



## Joint EGDF-ISFE position paper on digitalisation of education

### About EGDF and ISFE

1. **The European Games Developer Federation e.f. (EGDF)** unites national trade associations representing game developer studios based in 18 European countries: Austria (PGDA), Belgium (FLEGA), Czechia (GDACZ), Denmark (Producentforeningen), Finland (Suomen pelinkehittäjät), France (SNJV), Germany (GAME), Italy (IIDEA), Malta (MVGSA), Netherlands (DGA), Norway (Produsentforeningen), Poland (PGA), Romania (RGDA), Spain (DEV), Sweden (Spelplan-ASGD), Slovakia (SGDA), Turkey (TOGED) and the United Kingdom (TIGA). Altogether, through its members, EGDF represents more than 2 500 game developer studios, most of them SMEs, employing more than 35 000 people.
2. **The Interactive Software Federation of Europe (ISFE)** represents the European video games industry. ISFE's membership comprises national trade associations in 18 countries throughout Europe which represent in turn hundreds of games companies at national level. ISFE also has as direct members the leading European and international publishers, many of which have studios with a strong European footprint, that produce and publish interactive entertainment and educational software for use on personal computers, game consoles, portable devices, mobile phones and the Internet.
3. Both EGDF's and ISFE's purpose is to serve Europe's video games ecosystem by ensuring its access to talent and that the value of games is widely understood and to promote growth, skills, and innovation policies that are vital to strengthen the sector's contribution to Europe's digital future. The video games sector represents one of Europe's most compelling economic success stories, relying on a strong IP framework, and is a rapidly growing segment of the creative industries. In 2019, Europe's video games market was worth €21bn, and the industry has registered a growth rate of 55% over the past 5 years in key European markets<sup>1</sup>. All in all, there are around 5000 video game developer studios and publishers in Europe employing closer to 80 000 people.<sup>2</sup>

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<sup>1</sup> ISFE Key Facts 2020 from GameTrack Data by Ipsos MORI and commissioned by ISFE <https://www.isfe.eu/data-key-facts/>

<sup>2</sup> European Games Industry in 2018: <http://www.egdf.eu/wp-content/uploads/2020/08/European-Report-on-the-Game-Development-Industry-in-2018.pdf>

## I. Using digital games in education: video games pave the way to the digital future.

4. EGDF and ISFE welcome the opportunity to respond to this public consultation and look forward to the publication of the updated Digital Education Action Plan. Video games are quickly becoming one of the leading cultural mediums of the 21st century.<sup>3</sup> Through their ability to provide gamified learning experiences (available via both commercial or “off the shelf” educational video games), they are quickly becoming part of learning processes. Additionally, similar to literature, film and music studies, learning through video games is also increasing becoming part of school curricula. Thanks to its artistic, creative and technological features.

### **Video games help to acquire essential competences that are needed in a digitised society**

5. The COVID-19 outbreak has had a major impact on many aspects of the EU economies and societies. As telework and distance learning have become a reality for many people, the pandemic has accelerated the digital transition, thereby widening the existing skills gap between those who have the necessary competences to function and thrive in the digital society, and those who are lagging behind.
6. Digital skills are today basic skills and therefore as vital as literacy and numeracy. They encompass not only technical abilities to apply ICT, but also digital literacy, safety, collaboration, and content creation. Digital skills are part of the European Framework of Key Competences for Lifelong Learning, which defines the competences that each European citizen needs for personal fulfilment and development, employment, social inclusion and active citizenship. Skills such as critical thinking, problem solving, teamwork, communication and negotiation skills, analytical skills, creativity, and intercultural skills are embedded throughout these Commission’s Key Competences<sup>4</sup>.
7. Video games can help acquire these key competences and skills. While they enable players to immerse themselves in rich imaginative worlds, collaborate or compete with friends or other fellow gamers around the world, they pose significant intellectual challenges, specifically in terms of processing information, solving problems, devising strategies and plans, and interpreting information from a range of different media, both verbal and visual. Video games can also be seen as a means of developing particular skills or conceptual understandings or as a way of building logical or critical thinking abilities.
8. In primary education, teachers that have used games in the classroom observed a significant improvement in several key skills such as problem-solving and analytical, social,

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<sup>3</sup> <http://www.neogames.fi/wp-content/uploads/2019/01/Finnish-Game-industry-policy-recommendations-for-2019–2024.pdf> , p4.

<sup>4</sup> [Revised Council Recommendation on Key Competences for Lifelong Learning](#), p 14.

intellectual, spatiotemporal (hand-eye coordination, reflexes) skills, as well as an increase in concentration<sup>5</sup>. Games also contribute to the development of skills in creativity and innovation, such as the ability to cooperate and explore, self-management, independence, responsibility, initiative and enterprise. As previously mentioned the Polish government recently announced that from the next academic year 2020/2021, the video game “This War of Mine” by 11 bit Studios will be placed on the official reading list for high school students in Poland and made available for free to support the teaching of sociology, ethics, philosophy and history<sup>6</sup>.

9. Recent [research by the UK National Literacy Trust](#) has found, for instance, that playing video games can support young people’s literacy, creativity and empathy. A survey of 4,626 young players aged 11-16 revealed that 79% read materials related to video games, including in-game communications (40%), reviews and blogs (31%), books (22%) and fan fiction (19%), while 35% believe playing video games makes them better readers. 63% regularly write content related to video games, such as video game scripts (28%), advice to help fellow players (22%), fan fiction (11%) and blogs or reviews (8%). Furthermore, more than half (56%) of parents said their child had chatted with family and friends as part of playing a video game during lockdown and 60% felt that this communication had been helpful for their child’s mental wellbeing during this time.

### **Video games can help transform learning and teaching processes**

10. Education and training systems are crucial to ensure that every European is equipped with key competences and basic skills for lifelong learning. Teachers and trainers therefore require adequate preparation and training themselves. Across the EU, there remains a high need for pedagogic training which empowers teachers with the required skills to help their students become digitally competent and guide them towards a more exploratory and creative interaction with technology. Only 39.4% feel well or very well prepared for the use of digital technologies for teaching<sup>7</sup>. Video games can help support this educational reform.
11. Video games can be used to teach facts (e.g. knowledge, recall, rote learning or memorization), principles (e.g. cause and effect relationship) and solve complex problems, as well as provide practical examples of concepts and rules that would be difficult to illustrate in the real world. Importantly video games with no educational intent require players to learn a great deal. This is because digital games intrinsically implement

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<sup>5</sup> [How are digital games used in schools?](#) Games in Schools Project, Final Report, 2009, p. 10.

<sup>6</sup> <https://www.gamesindustry.biz/articles/2020-06-18-this-war-of-mine-will-be-added-to-polish-schools-reading-list>

<sup>7</sup> [Education and Training Monitor 2019](#), p. 32 and 88.

well-known pedagogical concepts<sup>8</sup>. They usually include high intensity of interaction, specific goals, a continuous feeling of challenge, and a sense of engagement which are concepts that have been associated with successful learning environments. Video games are therefore capable of modernizing the teaching methods in the educational system.

12. Video games offer a rapid learning curve which is usually forgiving in the first levels, so that players can progressively familiarise themselves with the game's mechanics and become proficient. They continuously adjust themselves to each player's skills and abilities. Video games provide a practical, but challenging learning environment promoting genuine collaboration between players, who can experiment, make mistakes and learn by doing<sup>9</sup>.
13. After an ethnographic research conducted over two years, the University of California, Irvine developed a programme for "connected learning" in high schools through video game competitions, also called "esports". This programme "connects" students' interests in esports participation with academic, career and civic achievement, making school more relevant and linking young people to future career pathways. The programme incorporates Career Technical Education (CTE), STEM, English Language Arts, and social and emotional learning. After the pilot year, the most prevalent key indicators across the qualitative data corpus were social-emotional learning (CASEL), communication, systems reasoning, and affiliation with the educational institution<sup>10</sup>.
14. Research conducted by Digital Schoolhouse<sup>11</sup> reports the positive impact of esports in schools and as a catalyst for embedding immersive careers education in the curriculum. 90% of participants stated it had increased their interest in a career in the video games industry and all transferable skills increased with Communication (74%) and Team Working (80%) coming top. Over 80% of students said that the competition had increased their interest in participating in other team sports whilst numerous reports were received of increased student confidence, improved attendance to school, cross year group friendships; and in particular engaging the 'forgotten middle' (e.g. those students with good behaviour and average attainment who are unlikely to appear on any targeted intervention lists). Participation within the tournament helped upskill the teachers involved with key knowledge and insights into career opportunities available within the wider video games industry; thus, enabling them to provide more relevant career guidance to their students.

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<sup>8</sup> In his book "What Games have to teach us about Learning and Literacy" James Paul Gee argues that games incorporate a list of fundamentally sound learning principles, principles that can be used in other settings, for example in teaching science in schools.

<sup>9</sup> "Don't Bother Me Mom – I'm Learning" How Computer Games are Preparing Your Kids For 21st Century Success, Marc Prensky, 2006, p. 59-63.

<sup>10</sup> [Esports as a Catalyst for Connected Learning: The North America Scholastics Esports Federation](#), Je Seok Lee and Constance Steinkuehler, XRDS, Volume 25, No 4, Summer 2019, Pages 54-59.

<sup>11</sup> [Esports: Engaging Education](#) (2018)

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## How both commercial video games and educational games can be used as pedagogical support in the classroom.

### Commercial games in the classroom

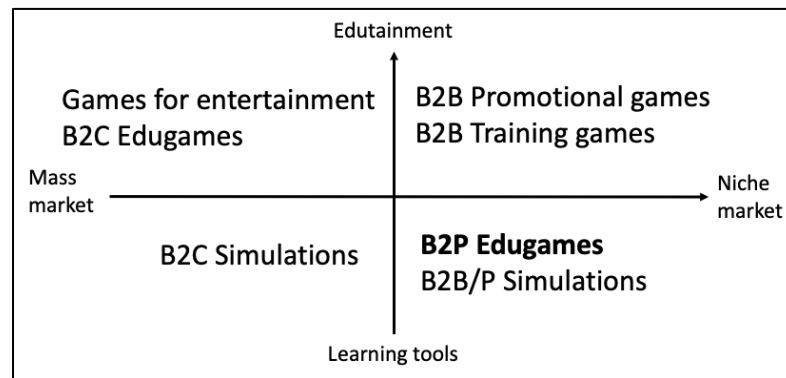
15. Since 2006, ISFE in partnership with European SchoolNet (the network of 34 Ministries of Education) is exploring how commercial video games are and can be used in schools. The initial research project under the name "[Games in Schools](#)" consisted of a survey of more than 500 teachers in 8 European countries, several case studies and interviews with policy makers. It revealed that games are increasingly used as a teaching tool although some teachers still encounter difficulties in integrating them into the curriculum and also because they lack equipment, and the reservations of parents and their colleagues about the use of electronic games. As part of this project, a [Handbook for Teachers](#) was published which offers appropriate training enabling teachers to combine digital with more traditional teaching tools. The Handbook, updated in 2020, provides the necessary information to understand the educational benefits of commercial video games and to learn how to use them as educational and motivational resources.
16. Furthermore, since 2014, 6-week long [Massive Online Open Courses](#) (MOOCs) are organised on an annual basis to empower and train teachers across Europe and beyond by online collaboration on the use of commercial video games as pedagogical support in the classroom. The course provides for 6 weekly workshops which mix multimedia content (like tutorials and video support materials) and simulation exercises with written documentation and reference materials. Participants interact through blogs and fora and at the end of each course teachers are asked to come up with a tailored lesson plan to do "in-class" activities. A record of 4,282 educators from 73 countries participated in the 2019 edition.
17. The UK's [Digital Schoolhouse](#) project has used popular video games to capture the imagination of children and teach complex Computing concepts. Since lockdown was enforced, Digital Schoolhouse has delivered 27 live workshops to over 600 households with 15,000 minutes watched across the globe. This brand-new content, streamed via Twitch and published on YouTube, is just one part of the programme's blended teaching model which is specifically designed for parents and carers who are responsible for home-schooling. Alongside live Computing workshops, the team has developed a bank of 50+ curriculum-aligned videos featuring popular video games, for learners 5 through to 16 years that deliver Computing, and without the use of technology. The programme's impact is evident in research<sup>12</sup> that reports 98% of visiting school pupils surveyed reported

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<sup>12</sup> [Digital Schoolhouse: Measuring the programme's impact](#) (2018-2019)

feeling more confident in computing after having been involved in a Digital Schoolhouse workshop.

### Edugames in formal education



18. Whereas commercial video games are designed mainly for entertainment purposes, serious games and more specifically edugames are digital education learning tools specifically designed to teach, train or raise awareness<sup>13</sup>. Just like on the commercial side, Europe has also a strong edugame sector developing games that are intended primarily for professional use on formal education and business trainings and simulations as learning tools<sup>14</sup>.

19. The COVID19 pandemic has forced education institutions around Europe to take a major leap in digitizing their education. However, from the perspective of the edugame developers, the key challenge is that digital single market for digital educational content, technology and tools is extremely fragmented and overcoming that fragmentation should be one of the priorities of the new digital education action plan. Edugame developers need, for example, updated information on how to access markets for educational material in each member state (e.g. information about curriculum requirements). Furthermore, while building a sectoral data space of education, the Commission should also consider addressing the fragmented implementation of European data protection rules between educational sectors and

<sup>13</sup> [https://www.isfe.eu/wp-content/uploads/2019/03/gis\\_handbook\\_english.pdf](https://www.isfe.eu/wp-content/uploads/2019/03/gis_handbook_english.pdf), p 19

<sup>14</sup> Edugame sector is particularly strong in the Netherlands, where at about half of all Dutch games production consists of games that help people train, learn, and manage change processes. However, there are edugame success stories also in other countries:

- GameMaker, a built-in language (GML) helping children and adults to learn to program as you go and not jump in at the deep end of coding was originally developed in Netherlands: <https://www.yoyogames.com/gamemaker>
- Yousician from Finland is one of the leading apps for learning to play an instrument: <https://yousician.com>
- Dragonbox from Norway is one the leading apps for learning mathematics: <https://dragonbox.com/about>

to foster data flows between educational institutions, edugame developers and learners.

20. In the educational sector, there is currently a double standard where new innovative game-based digital education learning tools go through a much stricter scrutiny on learning outcomes than traditional educational material like textbooks. This places edugames in an unfair market position compared to more traditional tools for learning.
21. There is a critical mass of scientific evidence on the benefits of edugames as digital education learning tools<sup>15</sup>. Educational games do not just provide more effective medium for learning, they also help to generate much needed digital growth and jobs in Europe. The challenge is that in the market areas outside Europe those tools need to be validated. In order to make those recognised on the Business to Public (B2P) sector markets globally, the possible certification/validation should be done by an independent public sector actor. In addition to learning outcomes, validation should ensure that edugames have a sustainable business model and they take into account all the requirements of the teachers and educational institutions, as well as the needs of the students (and their parents).
22. Finally, in order to secure quicker uptake of novel digital learning solutions, the public sector should use part of its annual investment in public education on new and innovative learning tools and games. These pilots should focus on achieving better learning results year after year.

### **Video games help close the gender gap in ICT and STEM careers**

23. The 2018 Digital Education Action Plan recognises the lack of interest among girls to pursue studies in ICT or STEM (science, technology, engineering and mathematics) as a clear problem leading to lost opportunities and risks contributing to gender inequality. From an early age, fewer girls tend to choose careers in ICT sphere due to various reasons among which stereotypes play a huge role. The Action Plan consequently calls to close this gender gap by digital and entrepreneurship education. ISFE welcomes action in this field as the female workforce is often underrepresented in Europe's ICT/Digital sector and in the video game sector<sup>16</sup>.

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<sup>15</sup> See for example:

- [https://www.istor.org/stable/26388380?seq=7#metadata\\_info\\_tab\\_contents](https://www.istor.org/stable/26388380?seq=7#metadata_info_tab_contents)
- [https://www.researchgate.net/publication/261076302\\_Educational\\_Games\\_Are\\_They\\_Worth\\_the\\_Effort\\_a\\_Literature\\_Survey\\_of\\_the\\_Effectiveness\\_of\\_Serious\\_Games](https://www.researchgate.net/publication/261076302_Educational_Games_Are_They_Worth_the_Effort_a_Literature_Survey_of_the_Effectiveness_of_Serious_Games)
- <https://educationaltechnologyjournal.springeropen.com/articles/10.1186/s41239-017-0062-1#Sec12>

<sup>16</sup> EU Women in Digital Scoreboard 2019; UK Games Industry Census 2019

24. Researchers at the University of Surrey have found that girls who play video games are more likely to pursue a STEM degree compared to their non-gaming counterparts. The link between gaming and degree choice remained even after taking into account other factors that might have affected choice of subject at university, such as ethnicity, socio-economic background and prior academic achievement<sup>17</sup>. Dr Anesa Hosein, the lead author, therefore, concludes that educators seeking to encourage further take up of STEM subjects should target girl gamers, as they already may have a natural interest in these subjects.

### **Video games can foster social inclusion**

25. The research literature and case studies shows that digital games-based approaches provide adaptable, motivating and engaging techniques that can be used to empower individuals and communities in ways that lead to social inclusion<sup>18</sup>.

26. In 2018, about 10.6% of people in the EU aged 18-24 were considered early leavers from education and training. The Commission has recognised<sup>19</sup> that there has been little or no progress in this field over the past 2 years. People with low levels of education are particularly vulnerable as they are more likely to fall into poverty. They run an increased risk of unemployment, lower lifetime earnings, lower participation in learning later in life, and less adaptability to change. They tend to contribute less in terms of tax revenues and rely more often on social assistance as compared to higher qualified people. Keeping virtually everyone in education at least until they complete upper secondary schooling is therefore an objective that has been high on the EU political agenda for many years.

27. Games have the ability to bring the school environment closer to pupils' everyday reality in which video games often figure prominently. Teachers regularly observe that pupil motivation is significantly greater when computer games are integrated into the educational process<sup>20</sup>. This increased motivation is sometimes linked to the greater self-confidence that some pupils develop when using games in the classroom. Their previous knowledge of games gives them the opportunity to guide and help less experienced pupils.

28. Games can be useful for pupils who encounter difficulties in cognitive, methodological, or social learning (slow learning, lack of organisation in work, resistance to rules and evaluation, etc.). The ways in which mistakes and different

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<sup>17</sup> [Girls' video gaming behaviour and undergraduate degree selection: A secondary data analysis approach](#), Anesa Hosein, Computers in Human Behavior, [Volume 91](#), February 2019, Pages 226-235

<sup>18</sup> <ftp://ftp.jrc.es/pub/EURdoc/JRC78777.pdf> Pages 27-92

<sup>19</sup> [Education and Training Monitor 2019](#), p. 51

<sup>20</sup> [How are digital games used in schools?](#) Games in Schools Project, Final Report, 2009, p. 9.



learning rhythms are managed in a game takes the drama out of learning. Games can reconcile the pupil with school learning as they allow repetition, identify errors in a non-traumatising way, make rules easier to accept, and help the pupil to understand his or her way of learning.

29. Video game competitions (esports) have been used to engage and motivate children and young people who cannot access a place in a mainstream school or are at risk of permanent exclusion from school, and act as a positive vehicle to facilitate the development of positive personal attributes. Since 2018, the British Esports Association has been organizing the AP Championships with the participation of Alternative Provision schools. The case stories consistently highlight improved attitude and communication skills, and better attendance levels<sup>21</sup>.
30. Beyond formal education, libraries can play an important role in bridging the digital gap between different socio-economic groups by ensuring that games culture and its benefits are accessible for all socioeconomic groups<sup>22</sup>. Poor network infrastructure, the high prices of pay-per-download or retail games or high prices of cutting-edge gaming devices like VR glasses or latest game consoles can make them inaccessible for lower socio-economic groups. A well working public library network with sufficient budget for latest games and gaming devices can provide an on-site access to fast internet connections and latest game and gaming devices helping to bridge this gap.

### **Recommendations for the Commission and Member States:**

- Throughout their careers, teachers should receive regular training to acquire the necessary skills to help their students become digitally competent.
- Teachers must be provided with sufficient resources and support to use commercial video games or edugames in combination with more traditional teaching tools.
- Edugames should be subject to the same validation and certification schemes as traditional textbooks and be eligible for financial support through public procurement.
- The Commission has to ensure that it reaches its goal for providing every school with a 1 GB wireless network.
- Libraries should be adequately resourced to play their role in bridging the digital gap.

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<sup>21</sup> [AP Championships Report](#), British Esports Association.

<sup>22</sup> <https://neogames.fi/2020-invisible-success-story-game-activities-in-culture-and-leisure-sector-in-helsinki/>

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## II. Bridging the digital skills gap

31. The European games industry is currently struggling with a chronic talent shortage in unfilled positions. Consequently, ISFE and EGDF welcome the ambitious goals that were set in the strategy to increase the digital talent pool with 500 000 specialists and expand the proportion of the EU population with basic digital skills to 65% by 2025.
32. With a series of local initiatives, the industry is trying to address the skills gap on the national level. In the UK, the “[Next Gen Skills](#)” campaign has achieved great success in getting computer science back on to the national curriculum. UKIE’s Digital schoolhouse project uses play-based learning to increase access to effective computer science education and its [Video Games Ambassador scheme](#) aims to inspire school children by sharing experiences about what it’s like to work in our industry. [Gamecampus.de](#) is a German portal where interested students, educational institutions, parents, politicians and the media can find information about the typical job profiles in the games industry and the game-specific courses that are on offer, as well as learn how to apply for an internship or job offer.
33. In order to successfully address the talent shortage, the Commission has to encourage member states to remove administrative burdens from talent immigration from outside the Union and take action to increase diversity among people pursuing studies in information and communication technologies (ICT) and science, technology, engineering and mathematics (STEM). Introducing games in formal education is one crucial tool for reaching the later goal. However, the Europe needs to act also on the side of non-formal education.

### Widening the focus from formal to non-formal education

34. Most of the emerging industries are based on the digital skills and knowledge of passionate young people. This is especially true for the games industry where non-formal education has always been crucial. The base of the flourishing European games industry is in the passionate young people participating in game development clubs and summer camps, game jams and demo parties.
35. The need for further digital skill-building and education does not end in the graduation of an individual from the higher educational institution. The paradigm of lifelong learning is a common sense to survive in the games industry: the game developers build upon their base of knowledge and continue investing in their future by training their already experienced employees during their careers. On the flip side, development studios spend up to six months training new hires composed of

- graduates and self-taught artists who are just starting their careers in order to get them to the level required to work on games.
36. Consequently, the Commission should strongly encourage member states to invest more on experimentation with technologies from emerging data-driven industries like games industry through youth work. Game development activities and other initiatives regarding upcoming technologies could be chosen as a strategic focus in youth work supporting the game development activities of young people (e.g. game development clubs and summer camps) while such activities must be allocated sufficient resources. This may help pave a clear path from amateur game development activities to becoming an entrepreneur.<sup>23</sup> Furthermore, it is important to acknowledge the importance of funding for NGOs maintaining and developing game education as a form of media education.
37. Closing the gender gap in the games industry starts in childhood, when targeted actions should be taken to promote game development as a hobby for girls. In the long run, gender myths have to be busted at an early age before strong gender roles have been developed in order to secure that the games industry does not lose any super talents because of damaging gender stereotypes. For this reason, the Commission and the Member States should have a clear focus on securing equal gender balance among the hobbyists and semi-professionals of the emerging fields of digital culture. One way of doing that could be to investigate, whether the Erasmus+ programme can create mobility instruments that encourage, in particular, young woman to work as trainees in video game studios in other member countries.
38. Furthermore, it is important to keep in mind that digital skills are often connected with other skills. For example, in order to ensure that students in game education have access to non-formal knowledge transfer forums on latest digital tools for game development, they need support to build sufficient networking skills to enter local industry communities<sup>24</sup>.

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<sup>23</sup> For more information, please see Helsinki Model for Talent Building: [http://baltic-games.eu/files/helsinki\\_model\\_of\\_games\\_industry\\_talent\\_buidling\\_2018-04-20\\_1.pdf](http://baltic-games.eu/files/helsinki_model_of_games_industry_talent_buidling_2018-04-20_1.pdf) This model was further developed under the Finnish games industry policy recommendations <http://www.neogames.fi/wp-content/uploads/2019/01/Finnish-Game-industry-policy-recommendations-for-2019%E2%80%932024.pdf> pages 10-11

<sup>24</sup> <https://neogames.fi/wp-content/uploads/2020/09/abstractinenglishJuniorsgettingemployed.pdf>

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**Co-operation between digital industries and educational institutions has to be strengthened: using digital tools in a real-world setting.**

39. The academic research and higher education institutions play an important role in growing new talent for the industry. However, they are facing major challenges in answering the quickly changing needs of the industry. It takes higher education institutions more than two years on average to develop and implement a new curriculum and then three years before the first graduates will enter the job markets. Meanwhile, the fast-paced games industry changes every six months. During those three years, both focus and digital technologies and tools used in the industry have usually been changed to something totally different. A close collaboration between the industry and the educational institutions is therefore necessary.
40. Outside the formal education programmes, the workforce also needs to be upskilled through regular training. One solution to bridge the digital skills gap is to make sure that games education simulates the realities in the games industry and provides skills for lifelong learning. E.g. education can be offered in a form of simulated game studio environment, where students from different disciplines orientate their studies in working together as a team to become games producers, developers, programmers or artists.

**Recommendations for the Commission and Member States:**

- Curricular reform, in particular by introducing Computer Science and coding into the school curriculum, is key to ensure address the skills shortage and helps close the gender gap in ICT and STEM careers.
- More resources should be provided for youth work supporting the game development activities of young people.
- It should be investigated whether the Erasmus+ programme can create mobility instruments that, in particular, encourage young woman to work as trainees in video game studios in other member countries.
- Upper secondary education must aim for self-initiated continued learning well beyond the current degree requirements, and, therefore, support for interest and skills in extracurricular activities must become a key part of secondary education for becoming a games industry professional.
- The connections between higher education institutions and the industry have to be improved. There has to be a joint vision between schools and companies on the level of courses and the pedagogy. In particular, higher education institutions have to bridge the gap between local industry community and students.
- Higher education must ensure that new teachers have sufficient skills to handle the online courses that game developer studios and publishers use for internal

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training (for example, courses by Coursera). General information on the requirements of such courses must be made available to everyone.

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