European Video Game Development and Disability: Reflections on Data, Rights, Decisions and Assistance

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Abstract. The *European Union* (EU) is funding the development of computer games for people with disabilities since 2004. Since 2014, the *Education, Audiovisual and Culture Executive Age*ncy (EACEA) – as part of the EU – is responsible for the management of development and funding of European Video Games. In 2010 the European Disability Strategy has taken effect. Ever since, the integration of people with disabilities into cultural life as well as learning environments has become one of the main topics in the EU. As computer games are part of both – cultural life and learning environments – the link between people with disabilities and video games are being reflected and discussed in this paper. The results show, that on the one hand the responsibility of the EU and EACEA to include people with disabilities into the development of computer games is taken into account. On the other hand, there is a lack of current quantitative data on people with disabilities playing video games and it remains difficult to say how many people face exclusion. Moreover, assistive technologies are still a niche product. Due to their expensiveness as well as their non-plug-and-play usability, they frequently remain difficult to use. Nevertheless, possibilities to link inclusion and technology in educational environments do exist.

Keywords: Disability game studies · European video game industry · European video game development · People with disabilities · Assistive technologies · Inclusive programming

1 Introduction

Over forty-five years ago, PONG (1972) became the world's first popular digital game[1] [10]. The popularity of video games is ongoing in public and academic discussions, ever since. Social projects like the newspaper strassen gazette refer to them under their aspects of social inclusion[2]. But academics are interested in the inclusional facets of computer games, too. The list of publications about the positive influences of video games, for example on people with disabilities, is current and diverse [7, 18].

[1] Hereinafter also referred to as video games and computer games.

[2] German newspaper sold by people without a permanent home. Issue of September 2019.

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Nevertheless, the reactions on computer games vary from hype to skepticism [14]. One reason for the divergency in opinions is probably the popularity of video games.

In Germany, the Southwest Media Education Research Network is collecting data on a regular basis. Data about the participation of children (6–13 yrs.) in digital games is being collected since 1999 (n = 537) and youngsters (12–19 yrs.) since 1998 (n = 568) [11, 12]. The past twenty years show, that the participation in video games has risen ever since.

In Austria, a first and last bigger data collection (n = 3.002) took place in 2017. It was commissioned by the Austrian Association for Entertainment Software[3]. The headline states, that almost two thirds of the 7.3 million online-households do play video games. To sum up, Germany and Austria are both interested in collecting data on participation in digital games. However, they share a lack of interest in data collection on people with disabilities playing computer games. An online-survey from 2008 (n = 13.296) shows, over twenty percent of people playing video games identify themselves as disabled[4]. Even if a general interest in the people playing video games exists, there is no special interest in people with disabilities playing computer games [1]. All in all, there is room for research, discussion and reflection left. To guide this first conclusion, the upcoming article takes a look onto the following questions: Why is it necessary to dis- cuss the link between people with disabilities and computer games? How are digital games and disabilities being faced together in the development of European Video Games? Where are possibilities and difficulties for technical inclusion?

2 The Human Right to Play in Austria and Germany

Members of the *European Union* (EU) must follow the *Universal Declaration of Human Rights* (UDHR). An agreement, that regulates these rights especially for people with disabilities is the *Convention on the Rights of Persons with Disabilities* (CRPD). For this paper, the Article 30 is especially interesting. It states, that children must be enabled to participate in culture and play without barriers [15]. For Austria, the CRPD came into effect on the 26th October 2008 and for Germany on the 26th March 2009. The EU addressed the rights of persons with disabilities with the *European Strategy for People with Disabilities* (ESPD) in 2010 and 2014[5].

As mentioned in the CRPD and ESPD, there is a right to cultural participation for people with disabilities. As computer games are part of European culture[6], there is a right for barrier free participation. As people with disabilities have a right to participate

[3] https://www.ovus.at/news/fast-5-millionen-osterreicher-spielen-videogames/.

[4] https://www.gamesindustry.biz/articles/popcap-games-research-publisher-s-latest-survey-says-that-casual-games-are-big-with-disabled-people/.

[5] Reference: European Disability Strategy 2010–2020.

[6] Reference: L 347/221.

in video games, there is a need to address these rights. Therefore, the next chapter focuses on the development of European Video Games supported by the *Education, Audiovisual and Culture Executive Agency* (EACEA).

3 Supporting the Development of European Video Games

In this chapter, the support of the EU and EACEA regarding people with disabilities playing video games is being focussed. One of the main aspects of computer games is them being played. As a result, people playing them are a key aspect in their development [13]. As mentioned in the chapter before, people with disability have a right to participate in video games. But even before the ESPD started in 2010, the EU funded projects focussing people with disabilities and video games. One of the first could be backdated to 2004. Even if the project *Guidelines for the development of entertaining software for people with multiple learning disabilities* (UPS) was cancelled right after the official beginning[7], the research on *Methods for Prototype Testing of Inclusive Computer Games* in the same year was not [19]. Eight years later (2012), the non-profit- project *Game Accessibility Guidelines*[8] began to support the video game industry with tips and tricks about the inclusion of people with disabilities into video games. In addition, even *Microsoft* published tips and tricks for barrier free games in 2017[9].

In between the EACEA started the funding of European Video Games and their funding with 2.5 million euro each year (max. 250.000 Euro per project). The program started in 2013 and will end in 2020[10]. Guidelines on how to get funded are being published online since 2014 and people with disabilities are being focussed as well since 2015[11]. Regarding to the guidelines, the developed games should suit the target audience. For example, the developers get five points for the inclusion of accessibility features which enhance the accessibility for gamers with disabilities. Altogether, there are one-hundred points to get.

As the EU decided to include computer games into their cultural heritage, nearly 1000 (n = 996) games were submitted to the EACEA for their support from 2014 to 2019 (see footnote 6). Furthermore, developers from 33 European countries[12] participated in the application process in the same period. More detailed information about nine out of the 33 countries participated in recent years could be found in Table 1.

[7] http://www.medialt.no/rapport/entertainment_guidelines/.

[8] http://gameaccessibilityguidelines.com/.

[9] https://docs.microsoft.com/en-us/windows/uwp/gaming/accessibility-for-games.

[10] Reference: C (2013) 8314 of 28 November 2013.

[11] References: EAC/S31/2013, EACEA/06/2015, EACEA/20/2015, EACEA/22/2016, EACEA/24/2017 and EACEA/24/2018.

[12] Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Den- mark, Estonia, Germany, Greece, Finland, France, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Norway, Poland, Portugal, Republic of Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Even if successful submissions do not exceed 23% in any year and the applications received have almost halved, the success rate has doubled from the beginning on.

In short, tips, tricks and guidelines for the inclusion of people with disabilities into computer game development do exist. They are provided by non-profit-organisations as well as the software industry. Besides, the EU has a special interest in funding projects regarding people with disabilities and video game development. European departments like the EACEA try to channel the growth and capabilities of computer games since 2013. But they could focus on inclusion even more. For example, there is no real need for developers of European Video Games to include accessibility futures into the final video game. Instead, they could focus another European audience at will not lose any points. Nevertheless, possibilities to participate even in finished games do exist. For instance, assistive technologies help people with disabilities to participate in video games, as shown in the next chapter.

4 Assistive Technology as a Chance for Inclusion

Computer games are designed for play and so are assistive technologies, as one of the common subtasks using assistive technologies is participating in computer games [9]. Video game worlds are an educational tool and technology can make a difference for students with disabilities to participate in these learning environments [5, 6]. The importance of barrier free participation through assistive technology was taken into account by the EU in 2010 and 2019[13]. Nonetheless, the devices may need to be rebuilt from scratch, as plug-and-play technologies are rare [8].

According to a report about the European assistive technology industry, they often do require readjustments as well as maintenance before, during and after their installation [17]. Nevertheless, there are fine working assistive technologies for playing computer games in existence [4, 16]. For example, the blind use haptic displays and talking dictionaries since at least 2003 [2, 9]. Even electric-wheelchair-joysticks, that are familiar to gaming-joysticks, are commonly used [3]. Besides, guidelines – not only for computer game development as mentioned in chapter three – for the use and development of assistive technologies do exist [6].

In conclusion, assistive technologies are being used by people with disabilities to play computer games and are an important tool for inclusion in learning environments. The EU is interested in assistive technologies as shown in critical evaluations and recent strategies. In addition, there is a general interest in technical inclusion of people with disabilities. Regarding the findings on participation, human rights, computer game development and assistive technology, the next chapter will conclude and discuss those topics.

[13] Reference: PE/81/2018/REV/1.

Table 1. Applications by country (selection of 33 countries participated in total)

	2014		2015		2016		2017		2018		2019	
	AR[a]	ASR[a]	AR	ASR	AR	ASR	AR	ASR	AR	ASR	AR	ASR
Austria	5	20%	2	0%	3	0%	3	33%	0	0%	2	0%
Belgium	5	0%	2	50%	1	0%	0	0%	3	33%	2	50%
Czech Republic	6	17%	0	0%	6	17%	5	0%	0	0%	1	0%
Germany	25	16%	13	15%	13	31%	15	27%	17	41%	20	40%
Finland	21	10%	6	33%	7	0%	11	0%	9	11%	6	17%
France	24	17%	18	17%	15	7%	12	42%	9	22%	15	20%
Portugal	4	0%	2	0%	1	100%	0	0%	1	0%	3	0%
Slovakia	5	0%	6	0%	5	0%	1	0%	1	0%	2	0%
United Kingdom	27	4%	22	18%	11	9%	24	25%	16	13%	12	17%
Sum	*122*	*9%*	*71*	*15%*	*62*	*18%*	*71*	*14%*	*56*	*13%*	*63*	*16%*
All participants	**259**	**11%**	**182**	**17%**	**138**	**18%**	**146**	**22%**	**132**	**23%**	**139**	**22%**

[a]AR = Applications received, ASR = Average success rate.

5 Discussion

Three questions were asked in the beginning and will be focused in the upcoming discussion. In Germany, there is repeatedly updated quantitative data about kids and teenagers playing video games. In Austria, there is only one bigger collection of data about people playing computer games to be found. What both countries share is a lack of data about people with disabilities playing computer games. There is only one large American survey in existence from 2008 and it is no longer available for further investigation. As participation in video games is a human right, further questions arise. Even if the EU and EACEA do support computer game development regarding people with disabilities in projects since 2004, there is more to do. On the one hand, the submission guidelines of the EACEA do encourage a focus on disability and impairments in the development of European Video Games. On the other hand, there is no real need to implement accessibility features in the computer games and assistive technologies are not mentioned in the guidelines itself. As assistive technologies do make a difference in the inclusion of people with disabilities in video games and therefore learning environments, there is a need for action. Besides, there is a need to strengthen the focus on assistive technologies in upcoming projects for digital game development.

In a more practical fashion, there are possibilities and necessities to integrate and install assistive technologies into more classrooms. Projects or courses aiming on *inclusive programming* tasks could be used in educational environments. Inclusive programming revers to the link between social inclusion and computer science. As mentioned in chapter four, assistive technologies as well as computer games need working hard- and software to function correctly. In addition, they are both being programmed in their development and need to be synchronized. In an inclusive programming project or course, the participants with or without disabilities could improve

their programming and social skills by working together. Moreover, they could learn to program their own digital game worlds and assistive technologies for playful and game-based learning as well as reprogram existing video games for more accessibility and usability.

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