Games for learning: creating a level playing field or stacking the deck?

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Abstract

Advocates of digital game-based learning make the case that games can support inclusivity and equality in education because they motivate non-traditional students, promote wider access, and engage learners who are disengaged from formal education. This article will argue that this is a limited analysis which – by the very nature of its inherent assumptions – propagates stereotypical notions of the role of games in learning and could actually reduce social equality. Assumptions about and demographics of computer game players are discussed, as are issues of gaming literacy, differences between education and entertainment games and the impact of these on learner motivation, gender issues of game choice, and accessibility considerations. The article also addresses the methodological challenge of giving a voice to those who are disengaged in research, a particular issue in the field of games and learning. Finally, four ways in which games have the potential to promote inclusion and equality are presented and discussed, drawing on recent examples of projects carried out at the Education and Social Research Institute (ESRI) at Manchester Metropolitan University. First, the use of non-digital games and playful activities; second, informal learning through commercial games, such as massively multiplayer online role-playing games; third, giving learners agency as game creators; and finally, the growing movement of games for good, such as games to support campaigning and fundraising activities.

1. Introduction

The use of digital games for learning is growing across all formal education sectors, from primary/elementary (e.g. Miller & Robertson, 2010; Sung, Chang, & Lee, 2008) and secondary/high school (e.g. Connolly, Stansfield, & Hainey, 2011; Huizenga, Admiraal, Akkerman, & Dam, 2009) through to further and adult education (e.g. de Freitas, Savill-Smith, & Attewell, 2006) and higher education (e.g. Connolly, Stansfield, & Hainey, 2007; Ebner & Holzinger, 2006), as well as workplace learning and training (e.g. Wall & Ahmed, 2008). In addition to the pedagogic benefits of games, such as the promotion of active, collaborative and experiential learning, a second argument for their

use is that they promote equity and social inclusion because they engage non-traditional students and promote wider access to education, though, for example "the engagement of new learners who are more visually oriented, or who have literacy and numeracy or language problems" (De Freitas et al., 2006, p. 8). However, the discourse around promotion of equality is often overly simplistic, and makes many problematic assumptions about learners, and the nature of learning with games, which are described in more detail later on. In fact, it will be argued here, the uncritical use of games for learning can actually increase inequality rather than reduce it.

This paper starts by providing an overview of games and their potential for learning, and the different ways in which they can enhance equity and inclusion. There follows a section in which the notion of 'games as enhancer of inclusion' is problematized and issues highlighted and discussed. The penultimate section of the paper describes four ways in which the author believes inclusion and equity can be created using games, and the paper concludes by drawing together the discussion and considering its implications for future research.

2. Background

The use of computer games for learning is a growing field, both in terms of research and practice. This includes commercial entertainment games used in formal teaching as well as games developed specifically with intended educational outcomes; games used in formal teaching settings and games that support informal learning; as well as the study of game as cultural and designed artefacts and analyses of how this can support and enhance learning. Defining 'a game' is problematic and has been much debated, with many different definitions in currency (see Prensky, 2007; Suits, 1978); to save getting ensnared in this debate here, Wittgenstein's (1958) notion of 'family resemblances' is a useful concept. This embodies the idea that while there are no definitive characteristics of games, but "if you look at them you will not see something that is common to all, but similarities, relationships, and a whole series of them at that" (Wittgenstein, 1958, p. 31). Whitton (2007) used this cluster approach to identify ten 'family' characteristics of games: competition; non-trivial

challenge; exploratory environment; fantasy and make-believe; goals; interaction; measurable outcomes and rewards; people; rules; and the creation of safe, playful spaces. Some activities with these characteristics might be considered to be 'games' while others that share fewer of the characteristics might be 'game-like'; in essence however it is not that definition that is important in this context, but the relationship between the activity (game), learning and social inclusivity.

Educational computer gaming has a long history, with the first educational digital games and simulations quickly following the development of the first entertainment computer games in the late 1960s, stimulated by the integration of war-gaming, computer science and operations research, coupled with the emergence of educational theories that emphasise active, experiential learning and reflection (Wolfe & Crookall, 1998). In more recent years, the use of computer games in learning has become more widespread and various, including the use of games in basic ways, such as an initial stimulation for discussion, games for drill-and-practice activities (e.g. Miller & Robertson, 2010), or where the game is used as an extrinsic reward for learning. However, there are also examples of more sophisticated usage, including games as central components to curricula (e.g. Squire & Barab, 2004) and collaborative learning through gaming (e.g. Vogiazou & Eisenstadt, 2005). Emerging areas in the field of games and learning include mobile gaming (Huizenga et al., 2009), alternate reality gaming (Piatt, 2009), and gamification, or the use of game elements to enhance non-game activities (Deterding, Dixon, Kahled, & Lennart, 2011).

The use of games for learning has three primary benefits. First, they typically embody active and constructivist pedagogies, such as experiential learning (Kolb, 1984), problem-based learning (Boud & Feletti, 1998) and collaborative learning (Vygotsky, 1978). Second, they provide mechanisms that can motivate and engage some learners, such as a structure of rules, goals and rewards, stimulation of curiosity and mystery, competition, and collection of sets. Third, they provide a safe, playful space, which Salen and Zimmerman (2004) call the 'magic circle', that exists apart from everyday life where different rules apply and learning through mistake-making is the norm.

Brown and colleagues (2002) identify a range of circumstances that can lead to a greater likelihood of social exclusion, including economic factors such as poverty and unemployment, being a member of certain ethnic minority groups, physical or learning disability, mental illness, or personal circumstances such as teenage parenthood and homelessness. As well as their pedagogic benefits, there is evidence that games (as well as ICT in general) can reduce social exclusion. For example: interactive multimedia has been used effectively to engage learners with behavioural disorders (Rieber, 2001); creation of multimedia by dyslexic students to support their learning (Dimitriadi, 2001); existing motivation with games used to engage adolescent boys with digital and print literacies through the development of a gaming community (Steinkuehler & King, 2009); the use of mobile gaming to engage young adults (Attewell & Savill-Smith, 2003); a learning game used to engage deaf students (Adamo-villani & Wright, 2007); and online networks that provide valuable opportunities for social inclusion (Notley, 2009).

Games can provide the motivation to learn, and access to learning in alternative ways, for excluded students:

> "Interactive multimedia, e-learning content and even educational gaming content may well provide more engaging and interactive material for some of these excluded groups that cannot for a range of reasons access and benefit from traditional and often text-based learning." (De Freitas et al., 2006, p. 10)

However, while this this argument may be partially correct, for games do motivate some people some of the time, their appeal is certainly not universal, there are deeper issues that need to be considered, and there is more potential for games to support social inclusion than simply as a motivational tool. In the next section a variety of issues associated with the motivational model of game-based learning and social inclusion are highlighted and discussed.

3. **Game-based learning and social inclusion**

While it may be the case that computer games are motivational for many learners in many circumstances, and can therefore be used as a tool to motivate and engage isolated or excluded learners, it is certainly not true of all learners in all contexts. There is a common, and problematic, assumption made in much of the literature regarding game-based learning that games are intrinsically motivational for most, if not all, people, and that this motivation can be exploited for learning. For example, Oblinger (2004) says that games "offer advantages in terms of motivation. Oftentimes students are motivated to learn material (e.g., mythology or math) when it is required for successful game play – that same material might otherwise be considered tedious." (p. 13). A possible explanation for this widely held and little-questioned assumption is that games researchers tend to find games motivating, and do not consider those individuals who are not interested in playing games, or indeed are demotivated by them. It is also self-selecting (typically male) gamers who often participate in game-based learning studies, which only serves to propagate the assumption. As well as finding that computer game-playing was by no means universal (even among computing students), Whitton (2007) could also find no evidence that 'gamers' were any more likely to be motivated by game-based learning than 'non-gamers' or that the types of game favoured by student in their leisure time (typically games that are based around a seek-and-kill mechanic) were those most appropriate for formal learning. While the rhetoric around 'games as motivators' is widespread, there is little research evidence that this is the case and while they may motivate some learners, their use may actually exclude others. There is a methodological problem that only the 'engaged' (in the game and in the research) have a voice, and so it is their views that are foregrounded in research, providing a very limited view of the overall potential population who might use games.

Modern digital games require a high degree of 'gaming literacy' in that learners are expected to simply 'play the game' without recourse to a manual. While games typically have sophisticated in-game training that facilitates the move from novice to expert player, starting with easy, scaffolded tasks before progressing to more difficult and complex ones, there is also a great deal of assumed

tacit knowledge and reference to cultural and genre-based memes (for example, the running 'Look behind you! A three-headed monkey!' in-joke that was originally part of a puzzle in 1990s adventure game *The Secret of Monkey Island* but has been referenced in other games of that genre since). Fundamentals of genres (e.g. navigation in a three-dimensional world, the goal of a platform game) are often left unsaid because they are 'assumed' by developers, but this provides high barriers to entry for new players. As well of levels of prior experience with specific game genres, confidence (with technology in general, as well as with gaming) plays a large part in a learner's ability to engage with games for learning; and it is often those who are socially excluded who are most lacking in confidence.

Game playing, and game preference, is also highly gendered. Carr (2005) argues that while there is much evidence that gendered gaming preferences exist, preferences are mutable and can be swayed by the novelty of exposure to a new genre, and that they are as much a result of gendered cultural and social practices as of the gender itself. While digital games have typically been written 'for men, by men', in recent years there has been a massive increase in female gamers with a reported 47% of gamers in the US in 2012 being female (ESA, 2012) due, in part, to the increasing number of games and game genres (such as casual games) specifically designed to appeal to the female market.

As well as issues around confidence, experience, and personal preference relating to games, there is also the issue of access:

> "Access to ICT is embedded in a complex array of factors encompassing physical, digital, human, and social resources and relationships. Content and language, literacy and education, and community and institutional structures must all be taken into account if meaningful access to new technologies is to be provided" (Warschauer, 2003, p. 6)

Universal access to technology and gaming (the discourse of the 'digital native' or 'games generation') cannot be assumed and indeed has largely been discredited (Bayne & Ross, 2007; Jones,

Ramanau, Cross, & Healing, 2010). Many people experiencing social exclusion, may be exactly those who also experience digital exclusion, and therefore will also be excluded from computer gaming and the social narratives and communities that surround play.

While there is evidence that online communities, and online gaming networks, can provide a way to develop friendships and reduce isolation for people with disabilities, there is little empirical research exploring the social aspects, work opportunities and personal value virtual worlds may offer (Herold, 2012) and they can also generate new forms of exclusion, for example the implications of the introduction of voice chat for deaf residents of *Second Life* (Carr, 2012). Similarly, while there has been a great deal of research into the use of ICT for people with disabilities, there is a lack of research into the usability of the software designed (Williams, Jamali, & Nicholas, 2006). Usability and accessibility of games is a particular area that may lead to exclusion because of the need, for example, to recreate precise actions on the interface to achieve an action in the game. Game interfaces, while typically aiming to be intuitive, are also commonly uncovered by discovery and exploration, so are often not initially transparent; creating another barrier to entry.

It is evident that using computer games simply as a motivational tool in order to engage socially excluded learners, while it may work in some cases, is not a universal solution and may generate as many issues of inclusion as it solves. In the following section, four examples are provided of how games might be used in different ways in order to enhance inclusion, and qualitative research that is being carried out in the area is presented and discussed.

4. Promoting social equity with games

Despite the inherent problems with the discourse of digital games and social inclusion, there are valuable and innovative ways in which games can be used to increase access to and engagement with learning opportunities for excluded individuals. In each of the four sections that follow, an example is provided of how games can be used to fulfil this role, drawing on a series of research and development projects undertaken at the Education and Social Research Institute (ESRI), Manchester

Metropolitan University. First, the use of non-digital games is explored; second, the affordances of game playing for informal learning are discussed; third, the ability to give learners agency through game building is presented; and finally, the potential of alternate reality games to mobilise communities and encourage critical thinking is discussed.

4.1 Learning with non-digital games

Traditional games, such as live action role play and simulation, card and board games, quizzes and puzzles, have been used in education long before the invention of the computer, with organisations such as the Society for the Advancement of Games and Simulations in Education and Training (SAGSET) dating back more than forty years (Van Ments, 1995). However, much of what has been learned in the field of traditional games is overlooked in the new enthusiasm for digital games. Traditional games are easy to play and, because they are easy to access, it is more likely that learners will have developed appropriate gaming literacies. More importantly, they are easy to develop as they do not require technical skills and are based on tried-and-tested gaming patterns, so it is within the capability of most teachers to develop their own games for learning that are tailored to and appropriate for their own learners and learning contexts. A further advantage of traditional games is that they rely on other players for their interaction, necessitating discussion and communication. However, this reliance on face-to-face activity may also exclude learners who are unable or unwilling to attend physically.

Members of the Technology, Innovation and Play for Learning (TIPL) research group in ESRI have been involved in several projects supporting academic staff at the university with the design of traditional games for learning (for example Forsyth, Whitton, & Whitton, 2011). A particular example of the use of traditional gaming to support inclusivity is the *Staying the Course* board game, which was developed by a colleague in the School of Physiotherapy with support on game design from ESRI (see Hamshire, Whitton, & Whitton, 2012).

The *Staying the Course* game was developed as the result of a large scale, mixed-methods, regional study undertaken at nine Higher Education institutions in the North-West of England, which investigated healthcare students' perceptions of their learning experiences. Student feedback from the project suggested that they needed greater support in their initial transitions from school or college to university, and although resources were available and students were told about support services, significant numbers were unaware of university procedures and how and when to access support. The project team aimed to create a game that would introduce students to common problems encountered during the first year of study, and encourage them to discuss possible solutions, providing an opportunity for both collaborative learning and peer support. As players progress around the board, they are presented with various dilemmas (generated from the study data) that highlight areas that might become a problem in the first year. The game format provides a safe and playful space in which new students can make-mistakes in a consequence-free forum. The use of a board game format was chosen because it is accessible to students from a range of backgrounds or with cognitive or physical disabilities; being inclusive is of particular importance during student induction, when learners may already feel isolated and disoriented.

The game has now been trialled with a range of students in a variety of settings and initial evaluations have been extremely positive; the majority of student feedback focused on enjoyment of game-play and perceptions of having gained greater knowledge and understanding of student support services after play. *Staying the Course* provides an excellent example of how simple game mechanics can be easily employed to create a playful and inclusive context for learning.

4.2 Informal learning from games

Much of the literature on games and social inclusion uses computer games as a mechanism to engage learners in formal contexts, in order to motivate learners to engage in formal education. However, if learners do not find the games themselves as motivating they are unlikely to become

engaged in the learning activity. Another approach is to appreciate the informal learning the takes place within games anyway, and consider ways of formally recognising this learning.

There is evidence that massively multiplayer online role playing games support the development of social skills such as leadership, teamwork, mentoring and communication (Ducheneaut & Moore, 2005; Jang & Ryu, 2011; Voulgari & Komis, 2010) as well as skills such as problem-solving and collaborative learning (Voulgari & Komis, 2010). Gee (2004) presents a detailed analysis of thirty-six ways in which he suggest informal learning takes place in computer games, including active and critical thinking, experimentation with identity, discovery of situated meaning, collaborative and discursive skills, and cultural and social skills.

The four-year Supporting Responsive Curriculum project aimed to change institutional processes to make courses more responsive to the needs of learners, employers and the external and internal environment. As part of this project ESRI members undertook a series of thirty-seven in-depth interviews with first and final year students. These interviews focused on a variety of areas including learners' expectations and experiences of university, their attitudes towards technology, and – of particular relevance in this context – fun and games for learning. Three quotes are given here as examples, which exemplify different ways that games can support informal learning: through content that is embedded within the core game; through game elements that trigger critical thinking; and through the acquisition of skills that are directly comparable to the game.

In the first quote, a final year student talks about his experiences playing *Assassin's Creed*, an historical action-adventure game. While ostensibly about combat, stealth and problem-solving, this game provides a rich and accurate historical depiction of the various locations in which it is set.

> "I don't know if you'll know Assassins Creed … That's part of why I'm so interested in Florence and Venice and Italy as well, yeah. I like all the history on it and the stuff it tells you

> … when I went to Florence you could see the streets that are on it and that and Venice as well."

(Final Year Student)

In this case, the student is describing how he became interested in his degree subject, Spanish and Italian, through playing an adventure game. The Italian setting and background, while adding colour and richness to the core game, was secondary to the core game mechanic, but it was this that enthused and engaged the student in this example.

The second quotation shows how games can foster critical thinking skills, not just through challenges within the game, but through engagement with the social and political context in which the game has been developed. The first year student talks about his experiences of playing *Medal of Honour*, a series of brutal wartime first person shooter game (where the primary goal is shooting things and the action is viewed through a first-person perspective).

> "When I was playing Medal of Honour sort of last term I sort of got there and played it and I'm like 'Oh this is really quite propaganda-y and it's saying some very strange things' and that's quite interesting actually."

(First Year Student)

In this example, the student has started thinking more deeply about some of the political issues surrounding the game; considering the positioning of, and messages within, the game and its place as a cultural artefact. This example shows that even games that are essentially about competition and combat have a social and political context, which can be engaged with critically, and game playing can encourage players to think about things in different ways.

The final quotation shows an example of how skills incidentally learned in a game might be directly transferred into real life. This student is again talking in the context of playing first person shooter games, and although the comment was made humorously, it still exemplifies a serious point.

> "I feel like now if we were attacked by terrorists I would be very confident in disarming them and getting a good kill count."
>
> (First Year Student)

This example highlights two points: first, that informal learning in games may not be of much use if it cannot be transferred to real-life situations; and second, that reflection on learning is essential if learners are to recognise the value in what they have learned in other contexts. While this student sees the skills used only in the context of the game, he will inevitably be using a range of skills that would be transferrable to other contexts, such as strategizing and problem-solving.

There is great potential for using the informal learning from games, either directly from the core mechanic, through secondary elements, or through engagement with the wider game context. However, the issues of acceptance (both by learners and establishment), recognition and transfer of learning means that it is still a long way from being a reality in formal learning contexts.

4.3 Player becomes creator

There is growing research and interest in the idea of moving beyond game-based learning to game creation for learning, so that the learner moves from the 'passive' role of game player to the more 'active' role of game designer. Giving learners agency to design and build their own games presents a paradigmatic shift from teacher (game) as holder of knowledge to facilitator of learning, which may be problematic. The way in which games are used in formal education is critical:

> "Computer games challenge the prevailing culture of schools where externally determined knowledge is packed clearly for teachers to dispense to their students. If bringing games into schools merely reproduce these power relations or knowledge transmission, it is unlikely [that there is] going to be any significant increase in learning engagement among students."
>
> (Lim, 2008, p. 1002)

There is evidence that game building can lead to greater intrinsic motivation and deep strategy use (Vos, Van der Meijden, & Denessen, 2011) but at present, possibly because of the ease of curriculum fit or the increased acceptability, the use of game-building for learning is generally limited to computer science contexts (Becker & Canada, 2001; Cheng, 2009; e.g. Hoganson, 2010). Much of the value of game-building is, however, in the collaborative aspects, both in terms of social inclusion and learning benefits.

The Making Games in Collaboration Project (MAGICAL) aims to bring game-building into the mainstream by focusing on the development of 21st century skills: collaboration, problem-solving, creativity, and digital literacy in particular. MAGICAL is an EU-funded Lifelong Learning Partnership project, with partners in the UK (ESRI), Belgium, Finland, Italy and Greece, which aims to develop a curriculum to support trainee teachers to design and run lessons based on collaborative game-building, and evaluate the use of game-building in school contexts. As well as providing the technical and game design skills, the training program also encompasses issues such as the embedding of active learning through games, and the changing role of the teacher; in effect, the project aims to promote cultural change as well as simply present a new pedagogic technique.

The MAGICAL project is about to enter its second year, which will see the partners work with trainee teachers to promote and support game-building, who will, in turn, use the methods with their own learners in schools. A series of in-depth case studies will be carried out in schools in each participating country to consider the value of game building from a variety of perspectives, including the learners themselves, teachers, parents, as well as school support and managerial staff. By taking this rich, qualitative approach, focusing on the experiences of participants rather than numerical measurements of learning, the project team hopes to gain real insights into the potential of game building to support the development of transferrable skills in learners, to affect teaching practices of trainees and institutional cultures, and to create socially inclusive and engaging learning environments.

4.2 Alternate reality gaming

Alternate reality games (ARGs) are a recent game form, which span both the virtual and real worlds to create a fictional game world and narrative that is interwoven with real people, places and events. They engage players with a series of interactive and collaborative challenges and puzzles that contribute to finding out more about the storyline as it unfolds over a series of weeks or months. Martin and colleagues (2006) describe this interwoven nature of the real, online and fantasy world, saying that ARGs "take the substance of everyday life and weave it into narratives that layer additional meaning, depth, and interaction upon the real world. The contents of these narratives constantly intersect with actuality, but play fast and loose with fact, sometimes departing entirely from the actual or grossly warping it" (p 6).

A key feature of ARGs is their collaborative nature, and their focus on problem-solving and mobilisation of action on large scales, and it is this feature that designers have harnessed to create games that highlight political agendas, such as *World Without Oil*, described as a "life-changing six-week experiment: a collaborative simulation designed to find out what *would* happen if demand for oil really did eventually outstrip our supply" (McGonigal, 2011, p. 303). ARGs have the advantage over other digital games that they have typically low production values, using web sites and existing social media, so are widely accessible, both to develop and to take part in; the regular, steady build-up of events also enhances inclusion by enabling players to participate in different ways over time.

The Alternate Reality Games for Orientation, Socialisation and Induction (ARGOSI) project, which started in April 2008 and finished in March 2009 developed and ran an ARG during student induction as a way to include learners in the social and orientation aspects of university life who might otherwise be excluded (non-alcohol drinkers, and international students, for example). The game was evaluated with user testing and interviews with players during the development stage, market research interviews while the game was running, and team reflection after the end of the game (for more detail on the choice of research methods, see Whitton, 2009). The evaluation showed that while some players were highly engaged, the vast majority were only peripherally engaged or failed

to engage at all. This is fairly typical of ARGs however, where there is usually a large drop-off rate over the duration of the game, with a small percentage becoming immersed in the game.

While ARGs clearly have the potential to provide an inclusive experience for a range of players, the question arises as to whether they are actually engaging with the excluded, or simply engaging with those who are already engaged. As this is a relatively new gaming genre and research area, it may take some time for the true potential of the format to address and enhance learning and social exclusion to emerge.

5. Conclusions

This paper has considered the potential of computer games, and games in general, to promote and enhance social inclusion beyond the notion that games can be used to motivate excluded groups (which, while not incorrect, does not get near the true value of games in this area). It is the intention to show a variety of ways in which games can be used to engage and empower disadvantaged and excluded people and groups, as a way or highlighting the issues inherent in the equity of gaming rather than as a way of presenting 'solutions'. It is crucial that the games and learning research community explore the true potential of games to support inclusion, and acknowledge and explore the difficulties of the field; equity and social inclusion must be high on the games and learning research agenda in the future.

As can be seen from the examples provided above, there are a variety of ways in which games can support social inclusion, but every technique has its drawbacks as well as its benefits; what will empower one learner may unintentionally exclude others. What is crucial, therefore, is to be aware of the range of ways in which games may be used and to take each learning context and group of learners into account in order to decide whether games for learning are an appropriate proposition and how they might best be employed to be as socially inclusive as possible.

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