

Section 3

Chapter 11 - Videogames, Apps And Education In The Field Of Pre-Primary And Primary Education

Theoretical Framework

11.1: Definition of the International Standard Classification for Education (ISCED)

The International Standard Classification of Education (ISCED) was designed by UNESCO in the early 1970's (UNESCO 1997). Since educational systems vary between countries, the standard is used for the classification of international data on education and education programmes to levels which can be considered comparable. There have been revisions in the years 1997 (ISCED 1997 – for data up to 2013) and 2011 (ISCED 2011 – for data from 2014 onwards) and finally the UNESCO General Conference adopted ISCED 2011 (UNESCO.UIS 2012) in November 2011.

ISCED 2011 included the changes in education systems mainly relating to the Bologna process in tertiary education, and also the expansion of education programmes for young children. Moreover, ISCED 2011 is not only a classification of levels of education programmes (ISCED-P), but also a classification of educational achievement (ISCED-A) in terms of qualifications resulting from formal education programmes. ISCED-F 2013 (ISCED Fields of Education and Training 2013) – a classification of fields of education – accompanies ISCED 2011 (Eurostat, 2018).

ISCED 2011 now includes 9 education levels (compared to ISCED 1997 with seven levels) – see Table 1 and 2 (UNESCO-UIS, 2012):



ISCED 2011						
Level label	Level	Category	Sub-category	Notes on sub-categories		
Early childhood educational development	0	01	010	Education programmes targeting children under 3 years old		
Pre-primary education		02	020			
Primary education	1	10	100			
Lower secondary education	2	24 General	241	Insufficient for level completion or partial level completion, without direct access to upper secondary education		
			242	Partial level completion, without direct access to upper secondary education		
			243	Level completion, without direct access to upper secondary education		
			244	Level completion, with direct access to upper secondary education		
		25 Vocational	251	Insufficient for level completion or partial level completion, without direct access to upper secondary education		
			252	Partial level completion, without direct access to upper secondary education		
			253	Level completion, without direct access to upper secondary education		
			254	Level completion, with direct access to upper secondary education		
Upper secondary education	3	34 General	341	Insufficient for level completion or partial level completion, without direct access to tertiary education		
			342	Partial level completion, without direct access to tertiary education		
			343	Level completion, without direct access to first tertiary programmes (but may give direct access to post-secondary non-tertiary education) ¹		
			344	Level completion, with direct access to first tertiary programmes (may also give direct access to post-secondary non-tertiary education) ¹		
		35 Vocational	351	Insufficient for level completion or partial level completion, without direct access to tertiary education		
			352	Partial level completion, without direct access to tertiary education		
			353	Level completion, without direct access to first tertiary programmes (but may give direct access to post-secondary non-tertiary education) ¹		
			354	Level completion, with direct access to first tertiary programmes (may also give direct access to post-secondary non-tertiary education) ¹		
		Post-secondary non-tertiary education	4	44 General	441	Insufficient for level completion, without direct access to tertiary education ²
					443	Level completion, without direct access to first tertiary programmes ²
					444	Level completion, with direct access to first tertiary programmes ²
				45 Vocational	451	Insufficient for level completion, without direct access to tertiary education ²
453	Level completion, without direct access to first tertiary programmes ²					
454	Level completion, with direct access to first tertiary programmes ²					

1. May include programmes previously classified at ISCED level 4 if they are equivalent to ISCED level 3 programmes.

2. Except programmes previously classified at ISCED level 4 if they are equivalent to ISCED level 3 programmes.

Table 1: Detailed correspondence between ISCED 2011 and ISCED 1997, levels 0 to 4



ISCED 2011					
Level label	Level	Category	Sub-category	Notes on (sub-)categories	Notes
Short-cycle tertiary education	5	54 General	541	Insufficient for level completion	
			544	Sufficient for level completion	
		55 Vocational	551	Insufficient for level completion	
			554	Sufficient for level completion	
Bachelor's or equivalent level	6	66 ¹ Orientation unspecified	661	Insufficient for level completion	
			665	First degree (3 – 4 years)	
			666	Long first degree (more than 4 years) Bachelor's or equivalent programme)	
			667	Second or further degree (following a Bachelor's or equivalent programme)	If equivalent to programmes already classified in level 6
Master's or equivalent level	7	76 ¹ Orientation unspecified	761	Insufficient for level completion	
			766	Long first degree (at least 5 years) (Master's or equivalent programme)	Unless equivalent to programmes already classified in level 6, then 666
			767	Second or further degree (following a Bachelor's or equivalent programme)	
			768	Second or further degree (following a Master's or equivalent programme)	
Doctor or equivalent level	8	86 ¹ Orientation unspecified	861	Insufficient for level completion	
			864	Sufficient for level completion	Programmes that lead directly to a doctoral degree only

1. The correspondences (or concordances) for academic and professional programmes at ISCED levels 6, 7 and 8 are identical to those for programmes where orientation is unspecified.

Table 2: Detailed correspondence between ISCED 2011 and ISCED 1997, tertiary levels

11.2.1. ISCED level 0

‘Programmes at ISCED level 0, or early childhood education, are typically designed with a holistic approach to support children’s early cognitive, physical, social and emotional development and introduce young children to organized instruction outside of the family context. ISCED level 0 refers to early childhood programmes that have an intentional education component. These programmes aim to develop socio-emotional skills necessary for participation in school and society. They also develop some of the skills needed for academic readiness and prepare children for entry into primary education.’ (UNESCO-UIS, 2012)

Programmes at ISCED level 0 allow children to learn in interaction with other children under guidance, typically in creative and play-based activities in a safe physical environment. The learning environment should be visually stimulating and language-rich. It fosters self-expression and the use of language for meaningful communication. Children should have opportunities for active play in order to exercise coordination and motor skills under supervision and through interaction with the staff. Children below the age of entry into ISCED level 1 belong to this level. The level differentiates between the categories ‘early childhood educational development’ (children in the age of 0 to 2 years) and ‘pre-primary education’ (children from age 3 to the start of primary education). Programmes may be referred for example: early childhood education and development, play school, reception, pre-primary, pre-school or educación inicial. ISCED level 0 includes programmes for children with special needs, regardless of their ages. (UNESCO-UIS 2012)

11.2.2: ISCED level 1

‘Programmes at ISCED level 1, or primary education, are typically designed to provide students with fundamental skills in reading, writing and mathematics (i.e. literacy and numeracy) and establish a solid foundation for learning and understanding core areas of knowledge, personal and social development, in preparation for lower secondary education. It focuses on learning at a basic level of complexity with little, if any, specialisation.’ (UNESCO-UIS 2012)



Typically, there is one main teacher in charge of the class who organises the learning process and organises educational activities around units, projects or broad learning areas. The entry age is usually neither younger than five years nor older than seven years and the primary education typically lasts until age 10 to 12. Programmes are referred to as e.g. primary education, elementary education or basic education. Some ISCED level 0 programmes may already provide some introduction to reading, writing and mathematics, but these programmes do not yet give children sound basic skills in these areas, and thus do not sufficiently fulfil the criteria for classification as ISCED level 1. Teachers at level 1 are typically trained in pedagogical approaches for core subjects. Programmes may be referred to as primary education, elementary education or basic education (UNESCO-UIS 2012)

11.3: Principles of children education

In the Lisbon Strategy, launched in March 2000 the EU aimed at making Europe ‘the most competitive and dynamic knowledge-based economy in the world’. One focus laid on new basic skills as a key measure in Europe’s response to globalisation and the shift to knowledge-based economies. The Commission has adopted a Recommendation on Key Competences for Lifelong Learning which identifies eight competences as most relevant in life and work in a knowledge based society: Literacy in reading, mathematics and science, language skills, ICT skills, civics skills and learning to learn skills. The Council adopted a specific benchmark in this field, namely to decrease the percentage of low achieving 15-year-olds in reading literacy by at least 20 %. 20 Core indicators for monitoring progress towards the Lisbon objectives in education and training were defined (COMMISSION OF THE EUROPEAN COMMUNITIES, 2007):

1. Participation in pre-school education
2. Special needs education
3. Early school leavers
4. Literacy in reading, mathematics and science
5. Language skills



6. ICT skills
7. Civic skills
8. Learning to learn skills
9. Upper secondary completion rates of young people
10. School management
11. Schools as multi-purpose local learning centres
12. Professional development of teachers and trainers
13. Stratification of education and training systems
14. Higher education graduates
15. Cross-national mobility of students in higher education
16. Participation of adults in lifelong learning
17. Adults' skills
18. Educational attainment of the population
19. Investment in education and training
20. Returns to education and training

In the Europe 2020 Strategy the goals towards education are to reduce school drop-out rates to less than 10 % and to increase the share of 30-34 years old having completed tertiary or equivalent education to at least 40 % (European Committee of the Regions, 2018).

Full-time compulsory education/training is regulated by the law of the specific Country and in general is provided in formal institutions/schools, under some certain conditions compulsory education/training can be provided at home. For more information follow the link to the document 'Compulsory Education in Europe' by European Commission - https://eacea.ec.europa.eu/national-policies/eurydice/sites/eurydice/files/compulsory_education_2018_19.pdf



11.3.1: Definition of pre-primary (early childhood) education – Frühpädagogik

Pre-primary Education has come to play an important role in society in the past few years. Since the development of children begins within the family and mostly depends on the parents, Pre-Primary education lays the foundation for lifelong learning experience and should ensure a smooth transition to the primary education and could therefore protect from dropping-out from formal education which should be an important matter in every nation (Haque et al., 2013). Furthermore children can learn and practice social values outside the family in kindergartens or similar institutions and they learn many things about themselves (Michaelis, 2012).

In the first two years, a child's brain develops an excess of synapses. Everything babies and toddlers learn starts with a stimulus. The more often they experience the same stimulus the stronger the synapses develop. The environment and the surroundings constantly influence the structure of the brain and therefore each brain is unique. Young Children learn with every second, and they have specific time slots where they learn specific skills more easily. Therefore, it is very important to provide an ideal learning environment. Children need reliable and positive surroundings they can depend on, and the necessary time and peace. They need a person they can trust and with whom they can build a strong relationship. If these preconditions are met, the child can learn with pleasure, which makes learning much more effective. It is also important that adults don't interfere with the child's play, so that the child does not become overstimulated (Bäcker-Braun, 2008). Children have to learn through making their own decisions and being self-sufficient, each child in its own way (Michaelis, 2012).

Imitation and participation are strong boosts for the development of children at pre-primary age. In our cultural area, imitation has lost its importance for learning manual and every day skills but is still relevant for the development of social and emotional competences. Participation, doing what adults do and doing it successfully is rewarded with feeling of happiness and activating the long-



term memory. Self-esteem is an important precondition for starting primary education and is often build through interaction with close relatives. Being loved and having the right to participate are preconditions for building self-esteem. Self-esteem can be boosted through encouragement and praise. Most of the children at the age of 5 or 6 are capable of entering primary education but there is a big variation of plus/minus 2 years for reaching the necessary skills for entering school. Unfortunately, the time of entrance into primary education is often determined by the date of birth instead of having the necessary skills (Michaelis, 2012).

11.3.2: Definition of primary education

Primary education often starts at the age of six (sometimes at 5 or 7).

In Austria one goal of the primary education is to make children fit to form their own opinion and to get to know how they could get education autonomously which they would need for their future professional life. Humanity, solidarity, tolerance, freedom, justice and environmental consciousness are key values for the society and are vital to become a cosmopolite citizen. Lessons should foster the ability to judge, to ability to take/offer criticism, the competence for decision-making and empowerment. The educational mission of primary education is to foster each child individually. Primary education should ensure a smooth transition to secondary education. Primary school institutions should be places where students feel comfortable and where academic as well as social learning will be fostered (Austrian Federal Ministry of Education, Science and Research, 2005).

Learning does not only take place in school. They start much earlier and go far beyond school teaching. Learning can occur while people communicate, when reading a book or watching an informative television programme, among other instances. All these can also take place in school (Brenner, 2005, S 231). Brenner (2005, S 234) cites Aristotle who states, that real lessons need people who are ambitious to learn and that learning something new always depends on that what already has been learned (S 275).



Language is essential for learning as it has the function to connect the subject to the daily world and to interact through communication with the educator. The teacher has to encourage the student to think on their own and he/she has to foster different learning paths depending on their previous knowledge. Furthermore, the content should be structured in a way that students have a personal connection to it. But this is only possible in interdisciplinary lessons (Brenner 2005, S 278f).

Education should stimulate the theoretical and practical understanding in the area of their practical and activity horizons in order to take part in daily human activities in a self-sufficient way. Brenner (2005, S 280) criticizes that in primary education the practical understanding often is missing. Students learn written language in school on blackboards or in books, but dealing with each other in a reading and writing way is neglected (Brenner 2005, S 280).

11.3.3. Young Children and computer games, game apps

11.3.3.1. Young Children using mobile devices

According to a study in 2013, 50 % of Austria's children from the age of 3 to 6 already used mobile devices to access the internet. Only in one of three cases the devices were appropriately prepared for the use. The main activities included playing, looking at photos, watching videos and listening to music. 34 % of the children at the age of three to six already played games on the internet. At the same time only 11 % of the parents were convinced that their children should learn to interact with the internet in a safe and controlled way at this stage of life (see <https://www.saferinternet.at/presse-detail/aktuelle-studie-41-prozent-der-3-bis-6-jaehrigen-regelmaessig-im-internet/>).

According to a 2014 study in Germany, 2 % of the children at the age of one, 10 % at the age between two and three, 17% at the age of four, about 25 % at the age between five and six, 43 % at the age of seven and 63 % at the age of eight had access to the internet. A gender difference



could only be noticed in the field of playing consoles which are mainly used by boys. Parents used three different approaches to protect children from the risks of the internet: they supervised the children when using the internet (mainly children at pre-primary age), limited the access time, and used content filters to restrict the access. 20 % of the parents with children at pre-primary age and 10 % of the parents with children at primary age installed a special internet home page in the browser (Grobbin, 2016).

Another study, carried out in Upper Austria (one of the federal states in Austria), shows that in 2016, 40 % of the children between 6 and 10 and 14 % of the children between 3 and 5 had their own mobile phone or smartphone. In 2018 there is a greater variation in the use of different media (watching TV via broadcasting service or streaming services; listening to music via radio, Spotify or YouTube; playing games on the Tablet, via console or mostly on the smartphone). The use of smartphones and tablets is increasing, making them the most used devices for playing games. Nevertheless, 70 % of the children between 6 and 10, like or strongly like to read paper books and most don't use eBooks or eReaders. Learning Apps are mostly used for mathematics and German lessons and the most commonly used devices are laptops or desktop computers. 75 % of the children using learning Apps like them or strongly like them. 2/3 of the children are aware of sensitive data, and during their internet browsing time they rarely encounter negative incidents. If so, they talk with their parents about their situation. At home, 44 % of the children use the internet only under the supervision of the parents. Only 68 % of the parents spoke with their children about the risks of the internet. Less than 50 % of the schools provide information about the risks of the internet and talk about this matter with their students. (Education Group, 2018).

It is obvious that media use is already common for children at pre-primary and primary age. In the most cases young children use mobile devices for playing and they don't even realize if they are online or offline and it is not relevant for them. Adults often use mobile devices for searching for information, for communication, for organizing daily life and for entertainment. At the age of 6 to 8 Girls and boys are equal interested in using digital devices. Whereas boys seem much more



interested on playing games, girls seem also interested in searching information. The use of digital devices mainly depends on the attitude of the parents towards the internet and digital devices (DIVSI, 2015).

There is a vital discussion (there is a sociopolitical discourse) about the right of children to use new media viewing the important aspects of access, protection and participation. On the one hand children have to be protected from the negative aspects of online participation on the other hand they should have the right on participation. As education strongly emphasizes on providing a framework where children can learn to participate in the real world the right of participation seems comprehensible (Dreyer 2018). But parents and educators have to support children on their way into the digital world (BITKOM, 2014).

Building up media literacy is one of the key competences in our digital society. Media literacy means to make use of new and old media, to know about their possibilities, to critical reflect the use, to know about risks and to use them in a creative way. Media literacy is not only important for younger generations. The more important media gets for children and teenager the more important is building up media literacy for families and educators. It is not enough to take measures to 'save' children from harmful interactions with new media but it is essential to empower them to interact with new media (Austrian Federal Ministry of Women, Families and Youth, 2018).



11.3.3.2. Age rating systems (PEGI – IARC - USK)

The following rating systems are relevant for the European region.

PEGI <https://pegi.info/>

The Pan European Game Information (PEGI) rating is an age rating system for games, films, tv shows and mobile apps which is used and recognised throughout Europe and is supported by the European Commission. The rating is used for the protection of children ensuring that the entertainment content is suitable for the indicated minimum age. The age rating system was developed by the Interactive Software Federation of Europe (ISFE <https://www.isfe.eu/>) and was launched in 2003. It replaced a number of national age rating systems in more than 35 countries (Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Israel, Italy, Kosovo, Latvia, Lithuania, Luxembourg, Malta, Moldavia, Montenegro, the Netherlands, Norway, Slovakia, Slovenia, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, and the United Kingdom).

The PEGI rating provides two levels of information as a Guide – the PEGI age labels and the PEGI content descriptors.



The PEGI age labels:






 <p>www.pegi.info</p>	<p>The content of games with a PEGI 3 rating is considered suitable for all age groups. The game should not contain any sounds or pictures that are likely to frighten young children. A very mild form of violence (in a comical context or a childlike setting) is acceptable. No bad language should be heard.</p>	 <p>www.pegi.info</p>	<p>Game content with scenes or sounds that can possibly frightening to younger children should fall in this category. Very mild forms of violence (implied, non-detailed, or non-realistic violence) are acceptable for a game with a PEGI 7 rating.</p>
 <p>www.pegi.info</p>	<p>Video games that show violence of a slightly more graphic nature towards fantasy characters or non-realistic violence towards human-like characters would fall in this age category. Sexual innuendo or sexual posturing can be present, while any bad language in this category must be mild. Gambling as it is normally carried out in real life in casinos or gambling halls can also be present (e.g. card games that in real life would be played for money).</p>	 <p>www.pegi.info</p>	<p>This rating is applied once the depiction of violence (or sexual activity) reaches a stage that looks the same as would be expected in real life. The use of bad language in games with a PEGI 16 rating can be more extreme, while games of chance, and the use of tobacco, alcohol or illegal drugs can also be present.</p>
 <p>www.pegi.info</p>	<p>The adult classification is applied when the level of violence reaches a stage where it becomes a depiction of gross violence, apparently motiveless killing, or violence towards defenceless characters. The glamorisation of the use of illegal drugs and explicit sexual activity should also fall into this age category.</p>		

Table 3: PEGI age labels

The PEGI content descriptors:


 <p>VIOLENCE</p>	<p>The game contains depictions of violence. In games rated PEGI 7 this can only be non-realistic or non-detailed violence. Games rated PEGI 12 can include violence in a fantasy environment or non-realistic violence towards human-like characters, whereas games rated PEGI 16 or 18 have increasingly more realistic-looking violence.</p>	 <p>SEX</p>	<p>This content descriptor can accompany a PEGI 12 rating if the game includes sexual posturing or innuendo, a PEGI 16 rating if there is erotic nudity or sexual intercourse without visible genitals or a PEGI 18 rating if there is explicit sexual activity in the game. Depictions of nudity in a non-sexual content do not require a specific age rating, and this descriptor would not be necessary</p>
 <p>FEAR</p>	<p>This descriptor may appear on games with a PEGI 7 if it contains pictures or sounds that may be frightening or scary to young children, or on PEGI 12 games with horrific sounds or horror effects (but without any violent content).</p>	 <p>GAMBLING</p>	<p>The game contains elements that encourage or teach gambling. These simulations of gambling refer to games of chance that are normally carried out in casinos or gambling halls. Games with this sort of content are PEGI 12, PEGI 16 or PEGI 18.</p>
 <p>BAD LANGUAGE</p>	<p>The game contains bad language. This descriptor can be found on games with a PEGI 12 (mild swearing), PEGI 16 (e.g. sexual expletives or blasphemy) or PEGI 18 rating (e.g. sexual expletives or blasphemy).</p>	 <p>DRUGS</p>	<p>The game refers to or depicts the use of illegal drugs, alcohol or tobacco. Games with this content descriptor are always PEGI 16 or PEGI 18.</p>
 <p>DISCRIMINATION</p>	<p>The game contains depictions of ethnic, religious, nationalistic or other stereotypes likely to encourage hatred. This content is always restricted to a PEGI 18 rating (and likely to infringe national criminal laws).</p>	 <p>PEGI ONLINE pegionline.eu</p>	<p>PEGI Online is an expansion to the PEGI System. If game websites carry the PEGI Online logo, parents are informed that the game or website in question is under the control of an operator that cares about applying best practices to protect young people.</p>

Table 4: PEGI content descriptors

PEGI ratings apply

- to all games released on disc or cartridge for Microsoft, Nintendo and Sony consoles, and PC.
- to all games released digitally for Microsoft and Sony devices (including smartphones and tablets).
- to many games released digitally for PC.

Many digitally downloadable games received their PEGI rating through the system of the International Age Rating Coalition (IARC), like Nintendo eShop, Google Play store and Oculus VR store.

<https://pegi.info/page/pegi-age-ratings>

IARC

The IARC system is a global rating and age classification system for digitally delivered games and apps that reflects the unique cultural differences among nations and regions. It provides a faster, more scalable solution, with the possibility of responding quickly to changes or errors. The IARC system currently includes rating authorities from Australia, Brazil, North America, South Korea and Europe.

<https://www.globalratings.com/>

USK

In Germany the age rating of computer games is the responsibility of the Ministries of the Federal States with jurisdiction of young persons' affairs (pursuant to the German Children and Young Persons Protection Act). The German Entertainment Software Self-Regulation Body (USK) was established in 1994 by the computer games industry to act as the organization responsible for the classification of computer games in Germany and carries out the necessary classification process. Since 2014 the USK also classifies apps and games within the IARC system. The USK uses the following five ratings:








	<p>Approved without age restriction in accordance with Art. 14 German Children and Young Persons Protection Act (JuSchG).</p>		<p>Approved for children aged 6 and above in accordance with Art. 14 German Children and Young Persons Protection Act (JuSchG).</p>
	<p>Approved for children aged 12 and above in accordance with Art. 14 German Children and Young Persons Protection Act (JuSchG).</p>		<p>Approved for children aged 16 and above in accordance with Art. 14 German Children and Young Persons Protection Act (JuSchG).</p>
	<p>Not approved for young persons aged under 18 in accordance with Art. 14 German Children and Young Persons Protection Act (JuSchG).</p>		

Table 5: USK age rating system

11.3.3.3. PEGI Level 3 - USK 0

Games which are released with the age rating “Approved without age restriction” do not include depictions of violence nor do they confront children with situations which produce sustained anxiety. The game atmosphere often features friendly and colourful graphics. The more gentle structure of the game does not put even young children under too much pressure. Game tasks are also child appropriate. They aim at children, young persons as well as adults. These include family-friendly games such as Games of skill and Board and Card games, Sports games, Jump’n Runs, as well as all games for young persons and adults which do not pose any inherent child protections

risks of any kind (e.g. Simulations, Management, Classical Adventures and some Role-playing games, which younger children are not even able to play).

Examples: Pokémon Go, Candy Crush

11.3.3.4. PEGI Level 7 – USK 6

<http://www.usk.de/en/classification/age-rating-symbols/approved-for-children-aged-6-and-above-in-accordance-with-art-14-german-children-and-young-persons-protection-act-juschg>:

These games mostly involve family-friendly games which may be more exciting and competitive (e.g. via faster game speeds and more complex tasks, such as Racers, Simulations, Jump'n Runs and Role-playing games (USK, 2013).

Children aged between 6 and 11 develop a capability for differentiated and distances perception of media representations and contents. Their ability to tell the difference between the game world and reality improves increasingly. They acquire their first differentiated media experiences and are able to withstand doses of excitement and pressure to act alleviated by breaks.

Game tasks are faster paced and require basic hand-eye coordination skills. Many game concepts for this age group are based on sporting competition or skill and revolve around fantasy and fairy tale worlds with well-known comic or cartoon heroes as game characters. The structure and dynamics of the games enable even younger primary school children to distance themselves from the events.

If fight scenes are included, they tend to be presented in a fairy tale or abstract symbolic form rather than being capable of confusion with reality. The fight scenes are not likely to make children feel insecure or which impart socially damaging role models. This category does not include games which subject 6-year old children to unreasonable stress, cause them lasting anxiety, overburden them emotionally or excite them unduly either acoustically or visually.

Examples: Plants vs. Zombies, Sonic & SEGA All-Stars Racing, Lego Harry Potter 1 - 4

11.3.3.5. Limitation of age rating systems

'The age rating symbol does not, however, provide any information as to whether the game is suitable for pre-school children or is educationally valuable. Neither does it indicate whether pre-school children will be able to master the technology and content of the game, whether the game tasks and graphics are always realised in a child-appropriate way or whether text displays and spoken language will be understood' (USK, 2013).

Furthermore the PEGI & USK labels could be different for the same game. It is advisable to consult pedagogical game counsels or to play the game by yourself. Find some game counsels for different countries in the following box:

National Websites for pedagogical advise in game choice:

Austria:

<http://www.bupp.at/> -

<http://toolkit-gbl.at>

<https://saferinternet.at>

<https://www.digi4family.at/serviceangebote/apps-und-interessante-websites-fuer-schueler-innen/>

Germany:

www.spieleratgeber-nrw.de

www.spielbar.de

www.internet-abc.d

Others:

<http://www.safekids.com/>

11.3.3.6. Chances and risks

Using games (for learning) can have positive as well as negative impacts on children at pre-primary and primary age.

How do young children may benefit from digital games

The following positive impacts and advantages can be found in diverse publications (VADEMECUM, 2017; Wastia & Kearney, 2009, Tettegah et al. 2016):

Digital Games are a widespread leisure-time activity of children and teenager. On the one hand the daily life experiences of children will be taken for serious when using games for education and on the other hand it would not be wise for the education system to ignore the popularity of such games. Every digital game could be used for learning experiences not only educational games. The teacher has to provide a pedagogical frame where the experiences and contents could be questioned or embedded into other experiences (like reading a book, watching a video, etc.). An interconnection between the game and traditional teaching tools generally produces better retention of the information learned.

Digital Games have the potential to personalize teaching and learning, to implement transdisciplinary approaches, to foster the empowerment of the learner and to promote meta-cognitive development. The gamer meets different challenges and by adopting the rules and building different skills he/she tries to overcome them. By doing that mistakes are possible and don't influence the real world. The ways in which mistakes and different learning paces are managed in a game take the drama out of learning. Feedback is an integral part of the game and not something separate (as in traditional teaching).

Through digital games the child adopts different skills, which can be made visual in a communicative process during the lesson. During and/or after the use of a game, children show real enthusiasm for writing texts, diaries, or content for a website, for making drawings or photographs, etc. These more traditional productions appear as a natural extension of the games introduced into the classroom. In some cases, computer games can start the discussion into a serious matter which would be otherwise more difficult to approach. Digital Games and its story

line can be a good starting point for conversations and provide many links to transfer the story into the reality of the player (e.g. competences for Media literacy could be build whenever discussing about the experiences with games)

Children could be encouraged to play the role of an expert. In this role they can speak about their experiences and views about Digital Games. They can also help other children who don't have the same experience. Digital games provide interactive rooms for trying out different roles, for living out creativity and emotions and for the simulation of processes. Playing together unites and can diminish social and cultural barriers and playing in groups can foster collaboration, cooperation and also competition.

Young children could develop their hand-eye coordination which is essential for school beginners. They can learn new words and proper pronunciation by listening to stories online which could be also useful for children engaging with more than one language. Small children could gain basic skills in mathematics, reading and problem solving. Furthermore they get access to things, creatures and places around the world they would not see in their immediate distance and begin to understand that life is much more than the walls at home.

Last but not least the children are highly motivated to use games in education and experiences which are made on their own will stay in mind.

What are the risks for young children playing digital games

For children at pre-primary and primary age the highest risk is to be let alone when playing digital games. They could encounter the following (see also <http://www.safekids.com/child-safety-on-the-information-highway/>):

Unsuitable content

There are many games that are rated as PEGI 3 or USK 1 but are not suitable for young children. If games without ratings are used it is advisable to get information about the game or to play it before the child plays it. Unsuitable content could be scenes with violence, bad language, situations that evoke fear, gambling elements, sexual inspired content, scenes using illegal

drugs/alcohol/tobacco, depictions of discrimination. For PEGI 7 non-realistic violence is accepted (like in comics). There could also be links to websites where the content may not be suitable

Breaches of privacy

There are many ways that a child's privacy could be at risk. Young children don't reflect what it means if they post a picture or a message. Another privacy risk are third party tracking cookies and other techniques which let enterprises know what children are doing on the internet. Some apps track the location of the child.

(Sexual) Harassment and bullying

If a games allows to connect with other gamers children sometimes encounter messages that are (sexual) harassing or other mean behavior.

Legal, financial and security risks

Small children don't know about the consequences if they download e.g. an app or click on a link or sending information (pictures, etc.). By doing this they could download files that contain malicious software that can even hand over credit card numbers or passwords. In-Game-Purchases are not obvious for small children – this could be a high financial risk, if there is no technical security system to prevent this.

High Time Consume

Many games are very time consuming in order to play the game successfully or to keep up with peers. If there is no limit from parents/educators children would forget over time.

11.3.3.7. Recommendations

When (young) children are using computer games or apps parents, educators and other supervisors have to recognize some elementary pre-conditions:

Respect the age of the children

Children up to 8 should be accompanied whenever using digital media. The person in charge has to choose the content and has to choose how long the children is allowed to play. Games should be designed in that way that children can stop it and continue it easily at a later point of time. There should be mechanism to protect the child from sexual harassment and from spending

money while playing (e.g. social networks contacts should be blocked if the game provides them). Use secure internet rooms on the basis of whitelists (these are Links and contents which can be used harmless)

Children from 6 to 12 don't need permanent supervision but educators/parents should know about the games and contents and it is crucial to speak with the children and to stay in contact if the child encounters something irritating. It is recommended to choose the games and contents together. Control tools and protected environments (using blacklists) are helpful to assist parents/educators.

For children/teenager from 8 to 18 it is crucial to support them in a competent way. The children/teenager should build up competences in dealing with new media. It is very important to speak about privacy, copy right, pitfalls in online deals, pornography and violence, sexual harassment and mobbing (BITKOM, 2014).

Games should be chosen according the PEGI or USK levels.

Exchange of Experience

Parents/Educators should always be interested in what children are doing in the internet. It is crucial to stay in contact and to exchange information about what they encountered during their play. It is essential to talk about positive and negative feelings and children should build a positive relationship with the person in charge in order to ask for help if needed (BITKOM, 2014). If possible the game should be played by the person in charge, to know about cost traps or a high time consume when playing. It is essential to talk about values and agreements and sometimes it is good to be open for alternatives.

Time Limit

The younger the children the more important is it to limit the time spent with online playing. It should only be one part of the daily activities. Hobbies, school activities and lazy time should enrich the daily routine of young children. Technical solutions can help to supervise young children.



Beware of Cost Traps

There can be different financing models for a app. Some of them have to be bought and often don't have advertising in it. Some are free but have In-Game-Purchases and some are free but there are costs if the player wants to play the whole game or if he/she wants to advance much faster in the game (free-to-play games). Children often can't reflect their decision for in-game-purchases without emotions. For young children it is not obvious that they are buying something by clicking on the tablet or smartphone. It is advisable that children at primary or pre-primary age don't have access to such games. Parents/Educators moreover can limit the access through technical adjustments in iOS and Android and children could use their own user account (Schalla and Scheid, 2015 – see also <https://pegi.info/page/game-purchases>).

Technical child protection

All gaming consoles, handheld devices and operating systems for PC and Mac are equipped with parental control systems (see also <https://pegi.info/parental-controls>). Parental control tools allow parents to protect their children's privacy and online safety according to various parameters. They can select which games children are allowed to play (based on the PEGI age ratings), limit and monitor their online spending, control access to internet browsing and online interaction (chat), and set the amount of time children can spend playing games. Technical Solutions can minimize the risk for small children in the Internet but they don't replace parental supervision and guidance.

- It is advisable to generate a special user account, where small children can't change the adjustments.
- Change the adjustments of the digital device so that children can surf and play in a secure environment
- Use filters which limit the risk for downloading contents which are not appropriate for small children – the following software is government approved by the German Commission for the Protection of minors in the Media (KJM)

<https://www.jugendschutzprogramm.de/?lang=en>



- Filters also could be downloaded for smartphones
- Children under 14 should not use their real name when accessing the internet

Personal information, privacy and copy right

It is very important that the privacy of small children is protected. It is advisable to release as little information as possible. Adjustments can be done in the user profile. When registering for online services user should only enter information which are obligatory. Only authorized persons should have access to the contents, pictures etc. of small children. Furthermore parents and educators should limit their dispatch of pictures of their supervised children. Children have a right to privacy and don't like it that parents send funny pictures of them to friends and relatives. Educators and children have to respect that everyone on a picture can decide if and where the picture is published. It is also important that children learn that it is not allowed to copy and use contents of others (like music, pictures, videos) without permission. There could be penalties if someone illegally downloads music or videos.

Developing Game based Learning ideas (Vademecum, 2017)

Games based Learning is not only playing a game. It is much more – there has to be a pedagogical frame and supervision to transfer learning from games. The basis can be a single game or digital games in general. Game preferences, contents or behaviour could be reflected or could be the link to alternative educational methods. The following steps could help to define a individual game based learning idea:

1. What is the educational goal? What experience should the children encounter? Which topics should be addressed? Who will play the game?
2. On the basis of the above questions a suitable game has to be chosen. Official websites with game recommendations could be helpful. In some cases the children are experts for a suitable game. The game should be checked if it is suitable according content, technical framework and age limit (PEGI).

3. The game has to be analyzed according the didactical potential: What is the didactical value? What are the constraints? Where can be problems? What could be the effects of the game?
4. What is the suitable didactical method for playing the game and for integrating the game into the lesson?
5. Test the game based method with your students and speak with your colleagues. Feedback can be used to revise the method.

