OPINION ARTICLE

Crafting minds and communities with Minecraft [version 1; peer review: 1 not approved]

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Abstract

Minecraft is a first-person perspective video game in which players roam freely in a large three-dimensional environment. Players mine the landscape for minerals and use these minerals to create structures (e.g., houses) and mould the landscape. But can Minecraft be used to craft communities and minds? In this opinion piece, we highlight the enormous potential of Minecraft for fostering social connectedness, collaboration, and its potential as an educational tool. We highlight the recent use of Minecraft to aid socialization in individuals with Autistic Spectrum Disorder (ASD) and promote civic engagement via the United Nations Human Settlement Program. We further discuss the potential for the recently released Minecraft: Education Edition and provide novel links between Minecraft and recent work on the role of social cues and community empowerment in enhancing mental health, wellbeing, and resilience.

Keywords

Minecraft, Education, Gamification, Technology, Developmental Psychology

This article is included in the [Developmental Psychology and Cognition](#) gateway.

Open Peer Review

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Any reports and responses or comments on the article can be found at the end of the article.

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Minecraft is a first-person perspective sandbox game – a three-dimensional, procedurally generated, Lego-like environment made up of blocks of different compounds (Duncan, 2011; Mojang, 2016). Players mine these compounds and re-place them to create various structures or shape the landscape. Minecraft has been purchased over 100 million times and in every country in the world (incl. Antarctica; Mojang, 2016). We think Minecraft is more than a global phenomenon, and may represent a critical and historical transition; an eminently popular videogame that is highly social and collaborative (Bainbridge, 2007; Entertainment Software Association, 2016; Granic *et al.*, 2014; Przybylski, 2014), casting doubt on the depiction of video gamers as disconnected adolescents (Zimbardo & Coulombe, 2016). While early videogame research focused predominantly on the negative impacts of gaming (Strasburger *et al.*, 2010), researchers are now starting to focus on the positives and Minecraft is at the forefront of this change (Granic *et al.*, 2014; Nebel *et al.*, 2016).

Unlike other games, when played in its traditional settings, Minecraft has no aim or specific goals, which allows players the freedom to immerse themselves in their own narrative, build, create, and explore. Players can build alone, or join/create servers to play cooperatively. Given the creative nature of Minecraft and the open world environment, it is unsurprising that some have used the platform to create immersive worlds, artworks, and performances (Bukvic *et al.*, 2014; Duncan, 2011). Importantly, Minecraft lends itself to socialization. The nature of the game has led to the formation of communities and groups that share and support creative creation. Given the move towards social and online gaming, it is unsurprising that a recent review found that videogame play is associated with social outcomes (Greitemeyer & Mügge, 2014). But unlike other games, Minecraft may be used to actively promote socialization.

An example of this is Autcraft, a semi-private Minecraft server and online community formed around those with Autistic Spectrum Disorder (ASD; Ringland *et al.*, 2016). Those with ASD often struggle with face-to-face social interactions, but they still express a desire to connect socially. Playing Minecraft can help these players meet their social goals and gain the positive effects of socialization (Ringland *et al.*, 2016). Although the effectiveness of Autcraft on wellbeing has not been tested, ethnographic research has suggested that the platform has successfully promoted collaboration, socialization, and community. Ensuring that individuals meet their social goals is critical in improving health and wellbeing (Holt-Lunstad *et al.*, 2010; Jetten *et al.*, 2012; Scarf *et al.*, 2016), and the Autcraft blueprint can be used to help other groups meet their social goals (*e.g.*, older adults who have become housebound or geographically isolated; Osmanovic & Pecchioni, 2016).

The collaborative nature of Minecraft can also promote prosocial behavior outside the videogame context (Gentile *et al.*, 2009;

Greitemeyer & Mügge, 2014). For example, to harness the prosocial behavior Minecraft instills in players and to promote civic engagement, Minecraft partnered with the United Nations Human Settlement Program (UN-Habitat) to engage communities in planning urban public spaces (Block By Block, 2016). The program provided residents with Minecraft and computer access so they could cooperatively recreate their cities and show city planners how they want their cities to look. The ubiquity of Minecraft and ease of play makes it the perfect game to promote bottom-up approaches and engage and empower communities to reimagine their city spaces (Baba *et al.*, 2016). The program has helped communities all over the world create parks, city squares, sidewalks, seawalls, and marketplaces.

Beyond social applications, Minecraft actively promotes the problem solving skills, creativity, planning, and persistence skills necessary for future success. Employers are actively recruiting gamers from online videogame leaderboards (Carr-Chellman, 2016) and gamers' unique skills are credited with helping scientists solve complex unanswered problems (Cooper *et al.*, 2010). Minecraft fosters these skills as the environment requires the player to interact with unfamiliar environments, experiment, calculate, plan ahead, and develop complex mental representations to understand the world. In fact, longitudinal research suggests that videogames are related to greater problem solving skills. For example, in a high school population, strategic videogame play predicted self-reported problem solving skills, which in turn predicted better academic grades (Adachi & Willoughby, 2013). Research has also experimentally manipulated videogame play to determine whether this correlation is causal. When undergraduates were assigned to play a strategy based game (Portal 2), relative to a group that ironically played a brain-training game (Lumosity), the strategy group displayed a significantly greater improvement in problem solving and persistence (Shute *et al.*, 2015).

To help educators craft minds in the class room, Minecraft released Minecraft: Education Edition in September 2016 (Mojang, 2016). While using games in education is not a new concept, using a commercial game with the popularity of Minecraft is. The use of Minecraft in education may not only increase motivation for learning, but allow students to take a more active role in their education. Already, a number of educators have taken advantage of the collaborative nature of Minecraft to plan immersive lessons, and homework in subjects such as math, earth and ocean science, chemistry, molecular biology, and history (Nebel *et al.*, 2016). Although there are few studies on using Minecraft in the classroom, educators have consistently reported that Minecraft has improved interest and motivation for learning (Nebel *et al.*, 2016). For example, to measure the effectiveness of Minecraft as a teaching tool, one 7th grade class was taught with Minecraft and the other in traditional lecture based learning. Both groups showed improvement, however, post-tests indicated those who had been taught with Minecraft performed significantly better (Wang & Towey, 2013).

While more empirical data is needed, the use of Minecraft to foster socialization, engage and empower communities, and enhance students' interest in education and creation suggests that Minecraft is crafting minds and opening a new chapter in video game research.

Author contributions

BR wrote the initial draft of the manuscript and provided scope for

the manuscript. DS conceived the idea and co-wrote the initial draft of the manuscript. Both authors agreed to the final content.

Competing interests

No competing interests were disclosed.

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Mark Lorch

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The article is a very brief introduction to some uses of Minecraft outside of its core gamer base. The authors highlight some interesting projects, but do not discuss them at any length.

Beyond providing a handful of examples no real attempt has been made to discuss how Minecraft can or might be used to craft minds and communities. Nor do the authors express much of an opinion on the topic.

Furthermore some fundamentals and high profile attempts to use Minecraft as an educational tool projects have been overlooked. For example the authors imply that the first versions of Minecraft designed for educational uses was launched in September 2016. However [MinecraftEDU](#) has been available since 2011. Other educational projects such work by the [Royal Geological Society](#), the [Tate Modern](#) are not mentioned.

The article does cover a very interesting and rich area for which I would like to see a comprehensive review or opinion piece. This article is a good start however much more depth, both in terms of examples, discussion and opinion is needed.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 03 Jan 2017

Damian Scarf,

We thank the reviewer for their thoughts and suggestions and address some of their

comments below. We hope that our amendments to the manuscript meet their concerns.

1. *The article is a very brief introduction to some uses of Minecraft outside of its core gamer base. The authors highlight some interesting projects, but do not discuss them at any length. Beyond providing a handful of examples no real attempt has been made to discuss how Minecraft can or might be used to craft minds and communities. Nor do the authors express much of an opinion on the topic.*

Unfortunately, we are limited by the amount we can say due to a tight word limit. The aim was not to discuss these points at great length but to provide a succinct and accessible overview of the promise of Minecraft in a number of areas. Very few studies using Minecraft have used adequate control groups, so where possible we have drawn on other videogame literature that has used more robust methodologies. At this stage we believe the research is not fleshed out enough for a large scale review or meta-analysis.

However, we agree that we may be light on an opinion and make our thoughts more explicit. We now draw on social psychology literature to make more of an argument for the use of Minecraft to help craft communities and some potential limitations.

1. *Furthermore some fundamentals and high profile attempts to use Minecraft as an educational tool projects have been overlooked. For example the authors imply that the first versions of Minecraft designed for educational uses was launched in September 2016. However **MinecraftEDU** has been available since 2011. Other educational projects such work by the **Royal Geological Society**, the **Tate Modern** are not mentioned.*

We thank the reviewer for these suggestions and have added in more high profile uses of Minecraft.

We agree we have made an error in implying that Minecraft Education Edition is the first being used for education. This was not our intention. We make this point more explicit.

1. *The article does cover a very interesting and rich area for which I would like to see a comprehensive review or opinion piece. This article is a good start however much more depth, both in terms of examples, discuss and opinion is needed.*

We agree that this is an important area and are excited to see some more results. We hope more pieces like these will compel other researchers to run randomised controlled trials to address some of the gaps in the literature. We believe Minecraft can and should be more than just a 'cool' way to present education.

Competing Interests: No competing interests were disclosed.

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