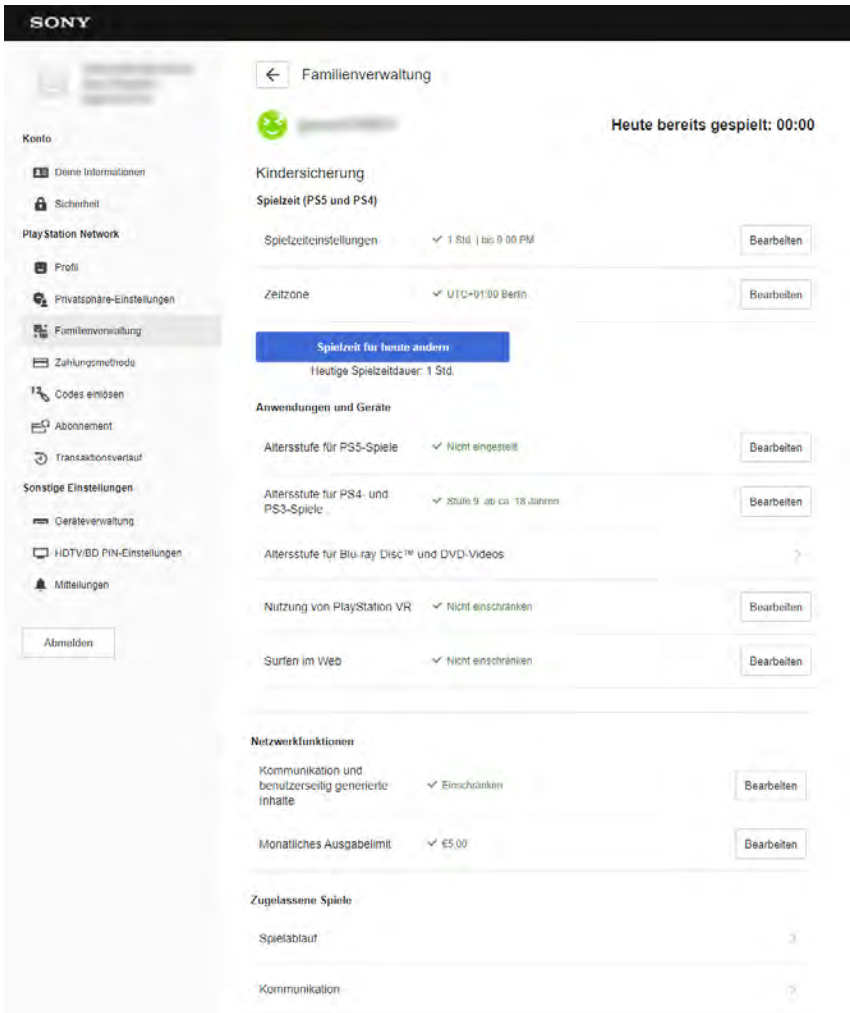
The **Nintendo Switch** console is often used by younger children and has an easy-to-use app that allows parents to control what the console offers and how it is used. One can set the game duration and a "good night alarm", as well as defining the age level for apps. Other settings allow disabling chat contacts, 3D view or sharing screenshots on social media.

If the app is activated, the activities of all accounts on the device are monitored. All family members who use the device should therefore be informed when the parental control app is used.



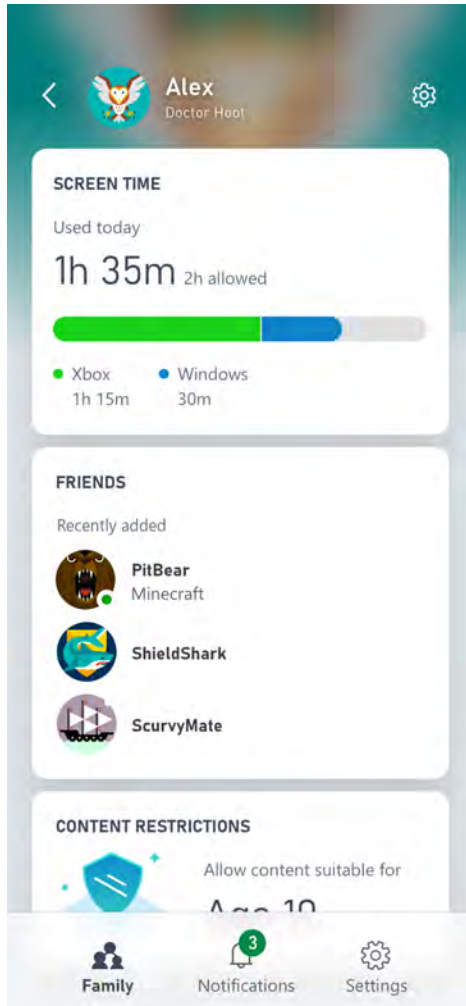
Access control Nintendo Switch app for parents (screenshot)

On **Sony Playstation**, settings are defined both on the console and in the linked parent account on the Playstation website. The website is a bit tedious to use, but you can find your way around and configure settings like usage time, age ratings, limits for purchases and contact with other players. The web browser integrated into the Playstation can also be disabled.



Playstation Family Management (Screenshot)

The setting options for the **Microsoft Xbox** are similar. Those who have a Microsoft 365 account can also control the child's access to the Xbox via the family function. The Xbox Family Settings app provides the same functions (<https://www.xbox.com/en-US/apps/family-settings-app>).



Xbox Family Settings App (Screenshot Microsoft)

Controlling Smart TVs

More and more devices at home include smart functions and are connected to the Internet. Smart TVs provide access to a wide range of media services and other functions. In addition to the classic TV programs, apps from video-on-demand providers are often installed on these devices. These apps usually do not have separate age verification, but can be password-protected. In addition, the entire TV set can also be secured with a PIN. Depending on how old children are, parents can either lock the entire TV or individual apps.

Smart Speakers and Voice Assistants

Smart speakers and voice assistants (such as Amazon Echo, Google Assistant, Siri or Alexa) are being used in more and more households and also in children's rooms. They offer access to a lot of content and functions, but they do not have appropriate child protection functions. To ensure that children do not come into contact with unsuitable content or use critical functions such as ordering products or controlling home automation, parents should assign a PIN for use wherever possible and not leave children alone with the devices. For data protection reasons, such devices should not be used in children's rooms.

As diverse as the devices and applications of digital media are, the demands on parents to competently accompany the use of these products are just as great. Parents must expand their digital skills continuously in order to guide their children into independent use.



Amazon's smart speaker "Echo" (Hurna, 2018)

2.2. Accompanying Children Using Digital Media

The risks for children and young people online are as diverse as they are in the non-digital world. In some places, the digital world offers protective functions that do not exist in the analogue world; in other places, new risks arise that did not exist without digital solutions. Parents often feel insecure in the digital world themselves and are not yet sufficiently familiar with the risks and dangers. This makes it even more important for parents to obtain comprehensive information on this topic. Only by that they can accompany their children appropriately on the Internet, recognize risks and dangers and protect their kids from them. The greatest risk for children and young people is that they are left alone in the digital world.

Many risks on the Internet share similar reasons and symptoms. Areas where risks can arise are:

- **Psychological risks:** the child's psyche can be negatively affected by information overload, addictive behaviour, loss of reality, and can cause effects such as stress, anxiety, or depression.
- **Social risks:** can arise from collaborative use of digital services, such as cyberbullying, violence, influencing political opinions.
- **Physical risks:** affect children's physical well-being, such as lack of exercise, posture problems, injuries during challenges.
- **Legal violations:** children and young people can be in danger of being victims of illegal behaviour or are at risk of committing them themselves.
- **Financial risks:** apps and services can expose children and young people to the risk of spending too much money.

A risk is defined by the danger of undesirable consequences. Whether these consequences occur and how severe they depend on the type of risk and how the risk is encountered. Parents who accompany the use of digital media ensure that children are not exposed to risks on their own and can learn to assess them without actually being in danger of negative consequences.

Studies on the causes and effects of digital risks must be considered carefully. All too often, correlations are turned into causalities. "Whoever plays shooter games becomes a killer." or "Whoever uses a lot of media becomes overweight." It is important that the correlations are considered well and that all influencing factors are taken into account. Overweight e.g. is not caused by gaming but by consuming unhealthy food during gaming and not moving enough (Kaes, 2017).

When faced with a dangerous situation, the human body automatically triggers fear and stress in order to equip us with the best functioning of our body. These mechanisms were helpful when our life was in danger and the best defence was either physically defending ourselves or running away. In the digital world, we no longer need these mechanisms; in some cases, fear and stress actually hinder us from warding off these intangible dangers. But herein also lies a great advantage of the digital world: as long as no one knows who we really are and where we live we are never exposed to

physical attacks. Especially for children and young people, it is therefore important to understand the importance of protecting privacy and personal data.

2.2.1 Psychological Risks

We as adults know from our own experience how good digital devices are at putting pressure on us to use them. They flash, they ring, they always keep us up-to-date with the latest news so it is very hard to resist the temptation to use them constantly. More and more adults come to the conclusion that the amount of information and interaction is too much for them, but only few are actually taking measures to reduce their usage. In the same way, digital devices cause stress and overload in children. Elementary school students, for example, report reading over 1,000 messages in class chat in just one day, and many express that they feel overloaded by the amount of information.

Why do we so rarely manage to put the digital devices down? Subconsciously, there is the **“fear of missing out”**. The term **FoMO** was coined for this (Barker, 2016). Although we realize that a high media consumption is not good for us, at the same time it offers appeal to our innermost needs (see chapter 2.1). Finding a good balance for the use of digital media is therefore a great challenge of our time.

If we are honest with ourselves, a large part of the messages that we send every day are not highly important. We send them because we have a smartphone with us all the time and out of boredom. We are often unaware that we are placing a high burden on other people who need to read and answer all these messages. Families should therefore practice **reducing digital communication to a level of necessary messages**. Grandparents should also be included in this exercise because they have become excessive users of chat groups and social media as well.

Research into the psychological risks of digital media is still at an early stage and has so far provided only few explanations and diagnoses. Technology progresses fast and the problems are complex. While a large proportion of people would agree with the statement "The use of digital media leads to stimulus and information overload," it is difficult to find evidence for this in scientific studies. Often enough, there are contradicting results of studies (Becker, 2018).

Regardless of scientific results, families should keep an eye on how children are doing when using digital media. Not all problems can be seen from the outside, which is why talking regularly with all family members is the most important method for sharing negative feelings, experiences or fears and looking for solutions together.

If children show symptoms such as **bad mood, headache, tantrums** or **sleep disorder** after using media, the reason may be **stimulus overload** or that they have been exposed to **unsuitable content** (Kita.de, 2020). For parents, this should be a clear sign to closely monitor their child's media usage and maybe limit the amount, timing or type of use. Anyway, they should accompany their child in the use of media until a solution is found and the child feels well again.

Tip

Do you know how long you use your smartphone every day? First, try to estimate it and then check it, with functions like "Screentime" (iOS) or "Digital Wellbeing" (Android). How good was your estimate?

The signs of **addictive behaviour** when using digital media were explained in Chapter 2.1. So far, only **gaming disorder** or video game addiction has been included in the catalogue of diseases of the World Health Organization (WHO, 2020). Its inclusion in the catalogue is not without controversy. One main criticism is that video game addiction is only a coping strategy for other diseases, especially **depression** (Liu, 2018).



Regular conversations can reveal negative issues before they become actual problems.
(Free-Photos, 2016)

Being the only digital disorder included in a medical catalogue does not mean that digital products other than gaming cannot cause similar negative impacts. So-called **"behavioural addictions"** can develop from virtually any type of digital media use. There are people who exhibit addictive behaviour when using social media, others excessively research and comment on the Internet. To assess whether the behaviour is a problematic one, people should ask themselves whether the person's behaviour is affecting themselves or their environment negatively. Long before addictive behaviour develops, patterns of behaviour emerge that are clearly disrupting family life: children neglect school, don't follow the rules of media use, or isolate themselves using digital media. Being aware of these signals can prevent the development of actual addictive behaviour. Parents should try to find out about the problems that cause this behaviour (help options and counselling centres can be found in Chapter 2.1).

The negative psychological effects of content that is **not age-appropriate** have also already been explained in the previous chapter. Again, the importance of preparing children and young people for such content needs to be emphasized once again, even if it is ensured that at home such content is not accessible. Some aspects that parents should discuss with their child early are:

- **Difference between reality and fiction:** This helps children to classify media content. Real content, especially real violence, has a much stronger effect on children than staged depictions (Internet ABC, 2020 [1]). Today, many shows deliberately set out to dissolve these boundaries in order to leave a stronger emotional impact on viewers. Many children and young people (unfortunately also quite a few adults) do not recognize e.g. scripted reality formats as a fictional format and think it is reality (Charan, 2017).
- **Sexual content and pornography:** Children today come into contact with Internet pornography around the age of 10. Even before that age, children are approached by adults with sexual motivation in chat programs, social media or video games. It is therefore very important **to talk to children about sexuality at an early age**. There are a variety of books to support parents in finding adequate ways to discuss this topic in an age-appropriate way. Talking about these things early on is a positive sign for children to address these topics in the family without being afraid or ashamed. This increases the chance that children will seek help from parents when they encounter content that scares or upsets them (Internet ABC, 2020 [2]). If adolescents are open to talk to their parents about pornography, they should take the opportunity and address the often unrealistic portrayal and possible negative effects. Studies e.g. show that intensified use of pornography can lead to **decreased sexual satisfaction, false expectations, increased pressure to perform, loneliness, and the end of relationships** (Brenner, 2018).
- **Depiction of violence:** Violent depictions in movies and video games and their influence on children and adolescents has long been debated in the scientific community (American Psychological Association, 2013). Many studies detect that aggressive children and adolescents frequently consume violent movies and video games and infer a cause instead of just a correlation. Consumption of content that is not age-appropriate is often an indication of a distorted parent-child relationship (Huang, 2019). That causality is questionable can also be deduced from the fact that a large proportion of adolescents use video games with violent content without developing psychological problems. However, parents should closely monitor whether such content is consumed to compensate for problems or if it is just for fun.

Parents should under no circumstances blame children if they have come into contact with inappropriate content. They should rather strengthen them and seek strategies on how to prevent such situations in the future (Internet ABC, 2020 [1]).

Fear and Depression

Fear signals the human body to be aware of risks and make it more efficient by releasing performance-enhancing substances. Fear should therefore be seen as something positive, as it is kind of an alarm system. Parents should encourage children to see the feeling of fear as a warning sign, too, which means that they should either move away from something dangerous or get help.

If **fear becomes a permanent condition**, it harms people because the permanent state of alarm means permanent stress. People develop a variety of fears in connection with digital media. These fears are connected to insecurity, being overwhelmed or the feeling of losing control.

For children and young people, it can be a dare or a search for confirmation when they **expose themselves to fears**. As in the analogue world, dares also take place in the digital world: looking at forbidden content, contacting strange people or creating risky videos. If such experiments go wrong, parents should react with understanding and help children to learn from this experience (Internet ABC, 2020 [1]).

Studies often find correlations between excessive Internet use and **depression**. Common to both behaviours is that those affected by it report difficulties in regulating their emotions. If one causes the other or if both are merely symptoms of a completely different cause has not yet been clarified (Hoge, 2017, p. 77).



Without downtime and balance, the digital world can easily be overwhelming (Piacquadio, 2018)

Stress and Lack of Concentration

Digital media can cause stress in a variety of ways and trigger concentration deficits. In addition to information overload and the fear of missing out, further stress factors can be observed (Schwenninger Krankenkasse, 2019):

- **Permanent distraction** through chats or social media messages. Devices and apps constantly alert us through visual and acoustic signals or vibrations that we should take care of something.
- **Constant availability** takes away the opportunities to relax and unwind.
- **Sense of obligation** to respond directly.
- **Peer pressure**, e.g. in chat groups or video games.
- **Reward features** in apps that should increase interaction (e.g., the Snapchat flame).

These are all stress factors that we could switch off at the push of a button. However, the pressure and stimulus that digital media exert on us are too great. Parents can be a good role model for their children if they are showing how they **regulate their media consumption themselves**. By having their children spending media-free time from an early age on and giving them space to develop alternative interests, parents pave the way for a balanced media use (Bruce, 2013).

Insecurity and Excessive Demands

Access to digital media has given us an enormous **increase in information**. It is difficult to judge whether the future is more uncertain today than it was a hundred years ago. In any case, we are aware of it more than ever as the world's problems are presented to us by digital news feeds nonstop. A major contribution to the perceived uncertainty is the often sensationalist reporting of news channels. In digital media, the number of clicks and interactions has become the most important measure and currency. Digital news channels all too often make their news look more dramatic than it really is to provoke interaction. Parents should discuss this development with their children and help them to make a realistic assessment of the situation. Parents set an example of how to inform themselves about events in the news. Having the TV running for 24 hours a day when a catastrophe has occurred, increases the feeling of insecurity and danger - not only for children and young people but also for adults.

Discussion about **fake news** or **fake videos** become more and more popular and with it the trust in media decreases. Parents should familiarize children with these issues early on and provide them with methods to find reliable sources on the Internet.

Tip

● Play the "Bad News Game" together as a family. The target of the game is to use fake news to gain influence in social media. In a playful way, you learn about the methods of social media
<https://www.getbadnews.com>

Feeling Inferior

Social media in particular contributes to increased insecurity of children and young people. As many of them constantly watch the images of seemingly perfect people in seemingly perfect lives, they end up comparing their life and themselves with the lives of so-called “influencers”.

Influencers are particularly appealing to children under the age of 10. They allow their followers to get close to them and share all of their private moments with them. There are a large number of reports on the Internet that show what is behind this illusory world. Together with their children, parents can talk about the topic using videos and images:

- Are You Living an Insta Lie? Social Media Vs. Reality <https://www.youtube.com/watch?v=0EFHbruKEmw>
- The Problem with Instagram Influencers <https://www.youtube.com/watch?v=-V1pVv9Sw98Q>
- Social Media und Depression: Wenn Facebook dein Leben zur Hölle macht || PULS Reportage https://www.youtube.com/watch?v=E2q0V1VEj_c
- ‘Instagram vs. Reality’ Exposes The Truth About Those Unrealistically ‘Perfect’ Pics https://www.boredpanda.com/instagram-vs-reality-fake-pics/?utm_source=google&utm_medium=organic&utm_campaign=organic



Social media posts require a lot of work but look like they are created casually in everyday life (Podrez, 2020)

Aggression

Aggression is an innate, instinctive behaviour that can also be observed in the animal world, for example, when defending territory or hunting. Perhaps that's why we have a hard time accepting aggression as a part of human nature. Family researcher Jesper Juul sees the cause of aggression in a variety of reasons. On the one hand, it can be a positive power struggle, such as scuffles between siblings; on the other hand, it can be a sign that someone does not feel respected or accepted by the other person. Sometimes people simply learned aggression as a behaviour pattern (Juul, 2013, p. 87).



Struggles can have serious but also playful backgrounds (Pixabay, 2016)

Aggression is often talked about in the context of **video games** and **hate speech** on the Internet. The American Psychological Association (APA) has done a lot of research about video games and aggression. In 2020, the APA stated again that there is no scientific evidence that video games cause aggression and violence. Rather, it is likely that violence and video games are phenomena of similar causes (APA, 2020).

The extent to which social media promotes aggression has also not yet been sufficiently clarified. Although studies show a **higher level of aggression among Facebook users**, the cause of this is not clear (Kaczinski, 2019, p. 61). To make children and young people aware of the issue of hate speech, they can be taught early on the basics of what is called "netiquette", which means good manners for talking on-line (i.e. the rules of etiquette on the Internet <https://checkmybroadbandspeed.online/what-does-netiquette-mean/>).

Desensitization and Loss of Empathy

Science could not finally agree on the degree to which social media causes desensitization and loss of empathy. Again, correlations are observed, but a causal relationship has not yet been proven. An overview of previous studies is provided by Gao et al (2017).

Fortunately, parents don't need scientific studies. They can focus on making sure their child is feeling well. Openness, understanding and regular conversations are the best basis for recognizing psychological problems early on and seeking support from professionals when needed. This also helps to avoid negative developments like desensitization and loss of empathy.



Trust is the most important basis for talking about problems (Subiyanto, 2020)

2.2.2 Social Risks

In addition to the psychological risks, digital media can also have a negative impact on groups or society as a whole. Cyberbullying usually affects smaller groups, while phenomena such as political extremism, agitation, fake news and hate speech affect society as a whole. Social media has contributed to the increased visibility of negative developments as algorithms are pushing these kinds of news heavily. At the same time, for a lot of people, social media has become the main source of information. They do not take into account that this source is not subject to quality control and that its methods and algorithms reinforce negative content (Lawson, 2019). By using reputable news sources, parents model competent media use to their children.

Young people have rated the five most serious negative impacts of social media (Pew Research Center, 2018):

- Bullying and rumours
- Disruption of interpersonal relationships
- Distorted views of reality
- Risk of addiction
- Peer pressure

Social media influences key areas of children's and young people's social life, above all the dynamics of group affiliations. Even before digital media became popular, group dynamics provided a huge potential for conflict among children. The use of digital media adds further problems.

Digital devices, especially smartphones, are an important **status symbol** for children. Those who own a smartphone at an early age can be sure of the recognition and also the envy of others.

Group dynamics also arise among parents around the topic of media use. Some parents are not worried and let their children have their own devices at an early age. Other parents are concerned about the risks and refuse to let their children have their own device. Others don't want their children to lose prestige within the group and therefore buy them a smartphone. Parents often don't talk with other parents about these topics. It would be a win-win situation for everyone if the goals, risks and rules of media use were discussed at an early stage. Ideally, this would lead to common guidelines that the entire class can follow.



Smartphones are a status symbol for children (Peggy_Marco, 2016)

If it's already hard for parents to resist **peer pressure**, how much harder is it for children? If families decide to go their own way and, for example, do not provide their child with their own smartphone, they should accompany their child closely and regularly seek discussion about how the child feels about it. For the child, it can be a strengthening experience not to be exposed to the pressure of the majority, but he or she should not be left alone in this situation.

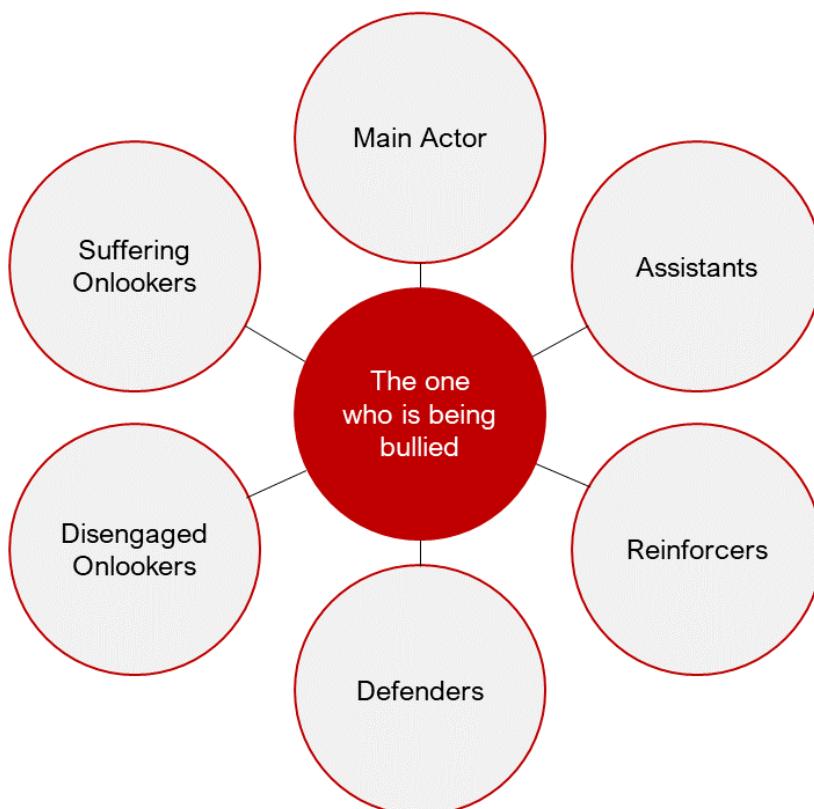
Most **disruptions of groups** are caused by communication on digital channels. Parents should therefore introduce their children to the rules of **good communication on online channels** at an early stage and set a good example:

- **An appropriate amount of communication:** do not write or publish every little thing, choose proper channels.
- **Appropriate language:** respectful communication, no insults.
- **Do not resolve conflicts through digital channels.** Instead, seek face-to-face conversation.
- **Check information** before forwarding or sharing it.
- **Respect others' rights.** This also means that parents ask their children before sharing or posting photos or videos of them.

One of the most serious problems of digital media for children and young people is **cyberbullying**. Bullying usually happens in secret, which is why digital communication channels have become a major place for such attacks. Today, first chat groups in classes are formed as early as elementary school. However, children are rarely accompanied by adults. Since they are not familiar with the abovementioned rules for good digital communication, an enormous potential for conflict inevitably arises. As soon as the first children in a class own a smartphone, rules for its use should be agreed upon with the entire class. This makes children aware of the problems and gives them a set of rules that they can refer to if others break do not behave well. If cyberbullying occurs in a class, it is important to approach the problem as a systemic one. It is not just about "the perpetrator" and "the victim," but about a complex web of roles and



Tip
 Teaching material on the topic of class chat rules are provided by the Klicksafe initiative:
<https://www.klicksafe.de/service/aktuelles/news/materialien-zum-umgang-mit-klassenchats/#s|klassenchat>



The system of bullying (Blum und Beck, 2012)

relationships that can only be addressed in the group. If teachers are not specially trained for this, they should seek support from professionals. Parents also should try to understand their child's role in this conflict and talk with them about their options for action.

Digital media so far does not seem to have a positive impact on the cohesion of society. On the contrary, tendencies for a division of society and an undermining of democracy are widely discussed. But one should not ignore the fact that digital media are still used by most people in a positive way that can strengthen social cohesion. Still, it's important for families to stay in the loop about these developments and provide children and young people with methods, such as checking information, standing up against hate speech, and supporting others online when they have problems. The current state of the online society can be considered as a kind of a digital state of nature. Families have the important task of supporting their children in becoming responsible users of the digital world and reinforcing the positive aspects.

2.2.3 Physical Risks

The best documented physical risk of digital media use is **inactivity** and **lack of exercise**. This happens when digital media usage displaces other activities. Parents should therefore care for enough motion in everyday family life, e.g. walking or cycling to school, club sports or joint sports activities (Klingschat, 2020).

Lack of motion can have serious consequences. The most common medical conditions include **obesity** and **back problems**. Younger children in particular show motor disorders if they spend too much time on digital devices instead of playing in motion. The risk of cardiovascular disease also increases. Obesity in particular can lead to further psychological or social problems, such as cyberbullying or low self-esteem.

A side effect of intensive media consumption can often be **poor nutrition**, which also increases the risk of obesity. Parents should therefore ensure that children and young people do not consume soft drinks, sweets or snacks while using digital media. Eating and drinking should never happen casually, otherwise, kids lose control over the amount (BZgA, 2020)..



Action in motion should be part of everyday family life (_Kardinal_, 2017)

Eating Disorders

The influence on body perception by media has not only been discussed since the advent of digital media. Before that, printed media, movies and television were criticized for propagating body images that do not correspond to the average (O'Neill, 1991). For a long time, eating disorders were dismissed as a fad of teenagers; fortunately, the disease is now generally recognized and can be diagnosed and treated. Although the disease manifests itself in physical symptoms, the primary cause is psychological and is often accompanied by anxiety disorders, depression, self-injury, or borderline disorders. An introduction to this topic can be found at: <https://www.healthline.com/nutrition/common-eating-disorders>.

An eating disorder often starts with the feeling of not being good enough. People with **low self-esteem** are particularly affected. How much impact this questioning of one's worth have can be determined by personal (e.g., genetic) predispositions or by the social environment (Burger, 2017). Social media have led to children and adolescents spending a lot of time looking at the staged, unrealistic body images of others. At the same time, they feel pressured to post content themselves and constantly engage with their own body image. Likes on social media for these people become a measure of value but individuals can rarely get close to the numbers of professional influencers, so a constant feeling of failure can arise (KKH, 2019).

Preventing these diseases starts with a **trusting and close bond between parents and children**. Since children and adolescents often feel strongly pressured by their environment, the family should be a space in which they are accepted as they are. Parents can support their children by (Lopez-Witmer, 2020):

- Helping children and young people develop a healthy level of discipline without turning it into compulsive perfectionism.
- Supporting children and young people in taking a realistic view of images in the media.
- With younger children, choosing together which people to follow on social media and find good role models.
- Practising to create social media posts together and also critically scrutinize them under the aspects mentioned above.

Physical Injuries

There are no precise figures on how many accidents occur as a result of digital media. However, statistical trends and media reports suggest that there might be a connection.

Smartphone use has an important impact on **road safety**. A lot of accidents happen because road users are distracted by their smartphones. Many countries have banned the use of smartphones on the road. As soon as children have their own mobile phone, parents should discuss the rules for using the device outside the home. The most important rule is to only use the phone in a safe place, away from traffic and under no circumstances when moving on the road (Henley, 2013).



Adults are often not good role models in road traffic (Piacquadio, 2020)

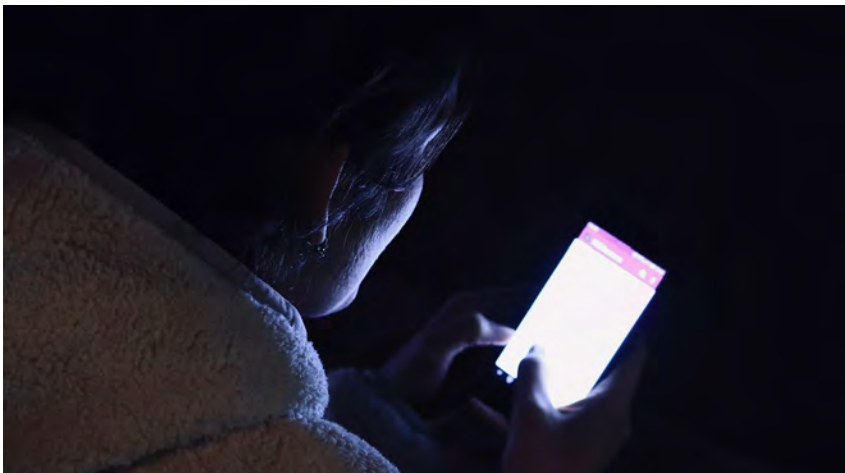
The number of accidents increases, which happen while people are using social media. Reports of people getting hurt or even dying while taking a risky selfie keep popping up in the news. Social media rewards risky behaviour with high click rates. Children and young people understand this mechanism very quickly but are often not yet ready to assess the risks appropriately. So-called "**challenges**" where people film themselves doing a certain task for posting them on social media can bring children into risky situations (Bansal et al, 2018).

Children and young people are often under big **pressure from their environment**. Although they may be aware of the risk, they engage in risky behaviour. Those who have a healthy self-confidence find it easier to say no in these situations. Parents should encourage their children to take their time to reflect on such situations and to think carefully about whether the risk is justifiable. If parents see risky content on their children's social media channels, they should talk to them about it. Above all, if children and young people receive enough confirmation and recognition in everyday life, they are less likely to seek this confirmation through risky behaviour on social media.

Fatigue

Fatigue is one of the most obvious symptoms of heavy digital media usage when sleep is reduced in favour of use. As outlined in 2.1, parents can prevent this by technically limiting the usage time and duration and keeping the devices out of the children's bedroom at night.

Screen devices should not be used before going to bed. Apart from the fact that such activities stimulate the brain, the **spectrum of light** from the screens also signals to the body "daylight, you need to be awake now" (Willemse et al, 2015). Many devices now have a dedicated "night mode" with warmer light. E-book readers are not problematic if they have an e-paper or e-ink display that is not illuminated.



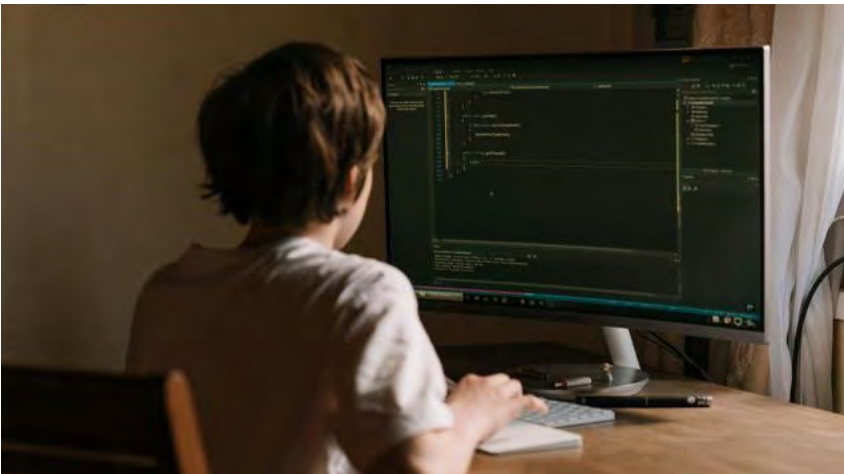
Illumination from the screens of digital devices signal to the body "daylight, wake up" (simard-francois, 2019)

Tip

Parents are also often disturbed by their smartphones at night. They, too, should learn to switch off or at least activate the "do not disturb" mode.

2.2.4 Legal Violations

People sometimes have the impression that the Internet is a space where the law does not apply. While there actually are (and always will be) illegal activities, states have expanded their legal regulations to large areas of the digital world. The topics of data protection and sexual assault in digital media will be addressed in a separate chapter due to their high importance. Please note: although a lot of laws in the field of cybercrime have been agreed on EU wide, there are still a lot of differences across the EU countries. This chapter will mainly focus on the situation in Germany.



Children can get into contact with legal violations in the digital world (cottonbro, 2020)

To ensure that children and teens do not become perpetrators or victims, families should regularly discuss basic legal issues. There are crimes that children and adolescents often are not aware of. Parents should address these topics as soon as their children spent unattended time on the Internet:

- **Insults:** Expressions of disrespect or disregard are insults to other people. For children and young people, it can be difficult to distinguish, as insults have become part of common speech. Children should be made aware that under no circumstances should they use insults towards people who might not share their style of language. This includes teachers and officials. Whether one utters an insult or expresses it on social media is irrelevant. Both remain a criminal offence.
- **Defamation and slander:** when someone deliberately claims false facts about a person or facts that damage their reputation.
- **Violation of the right to one's own image:** Photos or videos of people may not be published on the Internet without their consent. This should definitely be discussed with children before they get their own smartphone with a camera function. Children have great fun taking photos, but should be aware of image and personal rights. In Germany, the "highly personal" sphere of life is particularly protected, which is why photos in private homes, changing rooms or in helpless situations, for example, are prohibited. Of course, all these rights apply to children themselves as well, so parents should discuss whether publications of photos of their children are okay for them.
- **Copyright infringement:** With one click, almost anything is downloaded from

the Internet and also uploaded again to make it available to others. Technical hurdles, such as copy protection, rarely exist. Children must therefore learn which content they are allowed to use freely on the Internet and which they are not.

- **Dissemination of pornography:** Sexting, i.e. sending erotic photos or videos via chat programs, is part of the relationships of young people today. But often this material is shared with third parties. Depending on the content of the photo, redistribution can fall under the criminal offence of distributing juvenile or even child pornography (dpa, 2018).
- **Using prohibited symbols and sedition:** Can happen especially if children receive such content via social media and redistribute it without checking it.

Besides the crimes that may happen because children are not aware of them, there are acts that must be actively prepared and committed. Unfortunately, the Internet provides a lot of instructions for such crimes and incites imitation:

- **Stalking:** When someone repeatedly approaches others unlawfully and harasses or threatens them. This also includes contact via digital media.
- **Spying on data:** For young people, it can be challenging to gain access to IT systems and other people's data. There are a large number of instructions and tools on the Internet that can be used to gain access to other people's systems without much technical knowledge. Since these deeds are often committed for receiving recognition by others, young people often talk about them on digital media channels and thus can often be convicted.

Politically extremist crimes arise from a complex system of causes. Committing such crimes is usually preceded by a process of radicalization. The family situation can contribute to this process but does not necessarily have to. If young people are still living at home, families definitely have a chance to perceive personality and behaviour changes. But often enough they are too deeply involved in the system of reasons so that they can provide only limited support in preventing these crimes. Extremism often arises from a lack of perspective or despair. Parents who provide a loving home and understanding for their children and support them in building a perspective for their lives do their best to prevent such acts.

In many countries, there are institutions that help families correctly assess signs of extremism and, if necessary, support young people in dropping out.

- Germany: <https://www.aktion-neustart.de>
- Austria: <https://www.beratungsstelleextremismus.at>
- Spain: <https://recura.es>
- France: <https://www.cipdr.gouv.fr/prevenir-la-radicalisation/reperer/>
- Information in english: <https://actearly.uk>
- EU project on the prevention of extremism: <https://www.ycare.eu>

In addition to these offences that children and young people are in particular exposed to, there are further offences which affect adults just as much. Wherever possible, parents should share their knowledge of Internet safety with their children and practice it.

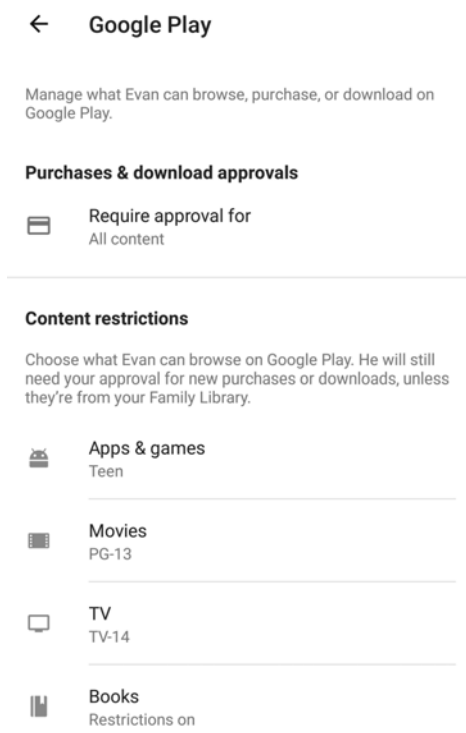


2.2.5 Financial Risks

The Internet has evolved from an academic network into a global marketplace. Many business activities have shifted to the Internet, and a large number of new businesses have been created there. Spending money on the Internet is now almost as easy as on the street. Children and young people have to learn how to deal with these new opportunities.

App or In-app purchases are often the first contact of children with money on the Internet. If the app itself is for free, additional features can often be purchased. One of the most successful online games that are built on this business model is Fortnite by Epic Games. In 2019, players bought add-on items worth \$1.8 billion (Wittkowski, 2020).

Such offers often appeal to children and young people. Whether or not parents allow their children to buy such products depends heavily on personal attitudes and also on how much money families have. In a survey, young people between the ages of 12 and 17 said they spend an average of around EUR 100 per year on in-app purchases (Forsa, 2019, p. 41) The main risk is **losing track of how much money has already been spent**, given the many small amounts involved. Parents should therefore monitor purchases on the Internet very closely and, as with pocket money, only give children a small number of credits in the beginning.

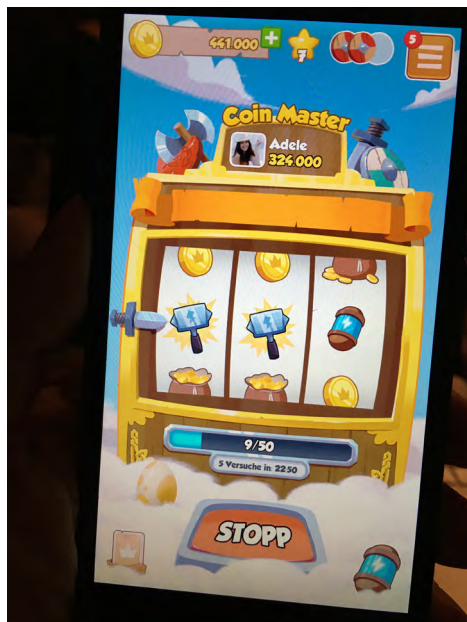


In Google Family Link spendings can be restricted or set under parental control (Screenshot)

As the spendings for digital offerings are often spread across many services and apps, it is easy to lose track of the **total costs of digital use**. To make children and young people aware of this, families should talk regularly about the total costs of digital services: Internet access, mobile phone tariffs, video-on-demand, games or music subscriptions.

In former times, people used to ring doorbells to sell newspaper subscriptions. Today, people are offered similar contracts on the Internet for ringtones, wallpapers or music, but also for non-digital stuff like dietary supplements or slimming pills. However, as the methods to make people sign such contracts are often intransparent and tricky, these offers have fallen into disrepute (<https://www.getsafeonline.org/shopping-banking/subscription-traps/>).

Many countries have put legal restrictions on these kinds of practices, but providers are creative and still manage to trap people. The good thing is that people are often reimbursed for the costs if they complain to their mobile provider. To prevent children and young people from falling into this trap, some mobile providers allow blocking such subscriptions (known in Germany as a "**third-party provider block**") (Test.de, 2020). Parents should also make children aware of the possibility of **unwanted purchases**. Young people, later on, will benefit from this lesson when they have unlimited access and spend their own money.



The Coinmaster app uses elements of classic gambling machines (Screenshot)

With **online betting** and **online gambling**, people can legally lose the highest amounts of money on the Internet. Although the risk of addiction is high for these offers, they are not prohibited in many countries. Compared to arcades, betting offices or casinos, online gambling is convenient and can be used in one's private space. Studies indicate that these offers are increasingly used by younger people. Controlling the amounts wagered is often more difficult here than in stationary gambling (Gainsbury, 2013). Stationary gambling has recorded declining customer numbers for a couple of years,

which is why the industry is trying to address young people as a new target group. The "Coin Master" app by Moon Active pursues this target by questionable means. It is a gambling simulation aimed specifically at children and is intended to introduce them to the mechanisms of gambling (Grube, 2019). The app, therefore, had to be marked with an age rating of 18 years.

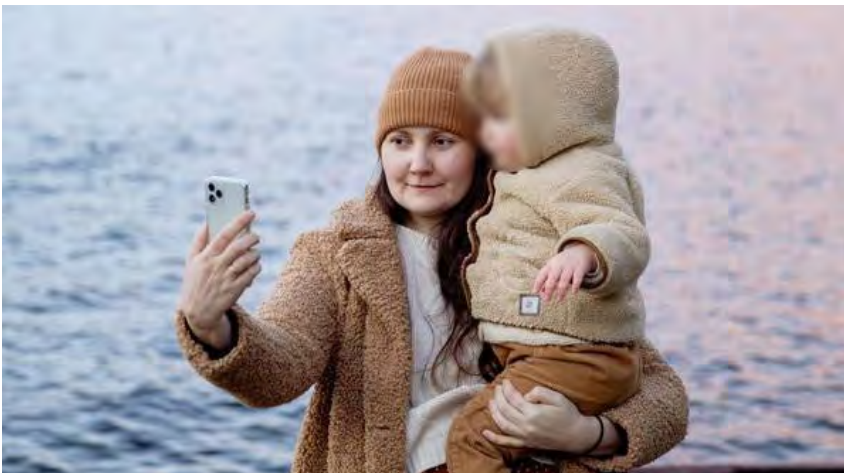
Again, it becomes clear how important it is to accompany children in their use of on-line services. Children must learn to recognize risks and develop strategies to deal with them. Parents are the most important teacher in this process.



2.3 Data Protection & Privacy

We explain the basics of data protection and privacy elsewhere. This section will focus on the aspects that are important for families and how to ensure data protection and privacy in family life.

For almost a quarter of all children, their digital life begins even before birth: many parents publish ultrasound images of their unborn children on the web. For 7% of all babies and toddlers, parents have already set up an email address. By the second year of life, 73% of all mothers in the EU have published photos of their children on the Internet (MacDermott et al, 2010).



The digital identity of children begins long before they are active on digital media themselves (Syrıkova, 2020)

Despite this often unreflected handling of young children's data, more and more people call for better protection of children's data even in the USA, the birthplace of social media (Allaert et al, 2019). YouTube and TikTok have faced massive criticism for processing data of children and young people. In fact, after public pressure, these services have made improvements to better protect children, as will be explained in more detail in the chapter on the use of social media (see chapter 2.6).

Social media reinforces the so-called "**privacy paradox**," according to which we claim that data protection and privacy are important, but we do not act like it (Bongiovanni, 2020). Convenience features such as personalization and ease of use (e.g., clicking away privacy statements without reading them) ensure that we continue to be very careless with our data.

As soon as children discover social media, most of them want to become active on these channels as well, to gain public recognition and attention and to be part of the community. Tiktok, for example, is very popular with elementary school children, and it is often difficult for parents to deny children the desire to post content there themselves. However, parents are often unaware of the risks involved in publishing such content.

Tip

Glenn Greenwald talks about the importance of data protection and privacy in his Ted Talk:

<https://www.youtube.com/watch?v=pcSlowAhvUk>

How important it is to introduce young people to Internet risks and make them aware of data protection and privacy is shown by a large number of young people affected by cybercrime because they do not protect themselves adequately online (Zeit Online, 2019). Therefore, parents play an important role in sensitizing their children to these issues early enough. Since they themselves are often not experts in this area, the first section starts by showing some examples of where and how data is already being collected and used online.



Being present on the Internet or remaining anonymous - often a difficult choice (Minisunrizer, 2016)

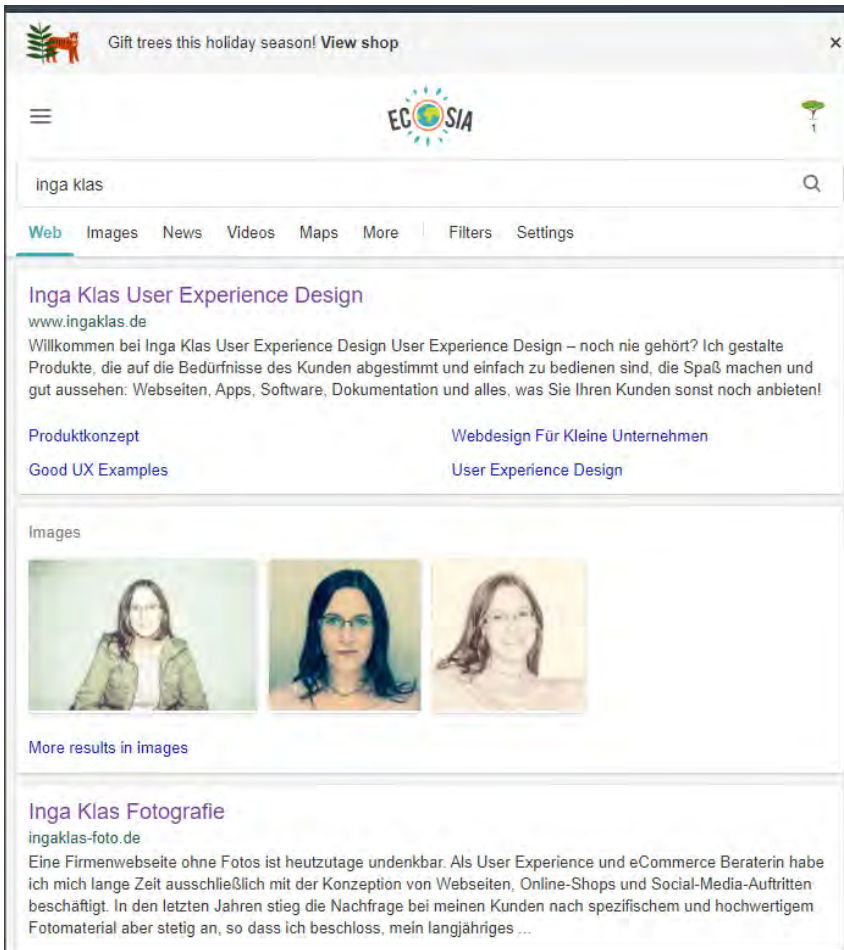
2.3.1 Making visible who tracks your data

It is often not clear how important it is to protect one's personal data because the collection and processing of data usually take place in IT systems that are not accessible to users but it is possible to make data traces visible. However, the methods presented below only make a small portion of our total personal data visible; the majority is collected without us noticing it.

Search "Me" in Search Engines

The most obvious data traces on the Internet can be found via simple queries in search engines. From time to time, you should enter your name and that of your children in search engines and search functions of social media. In this way, you can find either unwanted or even deliberately falsified information on the net.

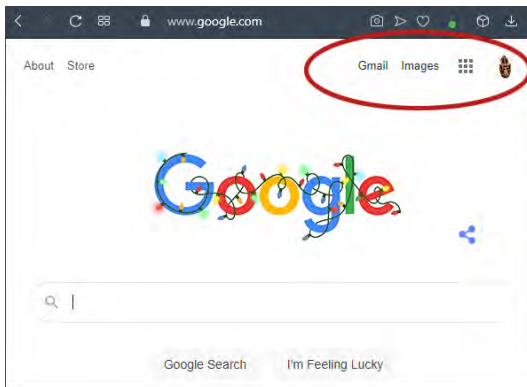
The EU makes data use transparent for data subjects: One of the most important goals of the European General Data Protection Regulation is to make the processing of all personal data transparent and to give users the opportunity to object to this processing. <https://gdpr.eu>



Search for your own name (Screenshot)

Check Google Data

Many people have a Google user account. Anyone who uses their Android smartphone, YouTube or Gmail transmits by default a lot of data to the company if the transmission is not actively disabled. These settings can be found in the Google user account. If you open the website of a Google product (e.g. "www.google.com") you can access your user account in the upper right corner:

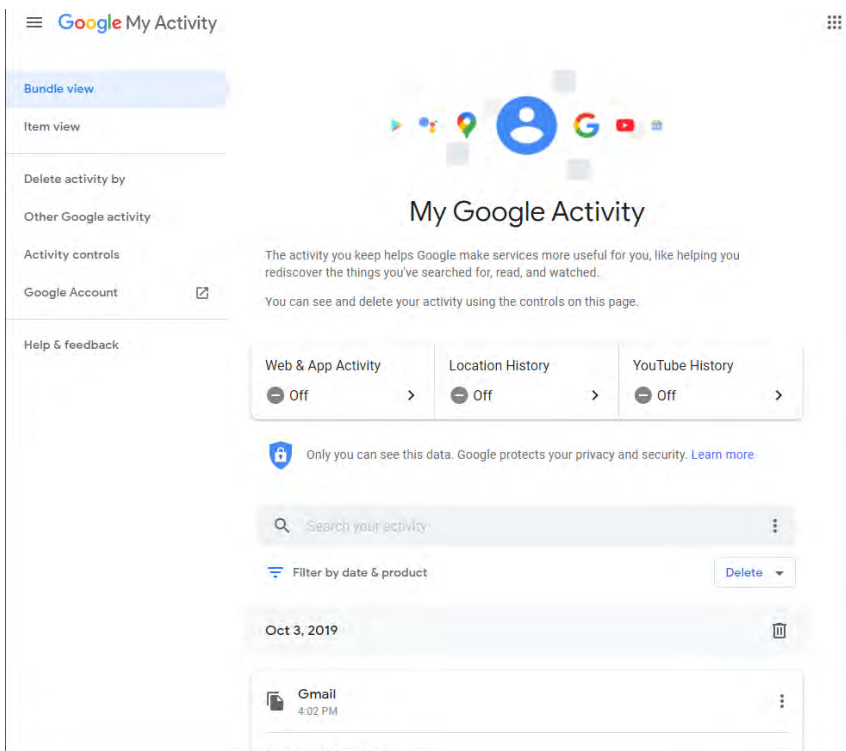


Zugang zum Google-Konto (Screenshot)

You can access the "Manage Google Account" item via the profile picture and enter the settings area. There are various areas where you can set privacy and data protection. As this area is restructured frequently it is not possible to provide precise instructions here. However, you can use keywords such as "privacy", "personalization", "data" and "data protection" as a guide.

At the moment there is an item called "My Google Activities" in the "Data and Personalization" section. Here, a lot of information that Google stores from the various services is displayed. In an account where many data usage options have already been disabled, this lists looks as you will see on the screenshot on the next page.

Using the default settings of Google, a lot of data is displayed here: location data and routes from Google Maps, search queries from Google, YouTube videos played and activities from apps. In addition, Google has access to much more information, such as the contents of Gmail inboxes (Curran, 2018). In the accounts of children and young people, all of these options should be deactivated.



Overview of data used by Google (Screenshot)

Viewing Facebook Activity

Social networks also store countless data about users. On Facebook, the history of public activities can be viewed via the so-called "activity log". To access it, click on the user icon at the top right corner of the Facebook page and select the menu item "Settings and privacy":

These are just all of your public actions. In the background, Facebook stores countless other data and links them in a variety of ways (Hutchinson, 2019). As early as 2015, a study determined that computer-based assessments of a person's character, based on their digital footprint, are more accurate than the assessment of close people (Youyou et al, 2015). Facebook uses this data to optimize its advertising offers.

[Box] Just how much power social media services have become clear in 2012 when a research report was published that described a large-scale experiment with users' news feeds on Facebook. The researchers at Facebook tried to find out whether users adopt the emotions of the content displayed to them. For this purpose, test groups were shown either mainly negative or positive news without their knowledge and analyzed which type of news they then published themselves (The Muse, 2014).

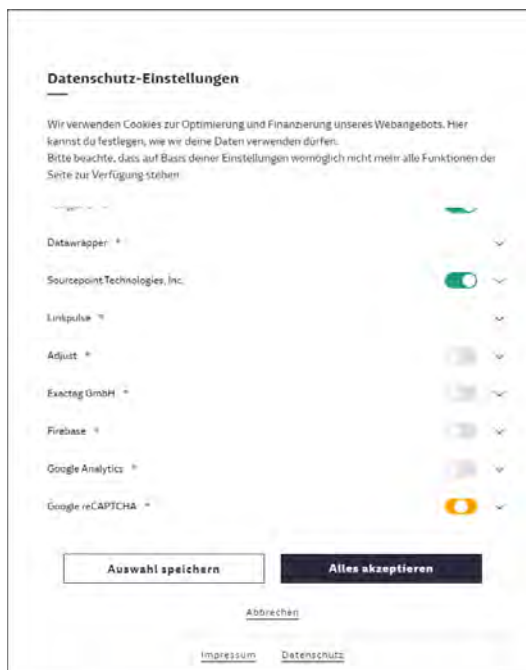
Can you scroll to the bottom of the list of your Google activities? If this list worries you, you will also find the options to delete the data and change settings so that they are no longer stored in the future.

Facebook activity log (Screenshot)

Cookies

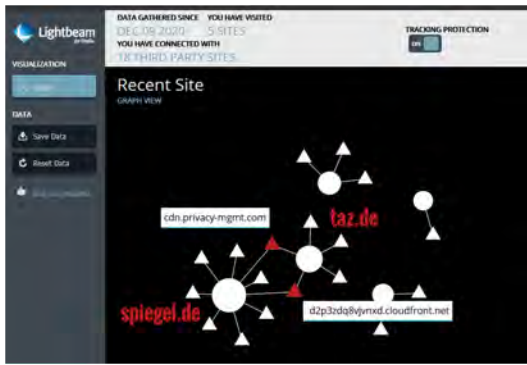
"Agree to the use of cookies on this website" - currently such messages and pop-ups follow us wherever we go on the web. What are these cookies and why are we constantly asked about them? Cookies are small files that websites save on users' devices in order to store information that might be needed again later, such as login data or shopping cart items.

The advertising industry has long used cookies to store information about the use of websites and to create and sell advertising profiles: Which pages were visited, which services used, which products viewed. These so-called "third-party cookies" collect countless data about the user to display tailored advertising on websites or in apps. Here, too, the EU General Data Protection Regulation has already led to a good deal of transparency. Even if it is often inconvenient to click through the long consent forms on websites, you have now much more clarity about advertising partners and data that is collected when using a website.



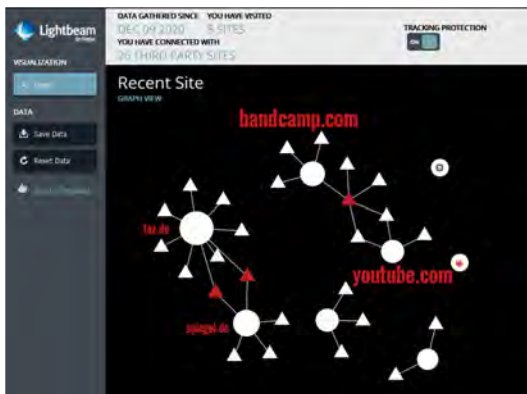
List of third-party partners in the privacy settings of a website (Screenshot)

To illustrate the way such third-party cookies work, Firefox users can install the "Lightbeam" plugin: <https://addons.mozilla.org/de/firefox/addon/lightbeam-3-0/>. The plugin visualizes how websites are connected to each other via cookies. For example, visiting two different news sites creates the following connections:



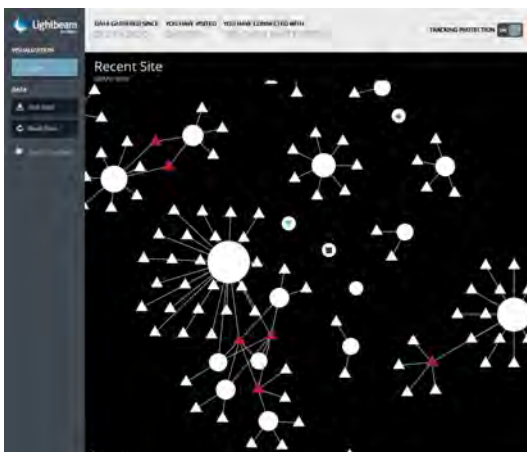
Lightbeam after 5 clicks (screenshot with colour highlighting)

If you visit the page of a music provider and the YouTube website, a connection is created here as well:



Lightbeam after 8 clicks (screenshot with colour highlighting)

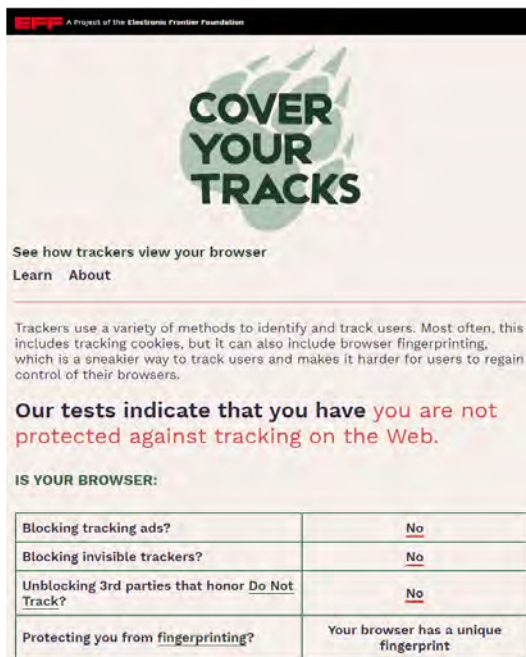
After just 15 clicks, a large number of connections have already been created that can collect and share data across sites.



Lightbeam after 15 clicks (screenshot with colour highlighting)

Webbrowser

When we surf the web, we create a lot of data. Therefore, the Internet browser plays an important role when it comes to safeguarding personal data. The website "Cover Your Tracks" <https://coveryourtracks.eff.org> checks your browser and provides information about what data can potentially be used:



The screenshot shows the 'Cover Your Tracks' website interface. At the top, it says 'EFF A Project of the Electronic Frontier Foundation'. The main heading is 'COVER YOUR TRACKS' with a paw print graphic. Below this, it says 'See how trackers view your browser' and 'Learn About'. A paragraph explains that trackers use various methods like cookies and browser fingerprinting. A key finding is highlighted: 'Our tests indicate that you have you are not protected against tracking on the Web.' Below this is a table titled 'IS YOUR BROWSER:'.

IS YOUR BROWSER:	
Blocking tracking ads?	<u>No</u>
Blocking invisible trackers?	<u>No</u>
Unblocking 3rd parties that honor <u>Do Not Track</u> ?	<u>No</u>
Protecting you from <u>fingerprinting</u> ?	Your browser has a unique fingerprint

Cover your tracks browser analysis (screenshot)

Choosing a secure Internet browser is one of the most important measures to protect your privacy. This involves weighing up and taking into account various aspects. A recommendation for the selection of a browser can be found in Mocan (2019): <https://www.cactusvpn.com/privacy/most-secure-browser/>.

2.3.2 Rights

The European Data Protection Regulation places a particularly high priority on the need to **protect children and young people**. Recital 38 states:

“Children merit specific protection with regard to their personal data, as they may be less aware of the risks, consequences and safeguards concerned and their rights in relation to the processing of personal data. Such specific protection should, in particular, apply to the use of personal data of children for the purposes of marketing or creating personality or user profiles and the collection of personal data with regard to children when using services offered directly to a child. The consent of the holder of parental responsibility should not be necessary in the context of preventive or counselling services offered directly to a child.”¹



The European General Data Protection Regulation protects privacy and data (mohamed_hassan, 2018)

The protective measures are specified in various articles, including:

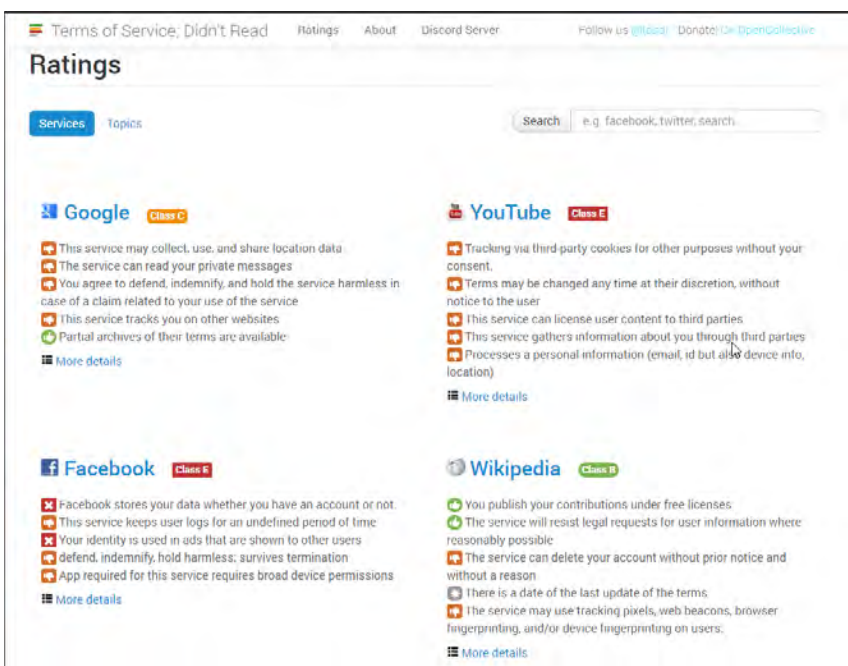
- **Consent:** Young people can consent to the processing of their personal data on their own from the age of 16. Special regulations in certain countries can reduce this age to a maximum of 13. In all other cases, the consent of the parents is required.²
- **Objection:** The processing of data can be objected to at any time unless there are special reasons for the processing.³
- **Right of access:** Individuals whose personal data are processed have a right to get information about, the purposes of the processing, the categories of data, who has access to the data and the duration of data storage, among others. The information must be provided in a timely manner, which usually means within 4 weeks.⁴
- **Right to be forgotten:** Individuals about whom personal data is stored have the right to request that the data be erased. This does not apply to data that must be retained due to legal requirements (e.g. tax-relevant documents).⁵

Tip
The General Data Protection Regulation explained for children:
<https://www.sysaid.com/blog/entry/how-to-explain-gdpr-to-a-5-year-old>

Terms of use and Privacy Policy

To protect your privacy and personal data, it is important to understand the terms of use and privacy statements of digital offers and services. Easier said than done, as you are often confronted with tons of pages that you can hardly understand without the support of a lawyer (as an example, the privacy policy of Microsoft: <https://privacy.microsoft.com/en-us/privacystatement> - printed out about 80 pages long).

We would have liked to give you tips on how to understand such texts because parents should be good role models here, too. However, we can only refer to a small help: The website "Terms of Service; Didn't Read" <https://tosdr.org> offers summaries of the terms of use of common Internet services.



Summaries of the terms of use of digital services (screenshot)

Journalist Alex Hern spent a week trying to read "all the small print" of the services he uses. His sobering report: <https://www.theguardian.com/technology/2015/jun/15/i-read-all-the-small-print-on-the-internet>.

However, parents can observe these points when using a digital service:

- **Check the provider location:** If the provider is located in an EU country, the General Data Protection Regulation applies. For countries outside the EU, you must check whether there is a corresponding contract that regulates data processing. At the moment (beginning of 2021), it can be assumed, at least for US providers, that data processing is not legally compliant (see also Module 4) (European Data Protection Supervisor, 2020, p. 2)
- **What data is collected?** Reputable companies provide information in their privacy policy about what data is collected before customers are actually using an offer. The privacy policy is either available on the website or it is provided before subscription or installation.
- **Where and how long is the data stored?** Companies should inform the user where and how long the data is stored. Reputable companies specify a deletion period for data that is no longer required for the use of the offer.
- **Sharing of data or third-party processing:** If the data is passed on to third parties or processed by them, they must be named and explained, why access to data is given to them. This may include analysis services, such as Google Analytics, which is used on many sites to measure website activity, advertising networks but also service companies connected to online stores, such as shipping services. In online raffles, personal data is often shared with a lot of other companies for advertising purposes.
- **What usage rights to my data do I grant?** Photo contests, for example, often contain clauses where participants agree that the photos may be reused by the contest organizer.
- **Arbitration:** Who is responsible in case of disagreement?

If there are doubts about the lawful processing of the data, data subjects can **request information about the use of the data** from the processor. If violations are identified or the use of data remains unclear, a **complaint** can be filed with the respective data protection authority or the case can be brought to court.

It is clear that there is still a lot of room for improvements concerning consumer protection. The European Consumer Protection Agency, as well as the country-specific organizations, are campaigning for this issue and are supporting those affected:

- Center for European Consumer Protection e.V. <https://www.cec-zev.eu>
- The European Consumer Organisation <https://www.beuc.eu/>

Tip
Companies in the EU were sanctioned for violations of the General Data Protection Regulation is listed on the website <https://enforcementtracker.com/>.

In addition, those affected by violations have the option to contact the following parties:

- **Site operator:** If personal information is published on a platform, data subjects can contact the operator and request that the data be deleted.
- **Police:** Legal violations can be reported to the police.
- **Data protection authorities:** In case of violations of data protection, a complaint can be made to the data protection authority.

2.3.3 Protecting Privacy and Personal Data

Children and young people are exposed to particular risks online and are not yet able to protect themselves sufficiently. Therefore, parents have an important role in accompanying and protecting them. They must resist the "privacy paradox" mentioned at the beginning of this section in order to adequately protect their children and prepare them for later responsible use of digital media.

For children, the **difference between private and public** does not yet exist. Everyone is part of their inner circle of relationships, which is why they tell strangers details about family life, which their parents might like to keep to themselves. Only over time do they develop a sense of which information is intended only for a smaller audience and which may be public.



Public or private? Children have to learn the difference. (photosforyou, 2015)

Parents can support this process in the digital world and make children aware of **which data on the Internet should be private and which public**. This includes making children aware of how to handle data responsibly, i.e. disclosing as little data about themselves as possible and paying attention to data security. The way social media works gives parents a hard time in these efforts, as these services encourage users to make as much data as possible public. How families can resist this attraction is explained in the chapter 2.6 Accompanying Social Media.

The following measures can be taken on all channels of digital media: Chat programs, social media, gaming, and in general Internet use. As young people will grow into independent use of digital media they might no longer adhere to all of these measures. However, parents can ensure that they are aware of the risks that can arise from disclosing information and know-how to act in critical situations.

Not Disclosing Personal Data

One of the most important aspects of protecting children and young people on the Internet is their anonymity. Risks are heavily minimized when no one has access to children's "non-virtual" identity and life. Without a phone number, no one can call them; without an address, no one can show up at the door; without their full name, it will be hard to find them.



Keeping private information needs to be practised in digital media (philm1310, 2011)

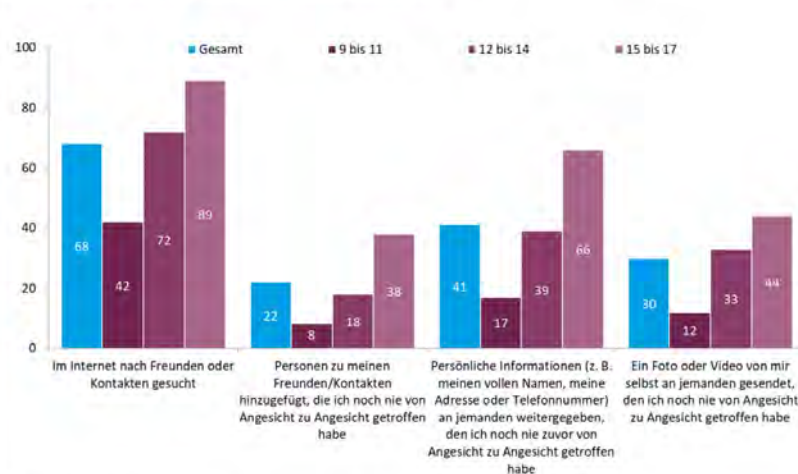
Even elementary school children understand these simple principles. One rule for everyday digital family life, for example, could be "If you meet people on the Internet, only tell them your nickname." To ensure that children are not surprised by such situations on the Internet, parents can practice this with them in advance in small roleplays.

Children and young people are sharing their private data on a large scale with people online whom they have never met in person. Younger children, in particular, should therefore not use the Internet without adult supervision. Older children should be sensitized to the following aspects:

- **No full names:** Depending on how frequently a name occurs, it can be an important key to finding out about a child's identity. Children should therefore never give their full name online without their parents accompanying it.
- **Nicknames instead of clear names:** Wherever possible, children and young people should only use a nickname (nickname or imaginary name) online, especially on social media channels and in video games.
- **No address, no phone number, no date of birth:** Under no circumstances should children share this data in digital media. Nicknames should not contain any reference to age or place of residence.

- **Different email addresses:** As soon as children start using email independently, parents should create at least two different addresses for them. One address to actually write emails and a second that is used exclusively for registrations with online services. If the child needs an email address for sensitive services, such as school portals or learning management systems, yet another address should be used. Children's e-mail addresses should not contain the child's real name.
- **Photos and videos:** Photos and videos include a wide range of potential risks and conflicts in digital media. Children and young people should therefore be introduced to the publication of these media in an age-appropriate manner. These simple rules in four stages can be used:
 - Use of digital media accompanied by parents, no photos or videos of the child will be published.
 - Use of digital media accompanied by parents, only photos and videos in which the child cannot be identified are published (e.g. without showing their face).
 - Use of digital media accompanied by parents: first photos and videos in which the child can be identified are published together with the parents.
 - Young people use digital media independently and decide for themselves whether to publish photos and videos.
 - To protect their children's privacy, parents should of course not post photos of their children on social media themselves.
- **No location information:** Many social media services allow to transmit or mark the current location. Children and young people should not use this function so that no one can conclude their regular locations in order to contact them there.
- **No reality-based avatars:** Avatars are virtual placeholders for a person, used for example in games or social media instead of an actual photo. This avatar should contain as few references as possible to the actual person (age, gender,...), especially for younger children.

Abbildung 3.19: Art der Kontaktaufnahme im Internet



QF10: Wie oft hast du in den letzten 12 Monaten folgende Dinge im Internet/online getan? (Basis: n=1.044)

Survey of young people on how they make contact online (Hasebrink et al, 2019, S. 27)

The ways in which photos can spread on the Internet are shown in the article about the Papa family, whose family photos have been used without their permission for artificial intelligence training: <https://www.nytimes.com/interactive/2019/10/11/technology/flickr-facial-recognition.html>

Safer Sexting

Sexting means sending texts, photos and videos with erotic or sexual content via chat programs. For many young people, this is part of their sexual activities; for parents, it is often unknown. Young people need to be aware that sharing such content always includes a risk that it will be misused or published, whether by the recipient or someone who gains illegal access to the data. It is equally important to teach respect for such recordings so that children do not abuse them themselves.

Instead of banning children and adolescents from sexting, parents should help them to reduce the risk of serious harm (Müller & Igling, 2020, p. 198ff):

- Instead of showing the whole body, show only parts of the body, especially without the face.
- No shots of unique features that allow conclusions about the person, such as jewellery worn regularly, tattoos, scars or prominent moles.
- Erotic photos do not have to be nude photos.
- Delete images from the smartphone regularly.

Avoid Data Collecting Actions

This tip probably comes too late, because already before birth, companies try to catch parents with free offers to reveal data about their newborn. Manufacturers of baby food, diapers and drugstores want to know all the details, so that they can send promotions tailored to the child's age. Parents should always question whether the offered discounts correspond to the benefits. As everywhere on the Internet, things are never for free, often enough one pays with their personal data. This is particularly true for social media services and retailers' loyalty card programs.

Technical Measures for Protection

Other Cumila modules explained a variety of technical protection measures for staying safe in digital media. These additional methods can be used by families:

- Set up child and parental controls on devices and in apps (see chapter 2.1 Age-Appropriate Media Usage).
- Install apps only when accompanied by parents and set age-appropriate settings (details in the chapter 2.5 Accompanying Chats, 2.6 Accompanying Social Media and 2.7 Accompanying Gaming).
- Disable tracking and data-collecting options in devices.

Raising Awareness of Risks

We often find it difficult to assess risks of data security and privacy or we simply ignore them. We orient our behaviour strongly to what others do. But the people who properly protect their privacy are hardly visible on the Internet. In the best case, people from our immediate private or professional environment can give us some guidance here.

When making decisions about our data, we are often limited by time and our ability to assess the consequences of the decision. We weigh up the costs and benefits. If the benefits seem to strongly outweigh the risks, we easily neglect them, as they are not very clear anyway (Barth & Jong, 2017). As many digital services address our basic human needs our risk perception is further reduced.

The following risks of data abuse and violations of privacy threaten children on the Internet. Parents should know about them and make children and young people aware of them:

Private Information Becomes Public

The media regularly report on incidents in which intimate photos of children and young people are leaked to the public. The victims suffer from enormous psychological stress and high social pressure so that often enough the only way out is to change schools or even location. Those who commit the acts, on the other hand, often escape unscathed or with very mild sentences.

In such situations, so-called "**victim blaming**" often takes place: "If only he or she hadn't sent those photos." The blame is placed on the victim, not the perpetrator. A psychological explanation for this phenomenon is that people look for reasons why the crime happened in order to be sure that the same thing does not happen to themselves (Feldmann, 2018). For the victim, this mechanism is fatal because, in addition to the actual violation of the offence, the victim is also condemned and isolated by their surroundings.

Parents should talk about these situations with children and young people before they actually get into such a situation. Parents should also address how to behave in such a situation if one is not directly involved. Discussing these topics, parents show that they understand such situations and qualify themselves as contact persons if an incident actually occurs. In this context, topics such as cyberbullying (see chapter 2.4 Cyberbullying) and sextortion (see chapter 2.4 Protection Against Online Sexual Assault) can also be discussed

Identity Theft

Identity theft is an extreme form of data abuse. Perpetrators take over a person's identity to conduct fraudulent business with their data or to damage the person's reputation. Victims often notice the damage late and it is hard and costly to stop the fraud.

Perpetrators gain access to victims' data in a variety of ways. Children and young people should therefore be aware of attack methods such as computer viruses or phishing attacks. But there is no one hundred percent protection against such attacks because also entire sets of personal data from companies are stolen and sold on the Internet. Therefore, one should regularly monitor account movements and regularly check with the help of search engines whether there are duplicates of one's own identity on the net. There are also platforms on the Internet where people can check whether personal data has been captured in an attack, e.g. at <https://haveibeenpwned.com> or <https://sec.hpi.uni-potsdam.de/ilc/search>.

Result of Your Request for the HPI Identity Leak Checker

Attention: Your e-mail address [redacted] appears in at least one stolen and illegally published identity data base (a so-called identity leak). The following sensitive information was freely found on the Internet in connection with your e-mail address:

Affected Service	Date	Verified	Affected users	Password	First and last name	Date of birth	Address	Telephone number	Credit card	Bank account details	Social security number	IP Address
verifications.io	Feb. 2019	✓	763,002,527	–	–	–	–	–	–	–	–	–
Onliner Spambot (Spamlist)	Aug. 2017		128,471,704	–	–	–	–	–	–	–	–	–
adobe.com	Oct. 2013	✓	152,375,851	Affected	–	–	–	–	–	–	–	–
dropbox.com	Sep. 2012	✓	68,658,165	Affected	–	–	–	–	–	–	–	–
linkedin.com	Jun. 2012	✓	160,144,040	–	–	–	–	–	–	–	–	–

Result of the Identity Leak Checker query (Screenshot)

Scoring and Profiling

For western societies, **China's social scoring system** often seems like a nightmare. The system collects a large amount of data to calculate a score that is used to grant citizens access to various benefits (Marr, 2019). For example, those who behave according to the rules receive cheaper loans, better kindergarten places, and can travel wherever they want. Those with a bad score get worse offers: bad hotel rooms, bad places in school and kindergarten, reduced internet speed (Ma, 2018).

There are also profiling programs in EU countries. The **Schufa** collects data on all citizens in Germany and assigns them to creditworthiness profiles according to criteria that are not public (Coester, 2017).

U.S. corporations use public data to create profiles of their customers and exclude them from their services, for example, Instagram blocks accounts because of the person's activity on Twitter and Airbnb rates its customers based on their social media profiles (Blue, 2020).

A 17-year-old teenager's loyalty card at a supermarket revealed her pregnancy to the family before she did it. The girl suddenly received printed advertising for baby products. The father indignantly complained to the supermarket about it, just to find out that his daughter was actually pregnant. The supermarket had accurately predicted the pregnancy based on the products the daughter had purchased (Hill, 2012).



The analysis of the shopping cart can provide results as accurate as a pregnancy test (PublicDomainPictures, 2011)

To summarize, wherever data is collected, data is also used. Due to the large amount of data, we leave behind in our everyday lives, a great deal of information and knowledge about us can be collected. Even for adults, it is still difficult to understand these systems, but they should inform themselves about these issues in the interests of their children.

Parents should also have in mind that it is never clear who and how will use the collected data in the future. Before World War 2, a government official in the Netherlands started a comprehensive "population register" that included names, addresses, and religion. When the Nazis occupied the Netherlands, this data came into their hands and they used it to track down people of Jewish faith and deport a large proportion to the Auschwitz death camp (Digital Kenyon, 1941). Similarly, the "Rosa Listen" (pink lists) in Vienna were used by the Nazis to track down homosexual people and deport them to extermination camps. Less data is always better data.

2.4 Protection Against Online Sexual Assault

According to studies, children come into contact with sexual content on digital channels at the age of 10-12, but many even before that age. The content is either sent by friends, searched for by themselves or children come across it by chance. In addition to accompanying children online, sexual education is therefore of great importance so that children are not confronted with it unprepared (Casalini, 2020).

The anonymity on the Internet and the often unmindful use of Internet services have created places in the digital world where criminals specifically target children and young people. Many children use chat groups, social media and game chats alone, so perpetrators can contact them without being disturbed. The criminal intentions are diverse and range from attempted fraud to sexual abuse.



Children are particularly at risk if they use digital media without their parents (Piacquadio, 2018)

In order to protect children and young people from such attacks, awareness of the risks, as well as guidance and age-appropriate education is necessary. Children and young people should have a contact person they can turn to in an emergency because nothing helps criminals more than the element of surprise and a lack of a social network to protect victims in the event of an attack.

The place where sexual education begins is in the family. Even though it is often uncomfortable for parents to discuss the topic with their children, they should be the first, because no one else knows the children as well as they do and therefore which content is appropriate for them. Many parents are unsure about how to approach the subject of sexuality. What is the right content for which age? How detailed should I explain things? What words do I use? There is a wide range of books on this topic that provide an age-appropriate approach and answer parents' questions.

A lot of information can also be found on the Internet:

- <https://www.plannedparenthood.org/learn/parents>
- <https://hablemosdefamilia.com/orientacion/hablar-de-sexo-con-los-ninos/>
- <https://www.familienleben.ch/kind/erziehung/sexuelle-entwicklung-bei-kindern-so-gelingt-die-sexualerziehung-von-anfang-an-6426>

For parents, it is a great opportunity to introduce the topic of sexuality to their children and bring in their perspective instead of leaving it to random, often not age-appropriate content on the Internet. Those who discuss the topic on a matter-of-fact level create a good basis for children and young people to seek help when they are assaulted, instead of withdrawing in shame. Two-thirds of the victims of sexual abuse on the Internet are girls and one-third are boys. Most victims are between six and thirteen years old (ecpat, 2020, p. 5). Education and prevention therefore ideally starts at kindergarten age (Erkert, 2002)..



Sexuelle Aufklärung begleitet Familien über alle Phasen des Erwachsenwerdens (cottonbro, 2020)

With sexual abuse that takes place in the non-digital world, three-quarters of the perpetrators come from the child's immediate environment. The reasons why people commit these crimes are complex. Contrary to what is often assumed, it is not predominantly people with a pedophilic tendency, the majority of people has a disorder of self-esteem and a disturbed integration into their social environment (Conen, 1999, p. 9ff).

The perpetrators are mostly men and male adolescents (Independent Representative on Child Sexual Abuse Germany, 2020). Not only adults commit sexual abuse, but increasingly also adolescents themselves (Swissinfo, 2019).

However, the types of sexual assault online are not limited to sexual abuse, but can take a variety of forms (Bavarian Police Criminological Research Group, 2020):

- Sexualized insults
- Obscene calls and messages
- Voyeurism
- Sharing of intimate photos
- Exhibitionism
- Sexualized bullying
- Stalking
- Preparation of physical assaults
- Revenge porn

Many of these assaults have already been explained in the previous chapters. In the following, two types of crimes will be examined in more detail in order to show the strategies of the perpetrators, but also the possibilities for prevention:

- **Cyber grooming:** the initiation of sexual contact with children and young people on the Internet.
- **Romance and sextortion scamming:** the pretence of a relationship with the intention of cheating or blackmailing the victim with sexual content.



Tip

To prevent sexual abuse, there are counselling services on the Net for people who see a risk of becoming perpetrators, e.g., at <https://www.kein-taeter-werden.de> or <https://pedo.help>

2.4.1 Cybergrooming

Cyber grooming refers to the initiation of sexual contact by adults to children or young people on the Internet. Perpetrators follow a pattern:

- **Getting into contact:** gaining the child's trust.
- **Collecting personal information:** name, address, phone number but also photos and videos.
- **Isolating:** disrupting trust between child and families and friends.
- **Extorting sexual acts:** either online or at meetings.

The most important part of prevention work is to explain this strategy to children and parents so that they recognize the signs of preparation for an assault early. The earlier you recognize the signs, the easier it is to prevent an act.

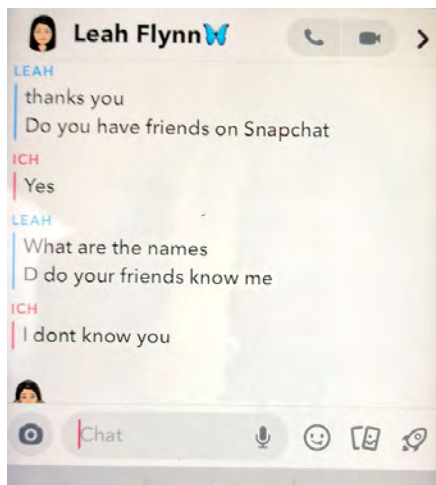
Preventing Contact

Contact is made in the digital world where perpetrators can communicate with children or young people without being bothered. The best protection against assault is therefore to accompany children during online activities. When children are alone on the Internet, they may get in problematic contact on the following occasions:

- **Chat programs:** Many children have their own smartphone in elementary school and use chat programs, such as WhatsApp. Children also come into contact with older young people and adults via chat groups in sports clubs or when phone numbers are passed on to third parties. It is possible to prevent contact in these programs to some extent (see chapter 2.5 Accompanying Chats), but parents should also closely monitor the use of chats, especially with younger children.
- **Social media:** Social media services have a lot of interactive functions. Perpetrators may contact children in comments, contact requests or direct messages. Many of these functions can be deactivated (for more information see chapter 2.6 Accompanying Social Media).
- **Chat functions in games:** Many games contain functions for chatting with other players. In games for younger children, these chats are often technically restricted, but perpetrators often find loopholes and still get hold of children's personal information. Parents should deactivate these chat functions if possible or accompany them when using the games (for more information, see chapter 2.7 Accompanying Gaming).

If contact is nevertheless made, perpetrators attempt to address children and adolescents in their basic needs. If perpetrators are adults, they often pretend to be children or adolescents and use youthful language (Schau hin, 2020):

- **Showing interest:** Perpetrators mock interest in the child or adolescent's activities.
- **Showing recognition:** through praise and compliments, e.g. regarding appearance or playing skills.
- **Understanding:** Perpetrators express understanding of the child's situation, especially when children or young people express their problems in public.
- **Offering help:** When children receive negative reactions from others, e.g., in-game chats or on social media, offenders are supportive to win confidence.
- **Seeking help:** Some perpetrators present themselves in need of help. Children find it particularly difficult to distance themselves from this because helping others is a big desire at this age.
- **Gifts:** Within games, perpetrators gift items to children or give them credit to buy items. With this, they create a feeling of obligation children have to give something back to the perpetrator.
- **Promises:** Perpetrators often pretend to own things that are interesting to children: fast cars, pets, celebrity acquaintances, a modelling agency, and promise them access to these things.



Conversation starter on Snapchat: personal questions from an unknown person (Screenshot)

Parents should make children aware that people on the Internet are not always who they say they are. There are a number of prevention videos on this topic:

- https://www.youtube.com/watch?v=Dil8Lj0_TGQ (Englisch)
- <https://www.youtube.com/watch?v=WzuoJy2vwwY> (Deutsch)
- <https://www.youtube.com/watch?v=LtgSo9elpUE> (Spanisch)

At the beginning of using digital services children should send and accept contact requests only together with their parents. On these occasions, parents can make their children aware of the risks and teach them good ways of interacting with others. **Blocking and reporting** the profile of the perpetrator are the two most important actions to protect your child. Parents should also consider reporting attempted offences to the police in order to protect other children from such assaults.

If the perpetrator has nevertheless managed to get in touch with the child, he or she will try to switch to a **non-public communication channel**. Children should therefore not disclose their mobile phone numbers or chat names. Children must be aware that as soon as they give their contact information to others for a private conversation they lose the protection of the public and are alone with the perpetrator.

It is a clear warning sign for children when people ask them not to talk to parents about the contact. In order for children to classify this demand correctly, it is important to have talked about **good and bad secrets** in advance (Schmelz, 2020). Only then they can estimate the situation and turn to a trusted person to guide further contact. Besides parents, older siblings, close friends or even teachers can also assume this function.

The strategy of the perpetrators is to gain the child's trust step-by-step. The conversation introduction therefore may seem harmless, which makes it difficult for children to assess them as a risky situation. Nevertheless, children may have a **bad gut feeling** even at this early stage, as many reports from affected children have shown. Parents should encourage them to always seek help or advice in such situations.

Securing Privacy

In the second phase of cyber grooming, perpetrators try to gather as much **personal information** as possible about the victim. The exchange of personal information often seems to take place in mutual exchange. Children often do not realize that the perpetrator is sending false information. Excuses such as "My webcam isn't working right now, but why don't you turn on yours" often don't make children suspicious.

By making contact, the perpetrator has often already crossed the **line between strangers and friends** from the child's point of view. Sentences such as "Don't give strangers your phone number" are therefore not helpful guidance for children because, from the child's perspective, the perpetrators are no longer strangers after the first few sentences. Better use phrases such as "Don't give your phone number to anyone you only know from the Internet."

Children are often not yet aware of the **boundary between private and public space**. Parents should therefore talk to their children about what information they can and cannot share with others on the Internet without their parents being present (see chapter 2.3 Data Protection & Privacy). Only if it is clear to children why the protection of their personal data is so important will they pay attention to it. Using illustrative

examples, even elementary school children understand this. For example, giving my first and last name in the digital world can lead to a person finding out where I live.

Children's gut feeling is an important warning signal also at this stage. In a workshop, one boy reported that a stranger had asked him in a game chat to send him photos of his feet. Without being able to presumably infer a sexual intention from this, he did not feel comfortable with it and called in his older brother, who clarified the matter for him.

However, all these indicators can only protect children if they have someone to turn to for help. There is a great danger for children who do not have a trusted person in their environment. They are also more susceptible to the psychological strategies of the perpetrators and lack the reassurance that someone is observing changes in their behaviour and can support them. Often, daycare centres, schools or youth facilities remain the only places that can provide such help. Children should regularly be provided with contact options for telephone and online counselling services in school. These offers can be used anonymously and are often available around the clock.

Not Being Isolated

Criminals try to isolate children from their families with sophisticated psychological tricks. Existing relationships of trust are undermined by suggestion and lies, such as "Your parents wouldn't understand anyway," or "Your friends will tell your parents." As a result, the victim is increasingly exposed to the perpetrator and has little opportunity to seek help.

In this situation, the person committing the crime seems to be the last confidant of the child. The perpetrator uses this situation to demand trustworthy materials from the victim, such as photo or video material, but also video chats. They may request content that seems harmless at the moment of sending but later makes the victim uncomfortable such as explicit pictures or pictures in erotic poses. This is the moment, where perpetrators have their victim under control by threatening to publish this material. It is now almost impossible for the victim to resist the perpetrator's demands.

Don't do Things you Don't Want to do

The victim is now in a situation where the perpetrator can blackmail him or her at any time but there is often no one left the victim can turn to for help. Many victims do whatever the perpetrator demands hoping that this will end blackmailing. However, the demands only begin here. It is important to make this clear, especially to older children and adolescents, if they get into such a situation. There is no escape unless they turn to someone who can help them out of this situation. Often, however, shame and fear prevent them from asking somebody for help. In prevention work with children and parents, it is therefore important to emphasize that the only blame lies with the person who committed the crime. For some victims, it can also be an option to report

the crime directly to the police.

For this reason, it is important for children and adolescents to distance themselves from assaultive persons. Even elementary school children learn to say "no" to adults in sexual abuse prevention. Children need to be aware that it is easier to say "no" in the virtual world than when they are confronted with the perpetrator face-to-face, that's why it is important to stop perpetrators at an early stage.

As insidious as these assaults are, it is important to see that they can be averted easily at an early stage if children are aware of the risk. A simple rule for everyday family life should be: Contacts with people who I only know from the Internet are always accompanied by parents.



In prevention projects, children and young people learn to set limits (Sullivan, 2020)

2.4.2 Romance and Sextortion Scam

In contrast to cyber grooming, romance and sextortion scams focus mainly on financial fraud. However, the psychological strain on the victim can also be serious. Both types of scam are based on the same principle as cyber grooming, but instead of a friendship, the victim is led to believe that they have a relationship or are interested in sexual activities:

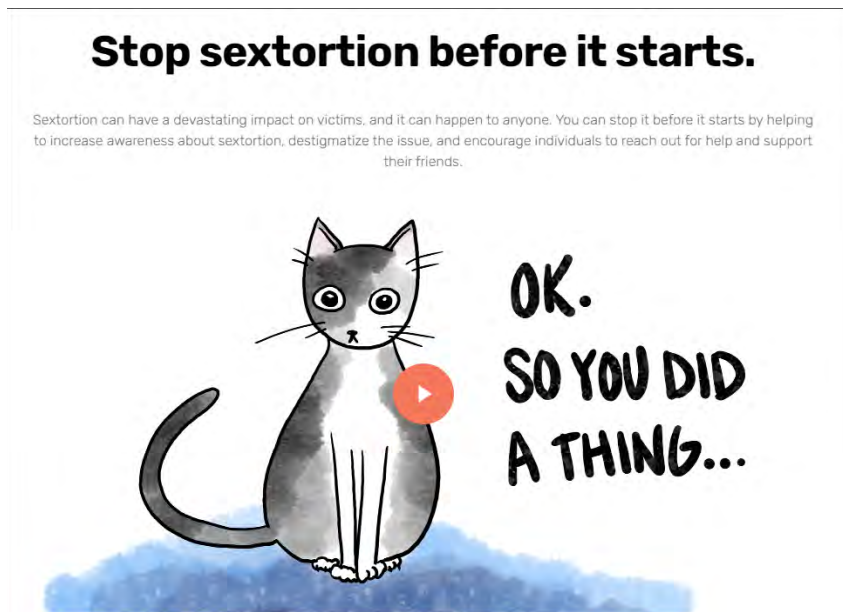
- In **romance scams**, the perpetrator pretends to be in a relationship with the victim. The perpetrators often pretend to live in the same area but are on the road a lot (e.g. military missions, working on drilling platforms). The victim is led to believe that they are in a relationship for a longer period of time. After some time, perpetrators state that they are in an emergency and need money. (Nowotny, 2019). A variant is the so-called "loverboy method," which primarily targets younger girls. Young procurers involve their victims in an apparent relationship via online contact and later force them into prostitution (der Spiegel, 2019).
- **Sextortion scams** aim to obtain photos and videos with sexual content from the victim in order to blackmail them. In most cases, male Internet users are approached by young women and asked to perform sexual acts. Once the material is in the hands of the perpetrators, the victims are blackmailed (Kriminalprävention CH, 2020). In addition to extortion for money, there are also reports of attacks on children and adolescents with the aim of extorting pornographic material or a meeting. In another variant, young people get to know alleged peers on dating portals. Once an exchange of intimate photos has taken place, the other party poses as the parents of the allegedly underage chat partner and threatens to report to the police if no money is paid (Gelinas, 2020).

Romance scamming can turn into sextortion. When photo and video footage is sent during flirting and the alleged relationship, this can also be used for extortion (Hosie, 2017). As with many types of extortion, payment of the first demand usually leads to further demands.

Read the testimonial of a journalist who almost fell victim to a romance scammer:
https://www.rnz.de/panorama/magazin_artikel,-love-scaming-wie-unsere-auto-rin-fast-einem-liebesbetrueger-im-internet-aufgesessen-waere-_arid,473686.html

The perpetrators and victims of these crimes are both male and female and come from almost all age groups. Romance scammers tend to target higher amounts, so children and young people are of less interest to them. Sextortion scammers are often satisfied with lower amounts and rely on the inexperience of young males

The website Thorn.org offers extensive information on the topic of sextortion and also provides a child- and youth-friendly treatment of the topic:



Sextortion Prevention Page Thorn.org (screenshot)

There are numerous tips on how to protect yourself from such attacks. Once again, it is important to rely on gut feeling and to approach contacts on the Internet with a healthy degree of caution. Furthermore, the same precautions apply as explained in chapter 2.3 Data Protection & Privacy in order to protect one's privacy even in the case of intimate contacts.

Getting Help

The most important but also most difficult step for victims of sexual abuse is to get help. Victims are often ashamed and place part of the blame on themselves. Educational work can help victims to seek help early.

Help may come from parents, friends, older siblings, but also people from school or leisure activities (teachers, school social work or team leaders). Sometimes it is easier to talk about these issues with unknown people. Children and adolescents should be familiar with the local support services and counselling centres.

In addition, the telephone support services mentioned in chapter 2.1 Age-Appropriate Media Usage may be considered, as well as services on the Internet:

- <https://www.hilfeportal-missbrauch.de>
- <https://www.dunkelziffer.de>
- <https://www.deine-playlist-2020.de>
- <https://www.anar.org>

To preserve evidence, you should back up chat histories and messages. Either save them on the device or take a screenshot of them. This step is important in order to be able to prove the crime. The police should always be called in the case of such crimes, if only to prevent subsequent offences.

In the case of Romance Scam, affected individuals have launched various websites on which they warn against fake profiles and try to attribute the mostly misused photos and resumes to the actual owners and warn them as well. Affected persons report that their activities have given them back the feeling of being in control of their own lives again (Leber, 2019).



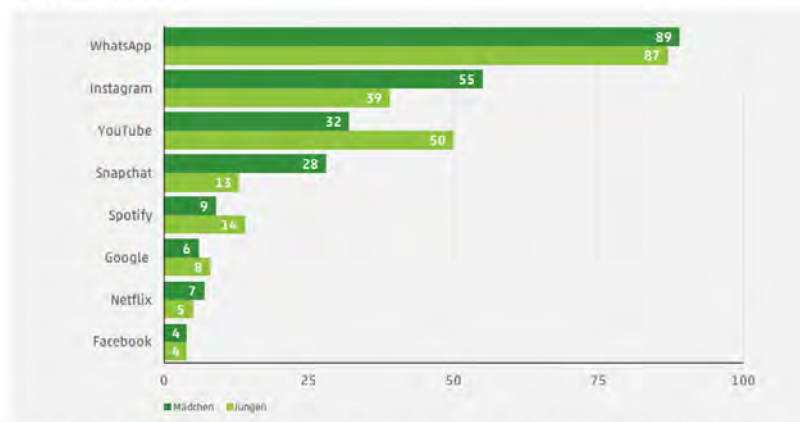
2.5 Accompanying Chats

This chapter summarizes the most important information for parents accompanying the use of chats. Basics on this topic can be found in chapters:

- **Communication:** How do you communicate well in digital media? (Cumila modul "Communication")
- **Messenger:** What chat programs are there? (Cumila modul "Communication")
- **Cyberbullying:** What are the social risks of using group chats? (Cumila modul "Communication")
- **Working in teams:** On the importance of digital communication in the world of work. Chapter 1.1 Working in Teams
- **Risks on the Net:** What risks are there specifically for children? Chapter 2.2 Risks for Children and Young People on the Net
- **Data protection and privacy:** Why it is important to protect children's data. Chapter 2.3 Data Protection & Privacy

Chats are available as standalone apps or programs (called messengers) and as part of social media and video games. The most popular messenger among children and young people is WhatsApp:

Wichtigste Apps 2019
– bis zu drei Nennungen –



Quelle: JIM 2019, Angaben in Prozent, Nennung ab 3 Prozent (Gesamt), Basis: Befragte, die ein Handy/Smartphone besitzen, n=1.142

Most important apps according to children and young people (mpfs, 2020, S. 28)

Many children and young people use the Internet without being accompanied by their parents, which leads to a variety of problems, as shown in the previous chapters. It is therefore important that parents select suitable programs together with their children and guide them from the first steps of use to independent use. This way children learn technical skills as well as the appropriate communication and how to treat other people on digital channels.

Selecting a Chat Program

WhatsApp is by far the most popular messenger used by children and young people on smartphones, although its use is officially only permitted from the **age of 16** in EU countries. The **age rating** was raised in 2018 with the implementation of the European General Data Protection Regulation because it is only from the age of 16 that young people can make unrestricted decisions about the use of their data without the consent of their parents (BBC, 2018). However, there is no effective protection against under-age use of the app. During installation, the user is asked whether he or she is 16 years old, which can be faked with a simple click.

Parents should be aware that the app's age rating in the app stores ranges from 0 to 12 years, which means that it may not be covered by parental controls and children can install it without parental consent. However, according to WhatsApp's terms of use, the use is clearly defined as 16 years and older.

Minimum age to use WhatsApp

If you live in a country in the European Economic Area (which includes the European Union), and any other included country or territory (collectively referred to as the [European Region](#)), you must be at least 16 years old (or such greater age required in your country) to register for and use WhatsApp.

If you live in any other country except those in the [European Region](#), you must be at least 13 years old (or such greater age required in your country) to register for and use WhatsApp.

Please refer to our [Terms of Service](#) for more information.

Offizielle Altersbeschränkung von WhatsApp (Screenshot <https://faq.whatsapp.com/general/security-and-privacy/minimum-age-to-use-whatsapp/>)

Why should parents be critical of the use of WhatsApp when so many people use the app? The Facebook group, which owns WhatsApp and also Instagram, is repeatedly criticized for its extensive data analyses, especially for advertising purposes, such as

- Linking WhatsApp contacts and Facebook's advertising activities (Lomas, 2016).
- Automatic facial recognition (Kelion, 2018)
- Use of app activity for advertising purposes (Horwitz & Grind, 2020).

As explained in Chapter 2.3 Data Protection & Privacy, the data can be used to create a digital profile that contains more knowledge about children and young people than one might think at first glance. Parents should therefore always be critical when processing such extensive amounts of data.

But how do you escape the social pressure to use WhatsApp when the whole world seems to be using it? For children, the answer to this question is quite simple: parents should not permit them to use the app and try to not give away too much data on the Internet themselves.

4 steps to responsible and data-saving use of messenger services in families:

- **Parents are looking for an alternative to Whatsapp:** The Signal Messenger has similar functions as WhatsApp and offers the most comprehensive data and privacy protection (<https://www.signal.org>). Other alternatives can be found at: <https://www.vpnmentor.com/blog/best-secure-alternatives-whatsapp/>. Telegram is not recommended due to the large number of questionable chat groups that children may be able to join and to the lack of default message encryption. Messengers that are specially designed for children are also questionable, as they may tempt parents to let the child use the service unaccompanied. The better choice is to use a common messenger accompanied.
- **Start using it in the family:** To get used to using a chat program, children should first use these tools in a small group. The closest family with parents, siblings and grandparents is a good place to start and gives the whole family a chance to switch to a data-saving messenger.
- **Invite best friends:** In the third step further chat contacts, like the closest friends are added. This may mean that you have to convince other families to use an alternative messenger, but since most alternatives are also free, the barrier to enter such services is not too high. The use is still accompanied by parents.
- **Free choice of messengers and chat contacts:** Once the child has gained enough experience in using the chat program, also the fascination for the tool usually drops and the child is able to control the usage. Children can then start to use chat programs on their own: Intensity of use, duration and timing, type of program. Parents continue to accompany the use until they have the feeling that the child can manage well on his or her own.

Using an alternative messenger has the big advantage (at least for the time being) that fewer people are there. This reduces the mental load since there are fewer messages, contact requests and notifications. Because there are fewer group chats, fewer social problems arise. The number of potential stranger contacts is also reduced.

Integrated Chats

Whenever chat functions are integrated into programs, parents should not leave their children unaccompanied when using them. Although there are technical measures in applications for children, to filter e.g. adult terms, these safeguards do not always work reliably.

Integrated chat functions are most often found in online games and social media.



Chat function in the game Wildcraft (screenshot)

The chat is usually activated after installing the apps, but some apps have the option to disable it. During the installation, parents should check if this setting is available and adjust it accordingly.



PIN-protected setting to disable chat in Wildcraft (screenshot).

Customize Chat and Messenger Settings

Chat messages often contain very private information and media content. It is therefore important that providers of chat programs handle users' data carefully and protect it effectively against abuse. In this respect, there are much better offerings than WhatsApp. However, it is possible to reduce the amount of data processed in almost every chat app and to restrict the information visible to other users. These settings can normally be found in the user's profile under menu items such as "data protection" or "privacy".

The following settings protect children's chat profiles:

- **Protect the account from unauthorized access:**
 - Protect the device with a PIN or password.
 - Use two-factor authentication (to log in to the chat app a password and also, e.g., an e-mail PIN are required).
 - Protect chat app with PIN or password.
- **Restrict visibility of personal information:**
 - Prevent the phone number from being displayed.
 - Do not disclose personal information in the chat name, such as full name, place of residence or date of birth.
 - Show profile photo and profile information only to confirmed contacts.
 - Prevent account to be displayed in search results.
- **Reduce advisory tones and visual signals:**
 - Turn off audio signals and vibration, reduce the volume in any case.
 - Limit visual notifications.
 - Activate do not disturb mode.
- **Restrict the use of personal data:**
 - Object to advertising and analysis purposes.
- **Limit contact requests:**
 - Disable chats and calls by unknown participants.
 - Disable being added to groups.
- **Hide activity states:**
 - Disable "Last online" status.
 - Disable indication that typing is in progress.
 - Disable read receipt (takes away the pressure of having to reply immediately).
- **Restrict access to data outside the app:**
 - Disable synchronization of the address book.
 - Check and disable access rights to files, media, camera, microphone if not needed.

Detailed descriptions of the most important apps for parents:

- WhatsApp: <https://www.internetmatters.org/parental-controls/social-media/whatsapp/>
- Discord: https://www.jugendmedienkultur-nrw.de/Wordpress2018/wp-content/uploads/2020/04/Discord-in-der-Kinder-und-Jugendarbeit_Statement-AJS-NRW-und-FJMK-NRW_27.04.2020.pdf

Family Rules for Chats

Children should make their first experiences with chat programs within the family. Rules for family chat therefore provide important orientation for later chat behaviour in larger groups. All family members should agree on the rules for family chat (see also chapter 2.1 Age-appropriate Media Usage). The rules can include the following topics:

Rules for children

- Children do not use the chat without being accompanied by parents.
- New contacts are added only when accompanied by parents.
- If something seems strange in a chat, parents are informed.

Rules for parents

- Parents do not secretly read children's chats. If parents want to read the chats, they talk about it in advance with their children and look at the messages together.
- Parents do not install sniffer apps on their children's devices to secretly read their children's chats.

Rules for all

- Everyone is careful not to send too many messages not to annoy others.
- Photos and videos are only shared if the people shown in the material agree.
- Language in chats is friendly and polite.
- In urgent cases, call instead of sending a message.
- Do not resolve conflicts and disputes in chat, but in person.
- Do not send confidential information, as it is always possible that digitally sent content may fall into the hands of third parties.
- Be careful not to send content that can scare or frighten the other person.
- Do not post content when you are upset or angry.
- Check information before forwarding it (no false news, no chain letters).
- Don't send messages at times when others may be disturbed (at night, during school or work).
- Those who have access to others' devices still don't read their chat messages.
- Turn beeps down or off to avoid disturbing others.
- Check exactly who you are sending the message to before you send it.
- Keep the duration of use to a reasonable level.

2.6 Accompanying Social Media

This chapter summarizes the most important information for parents about accompanying their children using social media. Basics on this topic can be found in chapters:

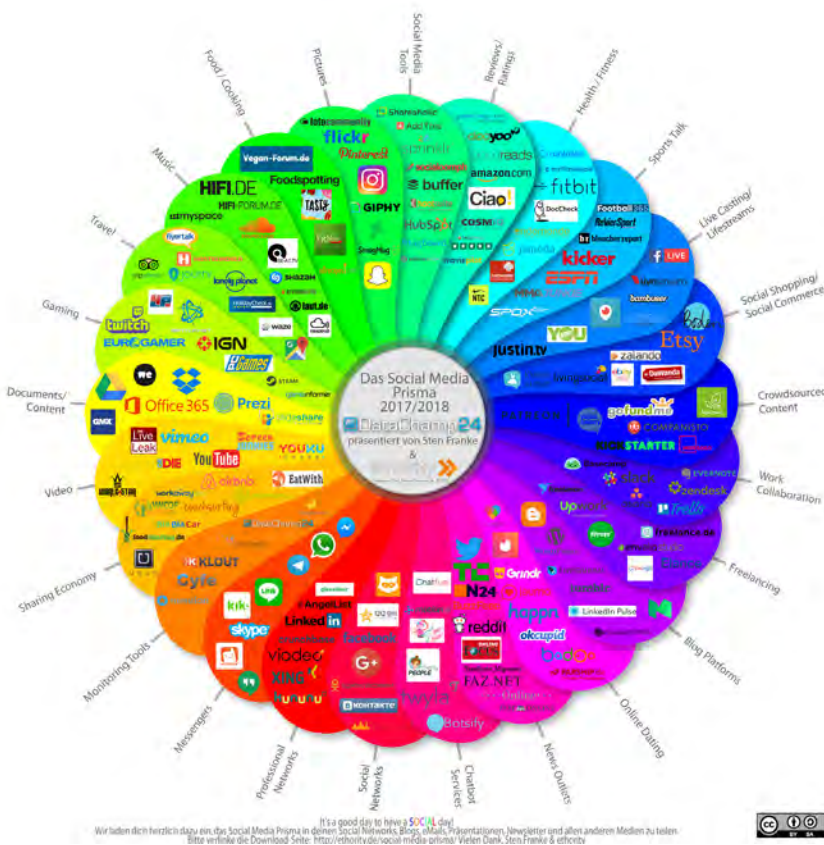
- **Communication:** How to communicate well on digital media? Module 2 Communication & Collaboration
- **Social media:** What offers are there and what influence do they have on society? Module 2 Communication & Collaboration
- **Opinion making:** How does social media influence personal opinion and who are the players behind it? Module 3 Information gathering and opinion formation
- **Conspiracy theories:** How do conspiracy theories emerge and how are they spread on social media? Module 3 Information gathering and opinion formation
- **Cyberbullying:** What social risks arise when using social media? Module 2 Communication & Collaboration
- **Risks online:** What are the risks specifically for children? Chapter 2.2 Risks for Children and Young People on the Net
- **Data protection and privacy:** Why it is important to protect children's data. Chapter 2.3 Data Protection & Privacy

Hardly any other area of the Internet is as dynamic as the world of social media. What's in today is out tomorrow, and new offers emerge overnight. Parents only have a chance of keeping up with this dynamic if they explore this world together with their child. Using it together can prepare children for possible risks and dangers, but parents can also learn to understand the fascination of the medium.



Accompanying children to their first concert is similar to using social media together (Haines, 2015)

Whether parents allow their children to use social media is a decision that every family must make for itself. It's not just a question of age, but also what influences you want to expose your child to. Before making the decision, parents should thoroughly inform themselves about the effects and risks that the use of these services can bring. Only if parents see themselves in a position to competently guide their children in their use they should allow them access. The Social Media Prism shows all available social media channels and makes clear that the challenge of keeping up is a big one.

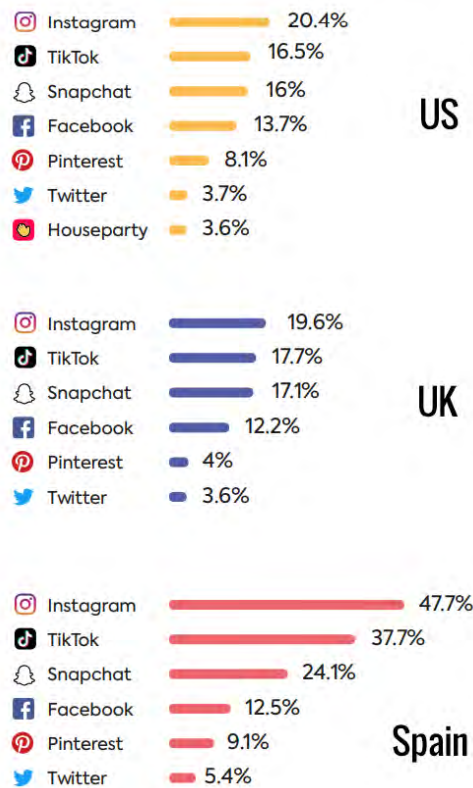


The Social Media Prism (ethority, 2018)

As shown in the previous chapter, WhatsApp leads the use of social media tools by a large margin. YouTube, together with streaming platforms, also accounts for a large share of internet use by children and young people. However, YouTube is mainly used to consume videos, not to publish them themselves. If one only looks at the applications that are actually designed to post one's own content, Instagram takes first place, followed by TikTok and Snapchat.

According to the terms and conditions of social media apps, virtually any services is approved for users 13 and older, which corresponds to the age limit for data processing under the U.S. Children's Online Privacy Protection Act (COPPA). The European General Data Protection Regulation even stipulates a limit of 16 years for such data processing, which, however, has so far only been taken into account in the WhatsApp terms and conditions. There is also inconsistency in the age ratings of the associated apps in the two major app stores, which makes it difficult for parents to find their way around.

Percentage of kids using social media apps (Feb 2020)



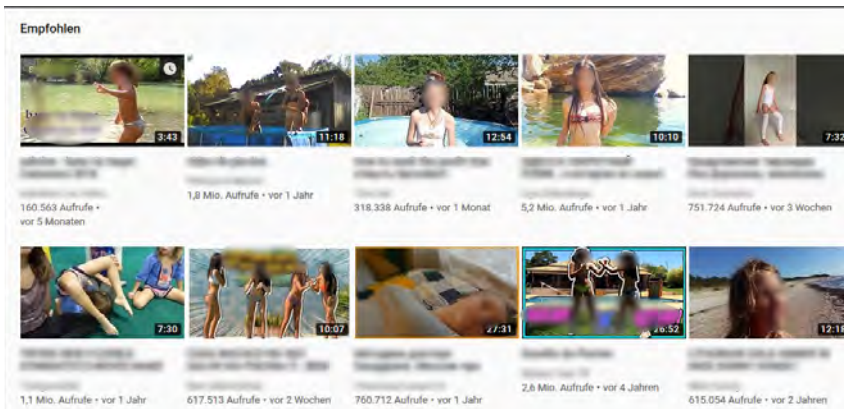
Use of social media apps excluding WhatsApp and YouTube among 4-15 year-olds (Qustodio, 2020)

This has consequences for securing devices of children and teenagers. The installation of WhatsApp has an age rating of 0 on Android devices, so that kids protection apps, e.g. in Google Family Link, do not prevent the child from installing the app. Parents should therefore always adjust settings so that they have to approve the installation of new apps or secure app installation with a password. Parents should also regularly check which apps are installed on their child's smartphone.

Social media companies have been under public pressure for insufficient protection of children and young people for a couple of years now. All services were originally designed to be used by adults, but are used extensively now by children and young people, which has resulted in a lot of risks for minors. Google was fined for privacy violations of children in 2019 (FTC, 2019). Also, private activists make risks and dangers public to put pressure on companies for better protection of children.

By 2019, videos of scantily dressed children were massively promoted by the YouTube algorithm and received huge numbers of views, especially from pedosexual-oriented circles. The videos' comment functions were used to contact the children, to leave lewd remarks or to point each other to further videos. Playlists were created and shared that contained these videos. Many of these videos were private vacation videos at the beach or swimming pool, or videos that the children had made and posted them-

selves (Orphanides, 2019). A YouTuber's campaign in February 2019 brought these violations into wide public discussion, which was followed by a couple of changes by YouTube (MattWhatIts, 2019).



Until 2019, YouTube's algorithm massively promoted videos featuring scantily dressed children (screenshot with unrecognition)

The changes included:

- Comment and playlist features, as well as live chats for posts featuring children and teens, have been largely disabled (Mac, 2019).
- Channels aimed exclusively at children no longer have community, story, and notification features.
- User data from videos specifically targeting children under 13 are no longer processed in YouTube's AI-based advertising system (Alexander, 2020).

How can this poor implementation of security functions be explained? The business of social media platforms is their users' interactions on the platform. High usage brings higher profits through advertising revenue. Posts with questionable content often generate an above-average number of interactions: challenges in which people hurt themselves, offensive videos, sensationalist fake news, sexualized content, violence, and others. That's why social media platforms have little interest in taking action against such content.

TikTok (formerly Musical.ly) also started its platform with only a few restrictions. The app was mainly used by children, and as a consequence of the poor protection features, it attracted adults and older teenagers who tried to encourage children to pose sexually or contacted them. Although TikTok now blocks relevant hashtags and also blocks the accounts of users who do not adhere to the so-called "community rules," there are still loopholes that can be risks and dangers for children and teenagers (Broderick, 2020).

Although technical measures exist to automatically screen content on the web for violations against children and young people, a major part of control remains on human moderators and the users themselves, reporting suspicious content. With the growing popularity of live streaming, e.g. on YouTube, Instagram or Twitch, human

control is becoming increasingly difficult because the amount of content is simply too large. Therefore, parents need to be even more careful when their children are using these kinds of offerings.

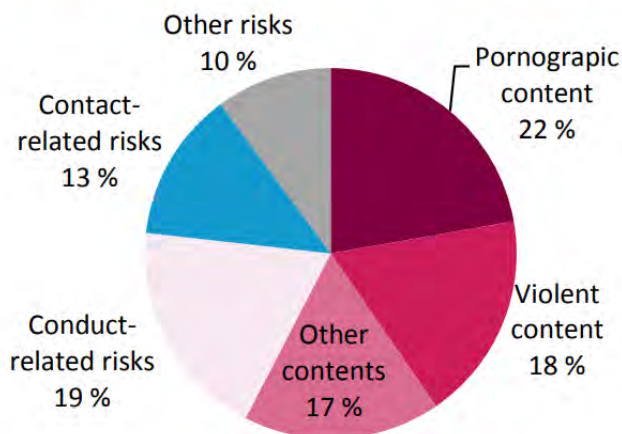
When released, Snapchat promised high security and privacy protection because posts are only visible for a short time and then disappear automatically. This creates a false feeling of security because although the app informs you when someone takes a screenshot, you can still use a second smartphone to photograph the contents of the screen. You also never know who is there when the other person receives the messages. Parents should talk to their children about this risk (Parker, 2020).

Social media is definitely not a place where children should be on their own. These platforms are an offer that is far from suitable for children, not only because of the danger of sexual assault and poor data protection, but also because of risks such as cyberbullying, hidden advertising, depictions of violence, and the manifold psychological and social pressures, such as encouragement of eating disorders, self-harm, or physical danger.

Moderate and responsible use of social media channels in families can therefore only take place together. We will show ways how to approach the use of social media together and make children and young people responsible users. .

Do we even need social media? A growing number of people are choosing not to use or opting out of social media for both personal (Marsh, 2016) and social reasons (Wong, 2017). Family discussion about this topic can be fostered by Jeff Orłowski's documentary "The Social Dilemma": <https://www.thesocialdilemma.com>.

Figure 1: What risks did children tell us about?



Base: N=9,636 children who identified one or more risks online.

Risks on the Net, determined by a survey of 9-16 year-olds (Livingstone et al, 2013)

Age Appropriate Use

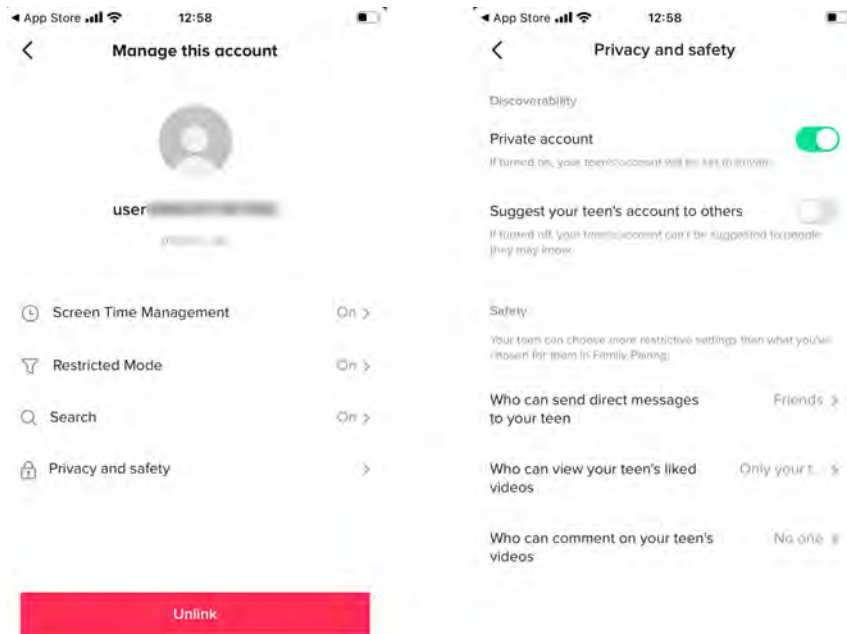
Due to the risks described above, there are only a few offers that are suitable for younger children. The use of social media should be gradual and accompanied very intensively by parents.

- **Watching together:** At the beginning, it is mainly parents who select the content. Together, the positive aspects of contributions can be discussed and basic problems can be addressed (such as advertising, content that is not age-appropriate). Suggestions from children are examined for positive and negative factors. Children should have the opportunity to express how they feel when viewing the content, especially what they are not comfortable with. Parents can give tips on how to behave later in uncomfortable situations (e.g., switching off, getting help, reporting posts or blocking users). Aspects such as negative body images or inappropriate language can also be brought up at this stage.
- **Own consumption:** When children feel confident in finding suitable content and know what to do if they come across unsuitable content, they can start using selected channels independently. The number of suitable offerings for children is limited and parents need to be aware that there is no one hundred percent protection against children also coming into contact with unsuitable content (Maheshwari, 2017). A better option than YouTube for adults is the **YouTube Kids app**. Many **television channels for children** offer videos for children on their websites. The independent use of social media channels such as Instagram, TikTok or Snapchat is not recommended.
- **Creating content together:** Many social media apps let you create photos and videos with filters and effects without publishing them. Editing this media is a lot of fun for kids and can be a first step towards publishing their own content. However, there is usually no way to block the publication of photos in the apps, which is why it is also necessary that parents accompany the use.
- **Posting and interacting together:** Children should share their first posts only with a small number of people, such as close friends or family. Parents should accompany these first posts to sensitize children to who can see the posts, what the rules are for publishing content, and how to protect privacy. Interaction with other users should also be practised together: When and how to comment? What can you do if someone says something inappropriate? Which friend requests do I accept? How can I keep people away by blocking them?
- **Posting and interacting independently:** Once children have gone through all of these steps, they know the basics of using social media on their own. If children turn to a public social media profile, parents can occasionally take a look at the posts and give feedback to their children.

In 2020 TikTok has introduced a **family pairing mode**. The child's account is paired with that of the parents, who can then define basic settings, e.g. whether the account is public or private. The option can be found in the settings under "Family Pairing".

The use of social media platforms targeted especially at children is not recommended.

Similar to the alternatives to chat programs, they are usually less appealing to children and lull parents into a false sense of security. However, many of the risks mentioned above also exist with these offers.



TikTok "Family Pairing" (screenshot)

Customize Social Media App Settings

In social media apps most of the important settings for families can be found under "Data protection" or "Privacy". However, some settings can also be adjusted in the posts themselves.

Children's accounts should definitely be set to "private", which means that they can only be viewed by confirmed contacts. Since the amount of use is also often problematic, many social media apps now have functions to measure or even limit the duration of use but for everyday use it may be easier to set the usage time for the entire device instead of single apps.

The following settings protect children's social media profiles:

- **Protect the account from unauthorized access:**
 - Protect the device with a PIN or password.
 - Use two-factor authentication (to log in to the chat app a password and also, e.g., an email PIN are required).
- **Restrict visibility of personal information:**
 - Set the account to "private". People who are not confirmed contacts will not be able to see the content.
 - Do not reveal personal information in the profile name, such as full name, city, or date of birth.
 - Show profile photo and profile information only to confirmed contacts.
 - Do not use a photo showing your face or personal details as the profile photo.
 - Disable display of profile in search results.
 - Do not tag locations in posts.
 - Avoid references to the place of residence in published photos, e.g. street names or house numbers.
- **Restrict the use of personal data:**
 - Object to advertising and analysis purposes.
- **Limit contact requests:**
 - Disable comments, messages and friend requests.
 - Disable tagging in photos or create shared media or limit to friends (e.g. TikTok Duet or Stitch).
- **Reduce advisory tones and visual signals:**
 - Turn off audio signals and vibration, reduce the volume in any case.
 - Limit visual notifications.
- **Hide activity states:**
 - Disable "Last online" status.
 - Disable indication that typing is in progress.
 - Disable read receipt.
- **Restrict access to data outside the app:**
 - Disable synchronization of the address book.
 - Check and disable access rights to files, media, camera, microphone if not needed.

Detailed descriptions for parents of the most important apps can be found at:

- TikTok: <https://bigtechquestion.com/2019/03/13/software/how-do-i-make-tiktok-safer-for-kids/>
- Instagram: <https://blogging.com/kids-instagram-safety/>
- Snapchat: <https://www.internetmatters.org/parental-controls/social-media/snapchat/>
- Twitter: <https://getkidsinternetsafe.com/twitter/>

Family Rules for Social Media

Rules for children

- Children do not use social media without being accompanied by their parents.
- New contacts are only added together with parents.
- If something seems strange, inform parents.

Rules for parents

- Do not create social media profiles for children until they want to do so themselves.
- Do not post photos, videos or private information about children on social media channels.

Rules for all

- Protect privacy: Avoid posting too much personal information, data and visuals. Do not tag locations in posts.
- Do not publish content that
 - violates the privacy or the rights of other peoples' images.
 - shows people in distress or putting themselves in danger.
 - may embarrass or make you uncomfortable later.
 - hurts someone or can be used to hurt you.
- Treating yourself and others with respect: no insults, name-calling or bullying.
- Not letting others pressure you into posting things you don't want to.
- Check the content in social media for its truthfulness and question its intentions (e.g. advertising or political influence).
- Set signal tones discreetly or turn them off so as not to annoy others.
- Do not post content when upset or angry.
- Keep usage time to an acceptable level.
- Make sure you are comfortable using social media and talk to others when you notice something is not going well.

Age Rating

	Terms and Conditions	Apple App Store	Google Playstore
WhatsApp	16	12	0
Instagram	13	12	12
YouTube	18	17	12
TikTok	13	12	12
Snapchat	13	12	12

Age ratings of social media apps (as of 18.12.2020)

2.7 Accompanying Gaming

This chapter summarizes the most important information for parents about accompanying their children using video games. Basics on this topic can be found in chapters:

- **Media-based learning:** How games can be used for learning purposes. Chapter 1.2 Learning
- **Creative and critical thinking:** How games can foster creativity. Chapter 1.3 Creative and Critical Thinking
- **Intercultural competence:** Video games as a place for intercultural encounters. Chapter 1.4 Intercultural Competences
- **Age-appropriate media use:** Selecting age-appropriate content and age-appropriate usage behaviour. Chapter 2.1 Age-appropriate Media Usage
- **Risks on the Net: What are the risks specifically for children?** Chapter 2.2 Risks for Children and Young People on the Net
- **Data protection and privacy:** Why it is important to protect children's data. Chapter 2.3 Data Protection & Privacy

Around 3 billion people worldwide play video games on smartphones, tablets, PCs or consoles (Mastro, 2020). They are an important part of children's and young people's lives:

- In 2014, more than half of two- to three-year-olds in Germany played video games daily or several times a week (Medienpädagogischer Forschungsverbund Südwest, 2015, p. 20).
- In 2019, 63% of 12 - to 19-year olds played video games daily (80% of boys, 44% of girls) and only 13% did not play video games at all (Medienpädagogischer Forschungsverbund Südwest, 2020, p. 44).

For a long time, video games were considered superfluous and often even harmful. However, it has now been scientifically proven that video games can positively influence the development of children and adolescents (Blumberg et al, 2019) and that it is not harmful even for young children if they play video games (Mozes, 2018). Video games can have the following positive effects:

- **Improving cognitive skills**, such as hand-eye coordination, reaction skills, problem-solving skills, concentration skills, spatial thinking.
- **Improving social skills** in games where people play together
- **Help with learning difficulties**, such as dyslexia or arithmetic disorders
- **Increasing motivation to learn**, through the use of video games in the classroom

In addition to the positive aspects, there are of course also risks, such as bullying, addictive behaviour and confrontation with content that is not age-appropriate, but to see video games as something unilaterally bad falls short.

Many **studies on the effects of video games** misinterpret correlations with casualties (as explained in the chapter 2.2 Risks for Children and Young People on the Net). The use of video games is often cited as a reason for the development of antisocial behaviour, although it is usually only a symptom of a disturbance that is rooted in other causes, e.g., family relationships or socio-psychological reasons. Even extreme forms of violence, such as assassinations or rampages, cannot be explained by video games alone, which is shown by the fact that the majority of gamers do not develop such disorders. Aggression and violence, especially by male adolescents, must be viewed in a broader context (APA, 2020). Explanatory approaches include societal structures and socio-psychological factors (Mittendorfer & Trescher, 2016) but also family and psychological reasons (Sonnenmoser, 2011).



Gaming controller (Carpina, 2020)

Most conflicts in families revolving around gaming are about when and how long to play. How to regulate use was explained in chapter 2.1 Age-appropriate Media Usage. Parents should additionally pay attention to the signs mentioned in the section "Addiction, escape or passionate hobby" to be able to determine the beginning of addictive behaviour. Children should also have the opportunity to develop all their skills in a balanced way appropriate to their age: their motor skills through sufficient exercise and their social skills through contact with others.

With video games, too, it is crucial for a competent usage to accompany gaming and to use it together. An easy way to start a conversation with your child is to play a video game together with them or watch them play.

There are numerous articles that offer an introduction for parents about devices, game genres and also currently popular games.

- Game plan: the complete beginners' guide to gaming – from buying a console to exploring new worlds: <https://www.theguardian.com/games/2020/sep/16/game-plan-the-complete-beginners-guide-to-gaming-from-buying-a-console-to-exploring-new-worlds>
- Children and video games: a parent's guide: <https://www.theguardian.com/technology/2017/may/11/children-video-games-parents-guide-screentime-violence>
- «Du willst WAS spielen?» Eine Game-Genre Übersicht für Eltern: <https://www.fritzundfraenzi.ch/medien/mediennutzung/du-willst-was-spielen-eine-game-genre-ubersicht-fur-eltern>
- Spielekonsolen für Kinder: Diese Konsolen sind geeignet und das sollten Eltern beachten <https://www.stern.de/digital/technik/spielekonsolen-fuer-kinder--diese-konsolen-sind-geeignet-9279500.html>
- Niños, padres y videojuegos <https://www.consumidor.ftc.gov/articulos/s0270-ninos-padres-y-videojuegos>
- ¡Toma el mando! Ser Padres en la Era Digital https://spaoyex.es/sites/default/files/guia_de_funciones_cognitivas.pdf
- PedaGoJeux.fr - Le Jeu Vidéo Expliqué aux Parents <https://www.pedagojeux.fr/accompagner-mon-enfant/bonnes-pratiques/famille-et-jeux-video-de-nombreux-outils-pour-jouer-en-toute-serenite/>
- Warum Zocken gut für Kinder ist: <https://www.psychologytoday.com/us/blog/screen-play/202004/how-much-time-should-kids-spend-playing-video-games-during-covid-19>



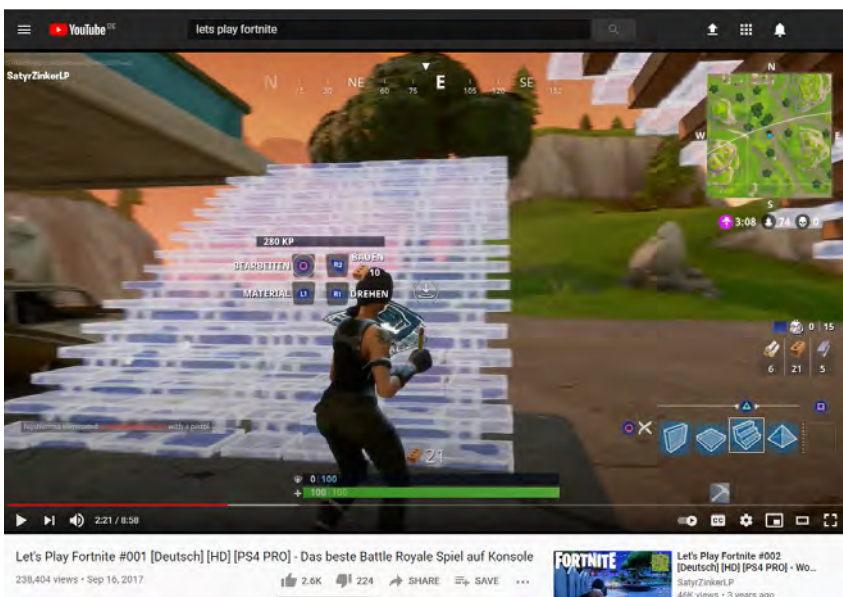
Playing together is an easy way to become a competent gamer (Subiyanto, 2020)

Age Appropriate Games

For the selection of age-appropriate games, there are recommendations on the games' packaging and corresponding information in the app stores (for details, see chapter 2.1 Age-appropriate Media Usage). In addition, numerous websites publish game recommendations for children of different ages:

- Selection of suitable games for preschool children <https://www.reviewed.com/parenting/features/video-games-kids-educational-benefits>
- Recommendations for children 5-11 years: <https://www.techradar.com/news/best-free-games-for-kids>
- Recommendations for different age groups <https://www.digitaltrends.com/gaming/best-video-games-for-kids-sorted-by-age-group/>
- Common Sense Media: <https://www.commonsensemedia.org>
- The Source for Parents: <https://thesource4parents.com>
- Family Video Game Database: <https://www.taminggaming.com>
- Spieleratgeber NRW: <https://www.spieleratgeber-nrw.de>
- Spielbar: <https://www.spielbar.de>
- Bundesstelle für die Positivprädikatisierung von digitalen Spielen: <https://bupp.at>
- Jeuxvideo.com: <https://www.jeuxvideo.com>

In *Let's Play videos*, gamers show how they play games. These videos can be found on popular video platforms with the search term "Let's Play" + the name of the game. By watching these videos, parents get a deep insight into the game and can evaluate whether it is suitable for their child.



Let's Play Video Fortnite (Screenshot)

Customize Game Settings

Many games include settings that allow increasing the safety of children and teenagers. Once again, technical measures are never 100% reliable, which is why it is nevertheless necessary for parents to accompany their children during use.

- **Age-appropriate settings:**
 - Some games allow you to set age levels that affect the difficulty and sometimes the type of content.
- **Protect games from unauthorized access:**
 - Protect mobile devices with a PIN or password
- **Restrict visibility of personal information:**
 - Set the game account to "private". People who are not confirmed contacts will not be able to contact or play together with the child.
 - Do not reveal personal information in the profile name, such as full name, place of residence, or date of birth.
 - Show profile photo and profile information only to confirmed contacts.
 - Do not use a photo showing your face or personal details as the profile photo.
 - Disable display of profile in search results.
 - Do not publish your location in the game.
- **Restrict the use of personal data:**
 - Object to advertising and analysis purposes.
 - Object to personalized offers.
- **Limit contact requests:**
 - Disable comments, messages and friend requests and only send or accept them together with the child.
 - Disable chat functions in games if possible.
- **Disable paid content:**
 - Do not store payment data in the game.
 - Deactivate in-app purchases or set a cost limit (Verbraucherzentrale, 2019).
- **Hide activity states:**
 - Disable "Last online" and activity display.
- **Restrict access to data outside the app:**
 - Check and disable access rights to files, media, camera, microphone if not needed.

Detailed descriptions of the most important device and game settings can be found at: <https://www.internetmatters.org/parental-controls/gaming-consoles/> (including all consoles, as well as Discord and Steam).

Family Rules for Gaming

Rules for children

- Children play video games only when accompanied by parents.
- New contacts are only added together with parents.
- If something seems strange, inform parents.

Rules for parents

- Parents inform themselves about games before children are playing it.
- Parents accompany the child while playing.
- Parents respect that some games cannot be stopped immediately without losing the score.

Rules for all

- New games are always reviewed together.
- Protect privacy: Avoid posting too much personal information, data and visuals. Do not give any locations information.
- If chat functions can't be disabled, they are only used together with parents.
- Treating yourself and others with respect: no insults, name-calling or bullying.
- Keep usage time to an acceptable level.



Endnotes

- 1 <https://gdpr.eu/recital-38-special-protection-of-childrens-personal-data/>
- 2 <https://gdpr.eu/article-8-childs-consent/>
- 3 <https://gdpr.eu/article-21-right-to-object/>
- 4 <https://gdpr.eu/article-15-right-of-access/>
- 5 <https://gdpr.eu/article-17-right-to-be-forgotten/>

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