



Video Games in Education – The Direct Impacts on Student Motivation and Engagement in the Classroom

Paisley Shaw

EasyChair preprints are intended for rapid dissemination of research results and are integrated with the rest of EasyChair.

July 18, 2020

Video Games in Education

The Direct Impacts on Student Motivation and Engagement

Paisley Shaw

Fundamentals of Computation

Flinders University, South Australia

Abstract

The increasing presence of technology amongst popular culture is producing heightened pressures on educators to incorporate those technologies into the classroom in a meaningful and impactful way. One of the most apparent technologies, for entertainment purposes, amongst school-aged children currently is video games. The integration of video games into the classroom, as suggested by current research, can have immense impacts on students' motivation and engagement in lesson material and allows students to take a collaborative, inquiry-based approach to their learning.

1 Introduction

Video games, as a source of entertainment, have been present in day to day life since the emergence of computers themselves. As digital games become increasingly more complex and prevalent in the average household, the call on teachers to integrate video game education into the classroom is also becoming progressively louder. In line with the Teaching for Effective Learning Framework (Government of South Australia, [DECS], 2010), as an educator, our responsibility is to design, plan and organise authentic and meaningful teaching and learning [Domain 1] (p. 15-28) that builds on students' prior knowledge and creates connections to their personal experiences using multiple modes and medias to ensure students can become active learners and participants within society upon departing school [Domains 3 and 4] (p. 47-80). The incorporation of educational video games, also referred to as 'serious games', into the classroom can provide educators with the opportunity to successfully execute meaningful learning which has

a direct, positive influence on students' attention, motivation and engagement within a lesson.

2 Video Games and Children

One of the most common, publicly heard, ideas about the effects of video games on children is that those who play digital games for extended period of time, or games of a violent nature, show heightened hyperactivity and inattention, disruptive and destructive behaviour and lower levels of engagement and success in the classroom amongst other negative connotations (Hsieh, Lee, & Lin, 2016, p. 2). However, currently more research suggests that digital games, of all genres and styles, closely support children's learning of transferrable skills such as communication and collaboration, problem solving skills, attention and memory. "Digital games can develop cognitive, spatial and motor skills, help improve ICT skills, teach complex problem-solving, increase creativity, promote genuine collaboration...and make [children] feel a wide range of emotions..." (Papanastasiou, Drigas, Skianis, & Lytras, 2017, p. 2).

Another common misconception about video games and children is that it inhibits children's natural ability to participate in imaginative or creative play, however, research suggests that video game play does not conclude when the game does. Video game play continues into elaborate discussion and conversations about children's favourite video games, the creation of meaningful connection making and expressive creative play (Squire, 2003, p. 59).

3 Video Games in the Classroom

Significant research suggests that students, particularly those with sensory, memory, attention and developmental disabilities, remain highly motivated and engaged in lessons which use digital

games to support prior learning and skill building than those exposed to traditional learning experiences (Hsieh, Lee, & Lin, 2016, p. 10). Although, in order to be successfully implemented, elected educational games should have clear and meaningful learning goals, give students progress feedback and objectives, have multiple difficulty levels to support differentiated learning, have elements of surprise to keep students engaged and be emotionally appealing (Squire, 2003, p. 51).

Video games can also be a highly interactive, effective tool, to support the integration of STEM education into lesson planning with content already widely available to aid science, mathematics and English lessons. The use of serious games to support lesson objectives have immense impacts on student learning and engagement, with studies like one completed by M. Mayo (2009) reporting that "...video games can yield a 7 to 40% positive learning increase over a lesson program."

The integration of video games into lesson planning can take many forms and can be used as a platform for distance education, or to support teaching and learning in the classroom (Annetta, 2008, p. 234-235). Massively multiplayer or cooperative style games allow for students to take a collaborative approach to the learning, whilst engaging in peer discussion. Meaningful use of educational action games help students reinforce prior knowledge and allow them to complete tasks at their own pace, giving them a sense of control over their learning, whilst simulation and role play games aid students in creating meaningful connections between their learning and real world scenarios (Squire, 2003, p. 53-54).

4 Video Games and the Educator

In order to effectively and efficiently plan and execute lessons that integrate educational video games it is critical that educators design lesson outcomes around the skills students will need to have in order to be successful digital citizens and societal participants upon leaving school (Annetta, 2008, p. 231). Teachers need to actively prepare and familiarise themselves with the video game, why the game is important to the learning, how it will support the learning. More formal teacher training programs and frameworks, such as EPIC (Schrier, 2015), need to be made available and tailored specifically to aid teachers' understandings of video games and how they can be used to motivate and engage students in the learning material in a meaningful and impactful way.

5 Conclusion

Integrating video games into the classroom can have immense positive impacts on students' attention, motivation, engagement and understandings of lesson material, particularly those with sensory, learning and developmental disabilities. In order to successfully execute meaningful and impactful video game lessons teachers need to be well prepared and thoroughly understand the video game, how to best integrate it for their students and each lesson needs to be carefully planned and organised in a way that supports all students' varying abilities and disabilities and challenges them all equally.

References

- Annetta, L. (2008). Video games in education: Why they should be used and how they are being used. *Theory into Practice*, 47(3), 229-239. Retrieved from <https://www-tandfonline-com.ezproxy.flinders.edu.au/doi/pdf/10.1080/00405840802153940?needAccess=true>
- Australian Curriculum, Assessment and Reporting Authority. (n.d.) *Australian Curriculum (F-10 Curriculum, Senior Secondary Curriculum)*. (unpaginated). Retrieved from <https://www.australiancurriculum.edu.au/>
- Government of South Australia, Department of Education and Children's Services. (2010). *Teaching for Effective Learning Framework Guide*. South Australia: Lane Print & Post. 1-88. Retrieved from https://www.education.sa.gov.au/sites/default/files/tfel_framework_guide_complete.pdf?acsf_files_redirect
- Hamlen, K. (2011). Children's choices and strategies in video games. *Computers in Human Behavior*, 27(1), 532-539. Retrieved from <https://www-sciencedirect-com.ezproxy.flinders.edu.au/science/article/pii/S0747563210002980>
- Hang, H., & Auty, S. (2011). Children playing branded video games: The impact of interactivity on product placement effectiveness. *Journal of Consumer Psychology*, 21(1), 65-72. Retrieved from <https://onlinelibrary-wiley-com.ezproxy.flinders.edu.au/doi/pdf/10.1016/j.jcps.2010.09.004>
- Hsieh, Ru-Lan., Lee, Wen-Chung., & Lin, Jui-Hsiang. (2016). The impact of short-term video games on performance among children with developmental delays: A randomized controlled trial. *PLoS ONE*, 11(3). 1-16. Retrieved from <http://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC4794225&blobtype=pdf>
- Jalalian, F. (2018). Study on the role of video educational games with a linguistic approach in english language education of the 2nd grade high school students. *Advances in Language and Literary Studies*, 9(2), 59-64. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1178263.pdf>
- Mayo, M. (2009). Video games: A route to large-scale STEM education? *Science (New York, N.Y.)* 323(5910), 79-82. Retrieved from <https://science-sciencemag-org.ezproxy.flinders.edu.au/content/sci/323/5910/79.full.pdf>
- Miller, C. T. (Ed.). (2008). *Games: Purpose and Potential in Education*. Springer Science & Business Media. Retrieved from <https://link-springer-com.ezproxy.flinders.edu.au/content/pdf/10.1007%2F978-0-387-09775-6.pdf>
- Papanastasiou, G., Drigas, A., Skianis, C., & Lytras, M. (2017). Serious games in K-12 education. *Program*, 51(4), 424-440. Retrieved from <https://www-emerald-com.ezproxy.flinders.edu.au/insight/content/doi/10.1108/PROG-02-2016-0020/full/pdf?title=serious-games-in-k-12-education-benefits-and-impacts-on-students-with-attention-memory-and-developmental-disabilities>
- Schrader, P. G., Zheng, D., & Young, M. (2006). Teachers' perceptions of video games: MMOGs and the future of preservice teacher education. *Innovate: Journal of Online Education*, 2(3). (unpaginated). Retrieved from <https://www.learntechlib.org/p/104278/>
- Schrier, K. (2015). EPIC: A framework for using video games in ethics education. *Journal of Moral Education*, 44(4), 393-424. Retrieved from <https://www-tandfonline-com.ezproxy.flinders.edu.au/doi/pdf/10.1080/03057240.2015.1095168?needAccess=true>
- Squire, K. (2003). Video games in education. *Int. J. Intell. Games & Simulation*, 2(1), 49-62. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.543.5729&rep=rep1&type=pdf>
- Vallett, David B., Lamb, Richard L., & Annetta, Leonard A. (2013). The gorilla in the room: The impacts of video-game play on visual attention. *Computers in Human Behavior*, 29(6), 2183-2187. Retrieved from <https://www-sciencedirect-com.ezproxy.flinders.edu.au/science/article/pii/S0747563213001520>