Crafting worldly spaces: The role of the educator in shaping student agency in Minecraft

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Background

The use of video games in schools is not new. However, classroom use of video games may be poised for a dramatic shift as billion dollar video game franchises such as Assassin's Creed and Minecraft continue to invest in features aimed at facilitating the use of these games for education (Egbert & Borysenko, 2018; Porter, 2018). A number of factors have contributed to the rise of classroom use of commercial off-the-shelf (COTS) games. These include increasing cultural acceptance of video games as a legitimate art form (Tavinor, 2011), a growing body of literature on the benefits of digital game-based learning (DGBL) (Coleman & Money, 2019), and desire of game developers to capture education dollars (Jowitt, 2016).

Research on COTS games in the classroom has tended to focus on whether games can improve knowledge and skill acquisition (Van Eck, 2006). Much less attention has been given to the question of student agency in COTS games. In particular, while there has been some acknowledgement that educators play a role in determining student agency outcomes in games (Lopez Lopez et al., 2019; Seventko et al., 2017), the specific ways in which educators influence student agency in games has been undertheorized. To better understand the role of educators in shaping student agency in COTS games, this paper analyzes classroom use of Minecraft as a case study. This section sets out the conceptual framing for the research.

Agency in video games

In their highly influential book The Rules of Play, Katie Salen and Eric Zimmerman argue for a theory of agency in video games that is fundamentally about "making choices and taking actions" (2004, p. 33). For Salen and Zimmerman, rules in video games, and games in general, are understood as restrictions of agency, but necessary restrictions so that gameplay can occur. Furthering the idea that agency in video games is fundamentally about choice, "ludologists" advocate for "agency as freedom from restrictions" (Tanenbaum & Tanenbaum, 2009, p. 2). These theorists argue that the agency experienced by players in video games has real-life significance and therefore game restrictions should be minimized. This notion that games should maximize the number of possible gameplay paths is prevalent in the game design community and has heavily influenced the development of "sandbox" games, like Minecraft, where players have the "tools to create their own environment and goals" (Williams, 2010, p. 460).

Baerg (2009) argues that video games that emphasize player choice function "like the neoliberal free market economy in offering choices to players who can use its resources to further their own interests within the parameters of the game's rules" (p. 119). His concern is that this "naturalizes a neoliberal approach to decision making in daily life" (Baerg, 2009, p. 119) at the expense of other conceptions of agency. The problem is not simply that digital games stress the importance of choice,

he argues, it is that they emphasize a certain type of choosing premised on "calculative rationality" (Baerg, 2009, p. 123).

Tulloch (2014) takes a different approach in critiquing the emphasis placed on choice in relation to player agency. He contends that Salen and Zimmerman's (2004) position that "rules operate to directly constrain player agency" (Tulloch, 2014, p. 338) fundamentally misunderstands human agency. Game behaviors "are only meaningful in context of a space defined and demarcated by systems of rules.[...] Rules may define limitations, but they also bring play into being" (Tulloch, 2014, p. 339). In other words, rules create spaces where certain actions become meaningful that would otherwise be meaningless. Rules are here understood as written or communicated guidelines of gameplay as well as technical constraints and social norms.

The idea of rules as restrictions also misunderstands player agency since players are themselves involved in the construction of rules in games.

By rethinking the role of player agency, we can start to see players not just as passive consumers of these messages but as active agents in the production and reinforcement of, or resistance to, some of these particularly problematic cultural logics [...] [W]e must not try to reduce it to restriction but recognize the complexity of the process of mutual construction of game and player that is taking place. (Tulloch, 2014, p. 348)

Tulloch is able to break from previous approaches to agency in video games by reconceptualizing how agents operate in game worlds. For him, the game space and the player do not exist independently but rather emerge together through play. "[P]layers are constituted by the rules" (Tulloch, 2014, p. 348). Thus, to argue a game limits agency, it is not sufficient to simply identify actions which are not possible within the game. This approach misses what is actually agentive about games to begin with. Player agency must be considered in terms of what behaviors become possible and meaningful within specific game spaces. Thus, it is necessary to theorize emergent behaviors in classroom use of COTS games. To analyze student agency in COTS games, we must first consider how student agency relates to the purpose of education.

A theory of human subjectivity

In the previous section, it was argued that video game player agency is constituted by the rules as opposed to strictly against the rules. Gert Biesta (2016) similarly argues that subjects do not exist prior to and independent of spaces but rather that subjects and spaces come into existence together. However, for Biesta subjectivity is not something that just happens whenever individuals come together. "To be a subject means to act, and action begins with bringing one's beginnings into the world" (Biesta, 2016, p. 133). This "coming into presence" (Biesta, 2016) is only possible when others acknowledge and respond to our actions which is why Biesta calls this phenomenon "democratic subjectivity." Since Biesta borrows the idea of "action" directly from Hannah Arendt, to fully understand the idea of democratic subjectivity, we must first explore Arendt's theory of action.

Hannah Arendt argues that free will, as a philosophical foundation for political freedom, is unsatisfying. Instead, freedom for Arendt is about the ability "to call something into being which did not exist before" (Arendt, 1961, p. 151). Creating something new necessitates a subversion of the "automatic processes" that become embedded in nature as well as in political life.

Our political life, moreover, despite its being the realm of action, also takes place in the midst of processes which we call historical and which tend to become as automatic as natural or cosmic processes [...] It is in the nature of the automatic processes to which man is subject, but within and

against which he can assert himself through action, that they can only spell ruin to human life. (Arendt, 1961, p. 168)

Arendt sees automatic processes as the slow erosion of human life. However, historical processes are created and constantly interrupted by human "initiative" (Arendt, 1961, p. 170), which she refers to generally as "action." Action has the power to disrupt automatic processes because others can take up these acts and turn them into new processes.

For Arendt, freedom is not about having the right to act. Freedom is not something that is possessed. Freedom is external, experienced, and emergent. Since freedom is not something you have, the appearance of freedom is possible in almost any situation no matter how repressive. She argues,

What usually remains intact in the epochs of petrification and foreordained doom is the faculty of freedom itself, the sheer capacity to begin, which animates and inspiresall human activities and is the hidden source of production of all great and beautiful things. But so long as this source remains hidden, freedom is not a worldly, tangible reality. (Arendt, 1961, p. 169)

In authoritarian environments, action is possible but highly improbable. Creating more opportunities for action increases the probability that freedom will emerge as a "worldly" reality.

For Biesta, action is the source of not only freedom but also subjectivity itself. Action is the mechanism by which "singular, unique individuals can come into the world" (Biesta, 2016, p. 100). Since subjects do not exist prior to action, subjectivity is not about the discovery of a preexisting self. Rather, subjects can be thought of as "born" through action. However, action is only possible, automatism can only be overcome, when initiatives are taken up by others. Biesta writes that democratic subjectivity is rooted in the idea that "one needs others who take up one's beginnings, always in new and unpredictable ways, in order to come into the world" (Biesta, 2016, p. 53). In other words, one must overcome automatic processes, in the Arendtian sense, in order to bring "one's beginnings" into the world. To clarify, Biesta is adamant that democratic subjectivity is not about self-expression. Rather, "it is about the insertion of one's beginnings into the complex social fabric" (p. 139).

Since subjects and spaces are inextricably connected, democratic subjectivity cannot be understood without an understanding of the types of spaces in which it emerges. Biesta argues these spaces, which he refers to as "worldly spaces," share some important features. As described above, democratic subjectivity is more likely in spaces open to newness. Subjectivity is not possible in spaces where stifling automatic processes cannot be overcome. Additionally, the emergence of subjectivity that overcomes automatic or embedded processes requires a space that is on some level "troubling" (Biesta, 2016, p. 53). Subjectivity thrives in spaces where previously held beliefs and assumptions are challenged.

The idea of spaces as both open and troubling seems contradictory. However, it is precisely this tension that defines "a space of a constant mutual transgression, of an order constantly and necessarily threatened by the very use it permits. And it is in the very moment of disjunction that the subject, the user and abuser of space, comes into presence" (Biesta, 2016, p. 46). Recalling the discussion of video game rules, the significance of gameplay that subverts the rules can be seen through this lens of disjunctive space. "When players repeatedly defy the rules, or more accurately when they construct and perform a new set, the possibility of new games emerges" (Tulloch, 2014, p. 346). This polemicizes the assumption that transgression of the rules is necessarily a bad thing. Transgression may be positive when it allows new games or forms of engagement to emerge. In this

way, the creation of new games can be seen as a metaphor, and sometimes even an example, of democratic subjectivity.

Role of the educator

Having articulated a theory of human subjectivity, we can now return to the question of the purpose of education.1 Biesta approaches the purpose of education this way:

If democratic subjectivity only exists in action, if it is about coming into the world through the ways in which others respond to and take up our new beginnings, then the question of learning is not about how to become a subject, but about learning from being and having been a subject... The learning at stake here is learning from and learning about what it means to act, to come into the world, to confront otherness and difference in relation to one's own beginnings. (Biesta, 2016, p. 142)

Educators cannot produce democratic subjects. The task for educators is to facilitate the emergence of worldly spaces in which democratic subjectivity is possible. Biesta summarizes by saying "educational responsibility today has to do with the 'creation' of a worldly space, a space of plurality and difference, a space where freedom can appear and where singular, unique individuals can come into the world" (Biesta, 2016, p. 100). The role of the educator becomes akin to the role of an architect and in fact Biesta extensively uses architectural theory as an analogy for how learning spaces should be constructed in schools. It is important to be precise here because Biesta is clear that worldly spaces cannot be created by purely technical means since, as mentioned above, they only come into existence through action.

One might reasonably conclude that this leaves an unenviable task for the educator. In fact, Biesta himself wonders "whether democratic subjectivity is actually possible in schools" (Biesta, 2016, p. 138). This is a striking comment coming from someone who argues that this is the educator's ultimate responsibility. When Biesta asks whether democratic subjectivity in school is possible, he means at least two things. First, he is asking whether democratic subjectivity is possible in schools as institutions. Schools increasingly employ behavioral engineering practices such as nudging and manipulating choice architecture to produce pre-determined behaviors and learning outcomes (Knox et al., 2020). These practices make it difficult for students to "respond in their own unique way to the learning opportunities provided by the curriculum" (Biesta, 2016, p. 138).

Second, he wonders whether democratic subjectivity is possible in schools as physical spaces. Biesta here refers to Hertzberger's (2010) thoughts on collective vs. social spaces. As opposed to collective spaces like churches and traditional classrooms that are organized around a single focal point, in social spaces "everyone can behave in accordance with their own intentions and movements and so be given the opportunity to seek out their own space in relation to others there" (Hertzberger, 2010, p. 135). Traditional classrooms often prevent, in a physical sense, "possibilities for encountering or avoiding others" (Hertzberger, 2010, p. 156). While social spaces do not necessarily promote respect for plurality, worldly spaces require these opportunities for "encountering" others.

Schools, both in their institutional and physical manifestations, present impediments to the emergence of democratic subjectivity. Schools as institutions and schools as spaces, therefore, represent two possible entry points for classroom use of COTS games to intervene in affording democratic subjectivity.

Minecraft and student agency

Minecraft is an example of a sandbox game that offers nonlinear gameplay and large maps to explore (Muriel & Crawford, 2020). In Minecraft, players are placed in a virtual world comprised of blocks. Minecraft is frequently described as virtual Legos (Duncan, 2019) since the game is primarily about removing (breaking) and placing blocks. Players gather or "mine" various resources from the world with which to make other tools and building materials.

When Microsoft bought Minecraft for $2.5 billion in 2014, it quickly expanded on earlier efforts to use the game for classroom learning with the subsequent release of Minecraft: Education Edition. This edition retains the core game mechanics of Minecraft while adding features that allow teachers to design lessons and manage student accounts. Additionally, Minecraft: Education Edition has developed class resources ranging from science-themed worlds to coding challenges to fully immersive lessons that function as add-ons to the game.

The sandbox game design gives educators enormous flexibility in the kinds of activities they can create. Minecraft lessons range from virtual simulations of social phenomena, to 3 D models of body parts, to recreations of fairy tales. Consequently, research has demonstrated the usefulness of Minecraft in teaching diverse content areas such as math, reading, writing, foreign languages, computer programming, design, and science (Checa-Romero & Pascual Gomez, 2018; Egbert & Borysenko, 2018; Karsenti & Bugmann, 2017; Overby & Jones, 2015; Wang & Towey, 2013).

Some research is already being done on the possibilities of student agency within Minecraft. Seventko et al. (2017), for example, provide a model of student agency in Minecraft that is focused on the occurrence of student "initiative" (p. 76). However, their approach, while interesting, is not sufficiently nuanced to account for the myriad factors influencing student agency as discussed above. In particular, their assertion that subversive student behavior necessarily evidences a lack of agency fails to acknowledge the ways in which resistance can be constructive and agentive.

Building off the argument that neoliberalism in COTS games may limit agency, Lopez Lopez et al. (2019) argue that Minecraft perpetuates damaging narratives about indigenous peoples. They write that "[a]t the heart of Minecraft lies a cycle of extraction, exploitation, and expansion" (Lopez Lopez et al., 2019, p. 1042). Specifically, they explore how the idea of terra nullius (empty land) furthers a curriculum in Australia that relegates aboriginal people to a past and insignificant footnote in history. They write that,

The curriculum performs the myth of Minecraft's terra nullius through the curricular use of "creating" and "building" a world. That is, not a world "encountered", but rather a world to be "created" by the settler through the act of "establishing" a colony. (Lopez Lopez et al., 2019, p. 1047)

To the extent that the Minecraft world silences native voices and history, the possibilities for worldly spaces in Minecraft are restricted. However, Lopez Lopez et al. (2019) also highlight how Minecraft provides a platform for resistance to the colonial agenda of the curriculum. They describe how one student, "[e]nabled by both the confidence in his familiarity with videogames, and Minecraft in particular" (Lopez Lopez et al., 2019, p. 1049), resisted the curricular direction and inquired into how aborigines were dispossessed of their land. Despite the paper's emphasis on neoliberal ideology in Minecraft, the story about the resisting student also suggests there could have been a radically different learning outcome if the teacher had encouraged the student's questions as opposed to dismissing them.

We now have a framework for theorizing the role of educators in shaping student agency in Minecraft. The highest responsibility of education is to provide worldly spaces where students can learn from being subjects. The rules and values of digital game spaces are not fixed; they are

constantly renegotiated and reconstructed. Educators' decisions influence the design of these spaces and thus influence student subjectivity. Hence, this research focuses on the ways in which educators shape the worldliness of classroom spaces with Minecraft.

This leads to the following research question.

- RQ: How do educators shape student agency in classroom use of Minecraft?

Methods

Educators likely play a more influential role in influencing student agency in open-ended sandbox games in which many different lesson and game types are possible as opposed to games that are highly linear and narrative-based. Of the sandbox games available, Minecraft was selected for the reasons presented above.

In this study, classroom use of Minecraft is conceptualized as a "network" field site (Burrell, 2009). The field site as a network approach provides a framework both for considering borderline cases (e.g. after-school Minecraft clubs) and for analyzing the role of educators who are not classroom teachers. To effectively capture the lived experiences of teachers and students (Collin & Brotcorne, 2019) a multimethod qualitative approach combining ethnographic practices, interviews, and artifact analysis was utilized. Additionally, as with many digitally mediated school settings, it is not appropriate to use a "classroom as container" (Healy et al., 2015) model to delineate the bounds of the case. This analysis is primarily interested in the use of Minecraft within a particular space, schools, and for a particular purpose, education.

Echoing the work of Nardi (2010), ethnographic practices of reflexivity and immersion were used to reduce the potential of cultural misunderstandings and inform the interview design. This included playing Minecraft for 30 h over a period of a month, watching YouTube videos (e.g. tutorials, world record "speedruns," and pranks played on other players), exploring the official Minecraft wiki and reading teacher blogs about Minecraft.

This reflexive immersion experience helped ground the abstract concept of "democratic subjectivity" as existing in gradations. This is important as while democratic subjectivity is extensively theorized by Biesta, there is less clarity as to what it actually looks like in the real world. It is even less clear what it might look like in virtual or hybrid online/offline worlds. This research seeks to provide a descriptively rich understanding of democratic subjectivity as manifested in Minecraft and as influenced by educators.

The research design of this study poses a potential epistemological challenge of identifying democratic subjectivity in school. One approach would be to operationalize democratic subjectivity as a binary variable and evaluate possible instances based on definitional criteria. While Biesta does tend to frame democratic subjectivity in this way, this analysis does not conceptualize democratic subjectivity as a binary. Instead, democratic subjectivity is operationalized as existing in gradations. This conceptualization of democratic subjectivity is arguably more useful in that various spaces can be described as more or less hospitable to democratic subjectivity.

The immersion experience also highlighted the roles that other individuals, in addition to classroom teachers, play in shaping student experience of Minecraft. The Minecraft lesson a student ultimately experiences may be designed by the Minecraft team, a teacher, a third-party developer, other students, or some combination thereof.

Table 1. Participants' Minecraft roles.[2]

Teachers	All but one of the participants had been a classroom teacher at some point and many are currently teaching.
Content creators	All participants had at least some experience creating lessons in Minecraft. On the less labor intensive end of the spectrum, this could mean creating a design challenge using a default "biome" (Minecraft world). On the other extreme, educators engaged in more extensive "world building" where they were designing brand new worlds that lessons could be built on top of
Trainers	These participants have spent time training other teachers on how to run effective Minecraft lessons.
Consultants	In addition to creating content and training teachers, consultants provide advice to schools on rolling out Minecraft at scale or setting up private Minecraft servers

For purposes of this research, it is not important to clearly define who is or is not an educator. What is important is to recognize that the role of the educator, and thus the responsibilities of the educator, is increasingly carried by a network of individuals. The influence of particular individuals in this network on the worldliness of particular Minecraft spaces depends on a number of factors. For simplicity's sake, interview participants will at times be referred to collectively as educators. The different roles interview participants had in relation to classroom use of Minecraft can be seen in Table 1. Most participants had some combination of these roles and influenced Minecraft spaces in a variety of ways.

Digital interviews were conducted with 11 individuals. Participants taught a range of subjects including tech education, math, science, French, history, and computer science, came from six different countries in North America, Europe and Australia, and differed in the types of the schools they worked in/with ranging from wealthy private schools to low-income public schools. Participants varied in the amount of experience they had using Minecraft as well as their motivations for teaching with the game. Some were more interested in the structural components of world-design while others were more focused on intervening in-the-moment on fluid student interactions.

Interview participants were identified by leveraging personal networks, searching for educators discussing Minecraft on blogs and Twitter, and snowball sampling (Crouse & Lowe Patricia, 2018). Outreach was conducted through email, Twitter direct messages, and LinkedIn messages. Interviews lasted between 45 minutes and two hours. Interviews were audio recorded and then transcribed. Real names were replaced with pseudonyms in the transcriptions and written analysis.

Interview participants were guided through a series of questions to recall examples of Minecraft lessons and interactions that contained core elements of democratic subjectivity. Then, participants were encouraged to reflect on the factors that made those lessons and interactions possible. In this vein, participants were also continually challenged to consider whether those interactions would have been likely to occur within the physical classroom or with the use of other education technologies and collaboration tools.

Additionally, a number of participants were able to provide relevant artifacts to supplement the interview. These included a recorded screencast of a Minecraft activity, screenshots of student Minecract creations and a teacher training PowerPoint. These materials were used as part of an artifact analysis to help contextualize the interview data, suggest possible interview questions, and clarify misunderstandings (Norum, 2008).

The interviews were analyzed for three categories: examples of worldly spaces, conditions of worldly spaces, and role of the educator in designing worldly spaces. Reflexivity guided this process to avoid masking differences in participant experiences of similar phenomena while still allowing common themes to emerge. Acknowledging the heterogeneity of educator experiences with Minecraft, the goal of this analysis is "crystallization" (Ellingson, 2009), understood as developing a more complex but still partial visualization of the topic. Credibility of the findings is enhanced by drawing inferences from multiple data types (Denzin, 2017). Research quality in this paper is also improved by striving for "meaningful coherence" (Tracy, 2010) between theory and analysis. Statements from participants are not read as revealing something true about them as subjects but rather as perspectives that emerged within particular education spaces and were mediated by the dynamics of the interview itself.

Findings and discussion

The literature suggests that educators are able to design and construct classroom spaces in ways that improve opportunities for student agency. However, this capacity is constrained by physical and institutional conditions of schools which limit the potential for worldly classroom spaces to emerge. This analysis will consider whether Minecraft provides educators increased opportunities to overcome these limitations, while also keeping in mind new constraints on worldliness that may be introduced by Minecraft.

The worldliness of a space, like the physicality of a space, is comprised of elements that build on top of one another. Each of these features, or conditions, of worldly spaces will be explored as possible points of intervention for educators to facilitate student agency. First, a space must be delineated. In other words, a place must gain conceptual coherence and become experienced as a space. Second, individuals must become aware that actions have meaningful implications for others within the space. Disjunctive spaces emerge when students realize that both use and abuse of the space is possible. Third, the worldliness of the space is amplified by elements that are capable of challenging identities. This necessary troublingincreases the probability of new subjectivities, new beginnings, emerging in the space. Fourth, since "for architects and educators the creation of a worldly space entails a duty [...] both for the creation of such spaces and for their constant undoing" (Biesta, 2016, p. 100), educators must have the ability to facilitate this deconstruction. Finally, a space only becomes worldly through action so worldly spaces are identifiable only through democratic subjectivity manifest.

Minecraft as a distinct space

In order for Minecraft to be a worldly space, it must first be experienced as a space. In video game literature, this experience is commonly referred to as "presence" or, more commonly, "immersion" (McMahan, 2003). Of the primary contributors to the sensation of immersion in video games identified by McMahan (2003), interview participants emphasized four in particular as contributing to Minecraft immersiveness: "avatars," "engagement," "social interaction," and "narrative."

Avatars

Beyond simply orienting the player within the game (de Wildt et al., 2020), avatars also extend the player's subjectivity into the game (Wilde & Evans, 2019). In Minecraft, players can select, or even create custom, "skins" for their avatars. Avatars can be anything from policemen to medieval princesses. Mark, one of the interview participants, commented that player avatars make Minecraft a "unique environment" compared to other classroom collaboration tools. He continued that there is "a separation from reality" while playing Minecraft "because it's in this digital world and while the avatar is a representation of you as a person, you can make it appear however you want." This separation from reality contributes to the experience that Minecraft is a distinct space. Educators themselves enter the virtual world of Minecraft with students and interact with them through their own avatars. Mark explained that these avatars made teachers more approachable to students and thus helped students see the teacher less as an instructor always trying to make a point and more as a "guide" who was there to answer questions and provide help when needed.

Engagement

Participants mentioned a number of factors that made Minecraft lessons engaging for students. As with any activity, heightened affective experiences such as enjoyment contribute to the experience of immersion. Denise observed that students do not think of Minecraft "as a learning tool. They look at it like, oh, this is a fun game we're going to play, not realizing they're learning." Sam described how his students feel "super comfortable" in Minecraft since most of his students have had at least some exposure to the game outside of school. Minecraft is also culturally accessible to students which makes using it in the classroom exciting and engaging. Finally, teachers reported that students get invested in their Minecraft creations. When educators allowed students to work on projects outside of class, some students would spend hours building homes, castles, and farms. Since players have the ability to design nearly every aspect of the world, there is significant opportunity to personalize their creations.

Social interaction

Students interact with each other in Minecraft. They see others' avatar there, they see others' creations there, and they even communicate with each other through the built-in chat function. Paul discussed the importance of this social element for middle school-aged students in particular. His students are constantly looking for new opportunities to socialize and Minecraft provides a space where "regardless of ability you can participate."

Teacher-student socialization in Minecraft is at least as important as student-student socialization. Bill explained that students love when teachers enter Minecraft with them. "When [the teacher] falls in lava, the whole room comes to life, because they can all relate. And so you build that family, and you build that relationship, which I believe is the most important thing a teacher can have."

Narrative

In the Minecraft lessons and activities discussed by participants, a common theme was the strong presence of narrative. Narrative helps students connect to the space and the meaning of the activity. While some lessons are designed to have narrow storylines where students progress from one step to the next, other lessons are more open-ended allowing students to choose the direction of the story. More examples of narrative will be explored below.

These four factors – avatars, engagement, social interaction, and narrative – may be more or less salient within any given Minecraft lesson. However, educators consciously leveraged these elements

to design more immersive classroom Minecraft experiences. This immersion helped students experience Minecraft as a space distinct from the traditional classroom.

Minecraft as a disjunctive space

Since democratic subjectivity is fundamentally about action, students must first learn that virtual actions can have meaningful consequences for others before opportunities for subjectivity can be seen or realized. Interview participants discussed this challenge in terms of students learning "digital citizenship." Digital citizenship refers to the skills and knowledge needed to use technology responsibly and appropriately. Sam found that the standard curricula offered on digital citizenship were ineffective because "the kids didn't relate to it." On the other hand, teaching in Minecraft provided numerous opportunities to teach students that their actions meaningfully affect others. He described a typical scene where one student would destroy a house that another student had built. While it may seem obvious that this is inappropriate behavior, students need to be taught this. To get the point across, Sam would often draw parallels to the physical world by asking the student if they would "go to someone's workbook and tear it up." Participants used these teachable moments in Minecraft to help students realize that even in digital spaces their actions carry consequences for others.

Behaviors that "explicitly subvert standard ends of gameplay through destructive means" in Minecraft are referred to as "griefing" (Beale et al., 2016, p. 191). Instances of griefing were discussed by almost every participant. They all identified griefing as a challenge of behavior management in the classroom but also as providing critical moments for students to learn about digital citizenship. These moments are so valuable that three teachers mentioned feeling ambivalence toward taking actions that would completely preclude griefing from occurring. Kevin described a scenario in which he intentionally allowed retaliatory griefing to happen. Kevin told a student, whose work had been destroyed, he would get punished for retaliating "but if you want to do it, I'm not gonna stop you." In reflecting on the story, Kevin said, "It's not something I typically do. But in those very few minor instances, I will let things like that happen." Kevin felt that seeing his own creation destroyed in retaliation helped the original instigator understand how his behavior was hurtful.

These examples highlight the ways in which griefing helped students organically learn digital citizenship principles. However, griefing is not just a destructive practice that happens to teach students respect through the experience of pain and loss. Griefing itself is a complex social behavior that is simultaneously constructive and deconstructive. Democratic subjectivity only occurs in spaces where voices can be heard and plurality is respected (Biesta, 2016). Griefing can silence and intimidate others but it can also function as boundary play that helps players see what types of actions are possible and meaningful in the game. Griefing creates moments of disjunction that threaten the very possibility of the game space but also breathe new life into it.

As an after-school activity, Mark's students created an obstacle-filled maze in Minecraft and hosted a live competition to see who could escape first. The following description of the event comes from watching a recording of the race that was live-streamed and then posted on YouTube. Soon after the race started, players started investigating the course to see what kinds of actions were possible. They soon discovered that they were able to break blocks that should not have been breakable. The students running the race scrambled to police behavior and fix bugs in the course. The game moderators were becoming increasingly frustrated until one of the players managed to dig out of the course and make his way to a village on the other side of the world. While other contestants had

been banned for breaking blocks, this player had sufficiently impressed the moderator with his game knowledge, skill, and ingenuity to retain his right to remain in the game.

The decision to allow this player to remain in the game embodies the idea of taking up another's beginnings as discussed earlier. The student was not silenced or banned. Rather, his actions were validated and allowed to influence the game's structure and purpose. The point here is not about whether the student's griefing was good or whether he should have been banned. The point is that the emergent classroom space in Minecraft is a contested space. While Mark and the student-moderators had a vision for how the race should operate, the actual existence, meaning, and purpose of the rules emerged through gameplay where they were reinterpreted and renegotiated.

While some participants reported having relatively few problems with griefing, most observed that griefing was a common, and often important, part of the experience of the space. Moreover, these examples highlight important preconditions for the emergence of democratic subjectivity. First, students become aware that their actions in Minecraft have real-world consequences. Second, through intentional teaching strategies, educators are able to leverage moments of griefing to foster mutual trust and respect for others' voices. Finally, educators play a key role in determining whether griefing-like behaviors can rise above the level of wanton destruction and become socially meaningful and constructive, as with the maze in Mark's class. This suggests that educators have the ability to leverage Minecraft to create what Biesta refers to as "troubling" spaces.

Minecraft as a "troubling" space

We have just seen how, when students are invested in digital spaces, the experience of griefing can be troubling. However, if Minecraft is to providebroader opportunities for subjectivity, curricula that is itself troubling must be possible. Sean creates educational Minecraft lessons professionally, including one that teaches students about the health effects of dirty water in Africa. He believes that teaching this topic in Minecraft is particularly effective in engendering empathy in students. To explain how, he described a conversation he had with a student during a lesson he led with a class.

One girl said to me, "It's like a horror map." And I said, "What do you mean?" She's like, "Is this like one of those maps? Where like, if you drink the water, you die in a horror movie?" And I say "No, it's real life for someone in Madagascar or Kenya." And she was like, "Oh, that's horrific."

Disch's (1996) concept of "visiting" helps illuminate what Sean is trying to accomplish through his Minecraft lessons. She writes that embodying the role of the visitor entails imagining what you would think, feel, and do in somebody else's position. In contrast to imagining how they feel, visiting facilitates the "experience the disorientation that is necessary to understanding just how the world looks different to someone else" (Disch, 1996, p. 159). Sean's story suggests that the student first responded to the narrative of the game through her own set of experiences. His question subsequently prompted her to consider that what she could previously only conceptualize as the plot of a horror movie was in fact someone else's reality. This gets to the essence of visiting which draws its power from the experience of "disorientation" or the clash of one's own perspective with the other's reality. This experience can be contrasted to what the student might have felt if she had instead been watching a documentary about clean water in Africa. The distinguishing factor is that within the immer-sive world of Minecraft, the student is more likely to "respond as a character in a story very different from [her] own" (Disch, 1996, p. 158) as opposed to being a spectator to how someone else's story plays out.

Stacey elaborated on this principle in discussing how a Minecraft refugee lesson not only engendered empathy but also challenged students' fundamental belief systems. In the refugee

lesson, students had to make decisions about whether to, for example, improve their chances of survival by doing something illegal or leaving "someone behind that they wanted to take with them." The lesson sought to show students that their frameworks for evaluating moral behavior and judging trustworthiness were not as useful or applicable for a refugee.

The enormous flexibility of Minecraft allows educators to put students in scenarios that elicit contextualized understanding. However, visiting, more than anything, is a mindset and no game mechanics can force students to experience it. Multiple participants expressed the importance of asking students challenging questions to trigger critical engagement with the lesson. Thus, while Minecraft world designs can create opportunities for visiting,prompting from teachers is often necessary to stimulate experiences of empathy and visiting. The "disorienting" or "troubling" aspect of visiting increases opportunities for agency by helping students overcome ingrained mindsets and see the world in new ways.

Educator as deconstructor

So far, we have seen how Minecraft can be experienced by students as a social space where actions such as griefing and visiting can challenge and foster student subjectivity. Further, educators play an important role in this process through world-building, lesson-design, and in-class questioning. However, if classroom use of Minecraft perpetuates automatic processes in schools and games, opportunities for student subjectivity could remain limited. The interview data suggest that educators are able to, and in fact often do, contest entrenched values in Minecraft and in schools.

Contesting the game

Students often struggle to identify biases in games that stem from personal values of game developers and technical constraints of the medium. In other words, students struggle to "read games as texts" (Jenkins, 2005). This lack of awareness can lead to an uncritical acceptance of how, for example, history and the lives of indigenous people are portrayed in video games (Squire, 2003). When Minecraft is presented as a neutral unbiased tool with which to teach history, it can cause students to internalize oppressive narratives, like terra nullius, as observed by Lopez Lopez et al. (2019). However, many of the participants did not simply place students into an empty world. For example, Jane designed an immersive research project on Native Americans in Minecraft to create a more memorable and significant learning experience. The students themselves had to select a biome that best matched the region their tribe was from. They then had to confront the limitations of Minecraft as a simulation when, for example, the tribe they were researching made boats out of a type of wood not available in the game. This is not to imply that terra nullius ideology was completely absent from this project but rather to highlight how educator decisions can influence how students respond to that ideology.

World design, lesson structure, game settings, and pedagogy are all variables educators can manipulate to shape the learning space. Alexander explained that there is a "certain gameplay that's in the design of Minecraft" but as an educator you also have the power to "define your own rules of engagement" and "change the basic premise of the game." In other words, educators can choose what kind of world to present to students.

The interview data challenges the notion that certain values are embodied in all classroom Minecraft experiences. In their capacity as game designers and architects, educators influence whether voices and subjectivities will be silenced or empowered.

Contesting the school

The act of quantifying social phenomena necessarily institutes a normative ordering system which prioritizes some values over others (Mau, 2019). For this reason, the evaluation of student work as articulated through grades is a powerful mechanism for embedding schools' institutional values. Participants discussed how Minecraft allowed them to mitigate and circumvent the restrictive effects of school grading culture. Bill remarked that "for years we were dominated by product-based assessment. Teachers would get something handed in, they would mark it, they would return it, and we thought we were doing a wonderful job." "Product-based assessment" can be understood in contrast to "process-based assessment" which allows for the assessment of thinking and creative sub-processes that go into the creation of an end product (van Niekerk et al., 2010). For example, Bill used Minecraft to give students credit for alternative ways of demonstrating learning such as verbally explaining how they incorporated the lesson into their project.

Mark elaborated on the value of Minecraft in moving away from traditional student evaluation practices. Mark turned to Minecraft originally because he had grown tired of trying to get students to care more about learning than about grades. He succinctly articulated that what he loves about Minecraft, is that in Minecraft students "can take risk. Whereas in school, the way it's traditionally structured, they're not encouraged to take risks. We say they are, but they're not encouraged to because you've got to get a grade on the test." He elaborated that Minecraft is both fun for students and an effective learning tool because students "can keep failing and then they get to try again immediately. And with Minecraft you can go and you can fall down a cliff and then you respawn."

These educators contested automatic processes in games and schools to create worldlier spaces for their students. Some educators risked censure and even firing to do this. In this sense, they were not only architects and designers of spaces but also acting subjects within them as well. Their actions were taken up by students and other teachers to create spaces where more diverse forms of subjectivity were possible. To see if democratic subjectivity was also possible for students in these spaces, one final story is analyzed for evidence of student subjectivity.

Taking up beginnings

The conditions for subjectivity neither equate to nor guarantee the existence of subjectivity. Subjectivity only emerges when opportunities are translated into action. In this section, we will explore the closest example to student democratic subjectivity that emerged from the interviews. This story from Jose highlights the role of the educator in the process of how the preconditions of subjectivity discussed above can culminate into a transformative classroom experience.

Jose is an elementary school teacher in a California border town that suffers from high unemployment. Many in the town are migrant workers. Having grown up in the area himself, he empathizes deeply with the needs and struggles of his students. When he became convinced of the power of digital classroom technology, he applied for grants to get iPads, programmable robots, and other educational technologies to help his students.

While Jose uses many different technologies, for him Minecraft is different. When students log into Minecraft, he sees them as entering a "new classroom," a "digital classroom." Jose created a lesson for the first day of Minecraft that would introduce students to the new space. In the lesson, students are placed in a town together without being told what to do. All of a sudden, a volcano erupts and the lava flow threatens to wipe out the town. Students have to work together to save the town from destruction.

The first class to attempt to save the town failed repeatedly. Eventually, after many failures and a lot of hard work, the students were able to save the town. In light of this, Jose was surprised when one

of the other fifth grade classes was able to save the town on the first try. When he asked the other class how they managed to do it, they said "we talked to some of the students from room 17 and they were telling us how they worked together. So we talked as a class and said, 'we need to work together right away.'" At first, Jose was upset that his class had ruined the surprise for the other class and tipped them off on how to win. Jose said he had "never thought to tell my students" not to do that because they were super competitive.' When he asked his class why they gave it away, they responded that they wanted to help the other class "be the first ones to get it" on the first try. When he pressed further and asked "Why?", Jose recounted that "they didn't want them to go through what they had gone through because my class got frustrated." Having their virtual town, despite their best efforts, repeatedly destroyed turned out to be emotionally difficult for the students. As a result, the students created a new game – one where instead of competing with other classes to beat the game first, they collaborated with other classes to solve a difficult problem.

As Jose reflected on the lesson, he considered the significance of the experience for his students. In their city, they deal with earthquakes and extreme heat. He remarked that in the real world, if "some other section of the country started getting to 120 degrees and had earthquakes, it's not like we would want to keep that information to ourselves. Hey, you know, let's help them to stay safe." Jose was proud of how his class responded and felt it was a powerful learning experience on empathy and community.

Seeing his students help the other classes and hearing their voices contest his vision for the lesson caused Jose to reconsider how his class should interact with the rest of the school. He started sending students with robots and iPads loaded with Minecraft to other classes to train the other teachers on how to use them in the classroom. Teachers who felt that they did not know enough about technology to teach robotics or use Minecraft were able to with the help of Jose's students.

All of this followed from students subverting Jose's lesson goals. His students' actions demonstrate the point that "what disrupts the smooth operation of the rational community is not necessarily a disturbance of the educational process, but might well be the very point at which students begin to find their own, unique, responsive, and responsible voice" (Biesta, 2016, p. 116). When Jose saw his students take responsibility for the frustration experienced by others, he was able to take up their beginnings and bring real change to his classroom and even the rest of the school. In Jose's class, immersion into Minecraft, learning through griefing, troubling curricula, and educator's transgressive agency were all factors that facilitated the emergence of student subjectivity.

The point of this story is not that collaboration is always better than competition or that students should help others avoid frustrating experiences. Competition and frustration can be a healthy component of education. The point is also not about how we need more technology in schools. What is special about this story is that students acted. Gameplay took on an unforeseen significance for students, so they constructed new rules to bring their own subjectivities into the world. Consequently, these actions transformed the school.

Conclusion

This paper has explored the types of spaces that emerge when Minecraft is used in education. These spaces are not exclusively located in the virtual game world or within the physical classroom. They are hybrid spaces. Minecraft and schools jointly inform these spaces through institutional rules and values but the spaces are brought into existence by the actions of students and educators.

The data suggest that educators were able to positively influence each of the five conditions of worldly spaces. Their choices and behaviors shaped whether distinct spaces, disjunctive spaces, and

troubling spaces emerged within classroom use of Minecraft. Further, educators were able to subvert automatic processes which threatened the emergence of new forms of student subjectivity in classroom Minecraft spaces. First, Minecraft was seen to help educators overcome current limitations of schools as physical places that prevent engagement with plurality and otherness. The affordances of Minecraft helped educators transform classrooms from collective spaces to authentically social spaces. Educators were able to create hybrid virtual physical spaces where students and teachers could encounter each other, visit with each other, and even challenge each other. Second, Minecraft was seen to help educators overcome current features of schools as institutions that limit the opportunities for original subjectivities to emerge. Educators were able to create spaces where students had the opportunity to respond to curriculum with their own unique voices. Educators created lessons where students not only found their own solutions to problems but also defined their own problems to solve. Students had opportunities to challenge the rules and even create new games. Third, educators effectively challenged elements of Minecraft itself that prioritize some narratives over others (e.g. settlers over natives).

Moreover, the relationships between educators and students were critical in the translation of these educator initiatives into worldly spaces. Participants repeatedly emphasized how interacting with students both virtually and physically brought new depth to their relationships with students. This serves as an important reminder that while classroom use of COTS games blurs the boundaries of who we may refer to as educators, connections between teachers and students remain essential for empowering students to take initiative and take up each others' initiatives.

This research does not presume to decide whether any of the stories recounted here rise to some threshold level of authenticity or newness to be considered true democratic subjectivity. However, this research strongly suggests that Minecraft can help educators overcome the limitations of traditional classrooms in creating pathways for student subjectivity. Biesta tells us that rich experiences of subjectivity are rare and impossible to produce technically. The best educators can do is create spaces that invite the emergence of subjectivity. When educators facilitate the conditions for worldly spaces, student initiatives that confront automated processes can be taken up by others.

Ethics

Ethical approval to carry out the research in this study was requested and approved by the University of Oxford Central University Research Ethics Committee.

Notes

1. It is important to note that while Biesta draws heavily from Arendt's theory of subjectivity, he diverges from her in his thoughts on the purpose of education.

2. Description of the participants is left in aggregate to preserve participant privacy.

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