

ENRICO GANDOLFI

Research Center for Educational
Technology, Kent State University
egandol1@kent.edu

KAYBETH CALABRIA

Franciscan University
of Steubenville
kcalabria@franciscan.edu

& RICHARD E. FERDIG

Research Center for Educational
Technology, Kent State University
rferdig@kent.edu

Introduction

There are two disparate ways to describe the relationship between digital games and special needs (i.e., physical, cognitive and even socio-cultural conditions than require specific interventions in everyday life routines, learning activities, and general accessibility). On one hand, it can be argued that the sector is becoming more inclusive. For instance, assistive technologies are gaining a foothold in the game industry with innovative hardware (e.g., the Microsoft Adaptive Controller), focused efforts of researchers and practitioners (e.g., the IGDA game accessibility interest group or the Games For Health conferences), increased customization interfaces and input systems (e.g., those offered in the games *Overwatch* or *Uncharted 4*), and focused funding initiatives (e.g., AbleGamers Charity and Special Effect). Conversely, one could also argue that the concerns of individuals with special needs represent an overlooked area. For example, toxicity and disruptive behaviors across game audiences (e.g., “Gamer-gate” see Mortesen, 2016) represent additional sources of biases, games are not accessible to all players, and the literature about special needs and gaming is scarce (with the notable exceptions of Carr, 2014; Champlin, 2014; Ledder, 2015). Additional research is required to respond to these opposing perspective as well as to further impact policy and practice. There are at least four reasons to justify such a claim.

1. Video games are at the forefront of technological adoption (Duggan, 2015). Given their ubiquity, they are ideal testing grounds for problematizing current interactive affordances and patterns and developing new and more inclusive solutions.
2. Video games and interactive media shape society and culture (Ferdig, 2018). They convey representations, ideologies, biases, and viewpoints. Gamers and game developers take a stand that is not as neutral as it may appear at first glance (Gandolfi & Ferdig, 2018). Shedding light on how the medium deals with the issues faced by individuals with special needs becomes crucial for understanding and perhaps changing social perspectives (from reiterating stereotypes to suggesting alternative perspectives).

3. The combination of technical and cultural perspectives can effectively support two leading approaches to individuals with special needs – i.e., the social model (Bickenbach, Chatterji, Badley, & Üstünet al., 1999) and the cultural lens (Wolbring, 2008; Campbell, 2009). The former refers to efforts aimed at making society more inclusive (equal possibilities, no barriers), while the latter addresses prejudices and constructed ideas of normality and abnormality. By combining these two foci, analyzing digital entertainment may become an ideal battleground for reflecting on disability and difference while promoting the development of proactive initiatives.
4. Videogames can potentially support special education and learners with disabilities, from improving physical and social skills to facilitating communication and self-organization (e.g., Saridaki, Gouscos, & Meimaris, 2016).

The goal of this special issue is to provide insights and guidelines for realizing and responding to this potential. The five articles collected address several aspects of the interplay between digital games and individuals with special needs. Aside from their topical differences, these contributions seem to share an underlying value given to the inclusion of individuals with disabilities in the world of gamers. The authors also collectively recognize the fact that games should be created with affordances that allow for universal access.

In his article on inclusive interfaces, Dalgliesh effectively expresses this viewpoint: “notions of incidental body-controller fit and precarious accessibility are outlined to develop a model that uses asymmetrical roles and diverse input to fit individual abilities and thereby expand participation”. Dalgliesh also recognizes the dignity of the human person in creating games where individuals can participate as equals; no one wants to be the unequal partner who is helped along in a childish manner. Dalgleish argues:

While roles are highly asymmetrical, fundamental principles such as reward, goals, challenge and meaningful play ... are maintained... Rather than segregate impaired players by placing them in exclusive sub-sections that provide “cut-down” versions of the canonical experience in an attempt to manage challenge and difficulty, the ARAC model has all players – impaired or otherwise – play in the same space.

This is especially relevant in online and shared play, where social interactions and exchanges are relevant and support the whole gaming experience. Imbriani and colleagues claim that “community creation and bonding are key components of successful competitive online games as in those actions are often sensationalized to widen the community with an audience of spectators”. According to Schrier, a “learning community can help to encourage connections

among disparate groups, as well as encourage a sense of belonging and inclusion in a game community, which may contribute to empathy, perspective-taking, learning, and positive exposure to others' backgrounds and cultures, and greater self-efficacy and social support. ...games that support intergroup cooperation may reduce bias, particularly in multiplayer games online”.

Accessibility issues remain a priority to address, and four articles directly deal with this topic from different angles and perspectives. Plothe advocates that the construction of games should begin with the idea of universal design, thus limiting the retrofitting of games. Dalglish's article is characterized by an emphasis on game controllers as a bearer of inclusions/exclusion for players with disabilities. Vercellone, Shelestak, Dhaher and Clements uncover how haptic technology may make a difference in providing more inclusive interactive experiences. Imbriani, Mariani, and Bertolo focus on how inclusive game mechanics can entail a shared ground between sighted and players who are visually impaired. The authors seem to share the belief that accessibility-related developments can positively impact cultural, empathic, and learning outcomes.

Indeed, the intrinsic work of creating virtual realities in game-like environments could have the potential for increasing awareness of negative bias and improving social interactions and mutual understanding. This opportunity emerges in all the five articles, most notably in Schrier's article:

Some games may help to immerse people into virtual worlds and new roles and identities [...], which may encourage consideration of others' experiences, feelings, and perspectives [...]. Games may help people express and experiment with their own identities and others' identities [...], and may enable people to communicate and interact with people from other cultures, with other types of needs, and with different types of experiences.”

This collection draws from different disciplines (e.g., educational technology, computer science, games studies, design, and biology). As such, the articles provide a variegated array of implications, spanning pedagogical strategies, game design suggestions, and technical insights. Such a wide scope is fundamental for addressing the interplay between video games and special needs in its entire complexity and richness.

In addition to the research presented in this special issue, there are four next steps to continue to support work in this area.

1. Game analyses often emphasize representation and aesthetics (e.g., Carr, 2014; Lynch et al., 2016). This refers to the interactive component of the medium, from rules to heuristics; these features are not neutral but rather they can communicate specific biases and schemes (Gandolfi & Sciannamblo, 2018). There is also value in exploring

- ludic mechanics and media environments. This would include studies of online platforms like Twitch.tv, Steam, and Reddit, where gaming communities gather and debate. For instance, Twitch.tv is strongly supporting streamers with special needs in collaboration with the association AbleGamers, but it has been the stage of toxic behaviours against players who are disabled (see the case of Adam “Lo0p” Bahriz, a legally blind and deaf streamer who was bullied by his own game mates during a live match of *Counter Strike: GO*) (Jackson, 2017).
2. Aside from some exceptions (e.g., see <https://spedapps.kent.edu/> for mobile games and the article by Vercellone et al. in this special issue), the study of video games for special education is nascent. More research is needed that specifically spans different disabilities, genres, and pedagogies. Mainstream games should be investigated targeting their instructional potential and affordances, which can be relevant due to their popularity.
 3. Researchers in this special issue studied digital gaming and its ability to foster empathy and perspective-taking (see Imbriani et al.; Schrier). Research should capitalize on this work to further explore affective, emotional, and cultural outcomes related to special needs.
 4. Technology companies and scholars should partner in research and development efforts to further explore assistive technologies for gaming. Despite some early efforts and contributions by authors in this special issue, the field is lacking accessible software and hardware.

We conclude this special issue by thanking the contributing authors as well as the reviewers who spent significant time during the review process providing suggestions and insights. Finally, we are very grateful to the associate editors of GAME, who have supported this special issue and its cause since the beginning.

REFERENCES

- Bickenbach, J. E., Chatterji, S., Badley, E. M., & Üstün, T.B. (1999). Models of disablement, universalism and the international classification of impairments, disabilities and handicaps. *Social Science & Medicine*, 48(9), 1173-1187.
- Campbell, F. K. (2009). *Contours of Ableism: The Production of Disability and Aabledness*. Basingstoke, UK: Palgrave Macmillan.
- Carr, D. (2014). Ability, Disability and Dead Space. *GameStudies*, 14(2). Retrieved from <http://gamestudies.org/1402/articles/carr>
- Champlin, A. (2014). Playing with Feelings: Porn, Emotion, and Disability in Katawa Shoujo. *Well Played*, 3(2), 63-81.

- Duggan, M. (2015). *Gaming and Gamers*. Pew Research Center: Internet. Science & Tech. Retrieved December, 3, 2018.
- Ferdig, R.E. (2018). *Society, Culture, and Technology: Ten Lessons for Educators, Developers, and Digital Scientists*. Pittsburgh, PA: ETC Press.
- Gandolfi, E., & Ferdig, R.E. (2018). Scratching the coding surface: tackling algorithms for inclusion and learning *International Journal of Information and Learning Technology*, 35(5), 368-378.
- Gandolfi, E., & Sciannamblo, M. (2018). Unfolding female quiet in wargames: gender bias in Metal Gear Solid V: The Phantom Pain from representation to gameplay. *Feminist Media Studies*, 1-17.
- Jackson, G. (2017). Disabled Streamer Receives Hundreds In Donations After Bullies Kick Him From Match. *Kotaku*. Retrieved from <https://kotaku.com/disabled-streamer-receives-hundreds-in-donations-after-1794507360>
- Ledder, S. (2015). “Evolve today!”: Human Enhancement Technologies in the BioShock universe. In L. Cuddy (Ed.), *BioShock and Philosophy* (pp. 150-160). Oxford, UK: Wiley-Blackwell.
- Lynch, T., Tompkins, J. E., van Driel, I. I., & Fritz, N. (2016). Sexy, Strong, and Secondary: A Content Analysis of Female Characters in Video Games across 31 Years. *Journal of Communication*, 66(4), 564-584.
- Mortensen, T. E. (2016). Anger, Fear, and Games: The Long Event of# GamerGate. *Games and Culture*, 13(8), 787-806.
- Saridaki, M., Gouscos, D., & Meimaris, M. G. (2009). Digital Games-Based Learning for Students with Intellectual Disability. In T. Connolly, M. Stansfield, & L. Boyle (Eds.) *Games-Based Learning Advancements for Multi-Sensory Human Computer Interfaces: Techniques and Effective Practices* (pp. 304-325). Hershey, PA: IGI Global.
- Wolfbring, G. (2008). The politics of ableism. *Development*, 51, 252-258.