Using MinecraftEdu to Establish Common Ground and Increase Collaboration in an American Literature College Course

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ABSTRACT

This paper and project examines how incorporating a MinecraftEdu three dimensional space environment into a college-level American Literature course may help establish Common Ground among students thereby promoting a more constructivist and collaborative style of learning.

Common Ground Theory, developed by Herbert H. Clark, proposes that language is a collaborative activity in which existing common ground is used to help develop further common ground. Increasing common ground allows individuals to communicate more efficiently. Different communication media offer different “constraints” or affordances that facilitate the process of establishing and increasing common ground.

By allowing students to communicate through various modalities, including voice, text, and visually, and by allowing for both synchronous and asynchronous communication, three dimensional space environments such as MinecraftEdu provide all of the “constraints” presented in Common Ground Theory. This may lead to more efficient student communication and facilitates collaboration.
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1. Problem Statement

Problem: More constructivist and collaborative approaches and activities are needed for teaching the humanities to students at the college level. This is especially true in college level survey English literature courses, such as American Literature, where lecture and discussion are still typical teaching approaches. However, these traditional methods are not conducive for establishing a sense of common ground (common grounding) among students, which is important for collaboration. Games such as MinecraftEdu might help establish the common ground needed for increased collaboration.

[Alternative: Establishing a sense of common ground (common grounding) is important for collaboration. Games such as MinecraftEdu might help establish the common ground needed for increased collaboration.]

Research question:

Do the affordances of MinecraftEdu (the 3D space environment, the various modalities such as voice and text, the use of avatars, etc.) help establish common ground (common grounding) among students? If so, does the establishment of this common ground increase collaboration among students?
It is the purpose of this paper/project to examine how incorporating a MinecraftEdu three-dimensional space environment into a college-level American Literature course may help establish common ground and promote a more constructivist and collaborative style of learning.

2. Literature Review/Theory Overview

Before looking at how MinecraftEdu in particular helps promote a more constructivist style of learning and how the specific affordances of MinecraftEdu can help establish common ground and increase collaboration among students, I want to start by looking at how virtual reality in general is closely linked with a constructivist style of learning.

**Note About Terminology:** There has been much research about the effectiveness of virtual reality for teaching various ages and subject matters. However, before beginning a review of the literature, the term “virtual reality” needs to be more clearly defined, especially since it has undergone somewhat of a semantic shift in recent years. Since the Oculus Rift and similar devices exploded on the technological stage in the last couple of years, the term “virtual reality” is currently applied to these more fully realized virtual worlds. The term three dimensional (3D) space environments is now used to describe platforms such as Second Life and Minecraft. However in much of the literature I read, the term “virtual reality” was still being applied to these three dimensional, interactive platforms. For a more extensive consideration of the
definitions of “Virtual Reality” and “Presence” as applied to higher education, see the section “Conceptualization” below.

Constructivist Learning & the Virtual Environment

A brief definition of “Constructivist learning theory maintains that knowledge is not received from outside, but that we construct knowledge in our head.” Social Constructivism maintains that “knowledge is not simply constructed by the individual, but by social groups” (Alessi and Trollip, 31). Constructivist learning principles reinforce the importance of individual experience, experiential learning, and collaboration with other learners. Learners are encouraged to actively construct their own knowledge, individually or collaboratively, while the instructor facilitates the process. Alessi and Trollip propose a list of principles or suggestions to help designers create “educational environments that facilitate the construction of knowledge” (32).

A constructivist style of learning and virtual reality are closely linked. In the study “Investigating learners attitudes toward virtual reality learning environments: Based on a constructivist approach,” Huang, Rauch, and Liaw (2010) noted that constructivist learning is seen by researchers as fundamental to the understanding of learning in a virtual environment. The researchers described constructivist learning “as the pedagogical engine driving the construction of Virtual Reality Learning Environments (VRLE)” (1171).
The study “The effects of virtual space on learning: A literature review” (2012) concurred with this. “A host of studies have focused on the constructiveness of virtual space,” concluded Skold, who identified socio-cultural constructivist perspectives as one of five key themes in the research. The other four are analogies between the study of physical space and learning; practical and theoretical pedagogy; architecture; and aesthetics.

Collaboration & Presence

As the technology grows more sophisticated, the affordance of presence, the sensation of actually being in a virtual world, continues to increase. Recent research in the use of VR in higher education has examined the dialogic relationship between presence and interaction or collaboration among students.

According to the study “Three-Dimensional Virtual Worlds: Research Trends and Future Directions” (2014), collaboration/social interaction and social presence are increasingly examined topics in recent research. Cruz et al. found that there is much overlap in the literature on presence and collaboration when it comes to many terms and features, “namely, communication, awareness, interaction, and cooperation” (52).

There are several different types of presence that researchers have focused on. Tugba Bulu’s 2012 study, “Place Presence, social presence, co-presence, and satisfaction in virtual worlds” examined the relationship among students’ perceived place, social presence, and co-presence in
3D virtual worlds, and found “a positive correlation between place presence and co-presence, which is consistent with the previous research” (159). He concluded “that students who felt present in the virtual environment also tended to feel the sense of being together. In line with the literature, it can be suggested that realism features of the virtual environment made the immersion possible as well as the psychological interaction of the students” (159). An increased sense of place presence augmented social presence, as students “tended to perceive the environment as more personal and sociable that increased the intimacy and immediacy” (159).

As shown by Ferguson (2012), educators can alter levels of presence by manipulating the levels of realism, immersion, and social interaction. Her first-person ethnographic study analyzed the various ways educators present both realistic and fictional death in Second Life and what the educational implications were. Educators who represented realistic death, such as simulations of medical emergencies, or fictional death, such as those of literary characters, were selective in their use of presence. They distinguished between different elements of presence, either increasing or reducing levels of immersion, realism and social richness, depending on the educational goal and the amount of emotional distance necessary to achieve it. “Educators’ concern is therefore to pitch the levels of presence at an appropriate level for the subject and the activity” (150).

**Presence & Avatars**
Users are most commonly represented or embodied by avatars in the virtual world. Avatars are a unique feature that make teaching in virtual worlds “significantly different than teaching in any other online environment” (McKerlich at al. 333). The researchers introduced the term “avagogy” in 2008 to describe “the strategy, design, art and technique for teaching and learning that uses avatars to represent learners in immersive environments” (334). The use of avatars to navigate the spatial environment greatly enhances a user’s sense of presence in the virtual environment. This increased sense of presence improves communication and collaboration between and among users.

In their review of the research on the “Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings,” Hew and Cheung found that avatars contributed to a sense of presence and facilitated students’ interactions. Students liked using the avatar, which gave them the feeling of ‘being there.’ The avatars provided students with a sense of being co-present in the virtual environment, and increased their interactions with each other as well a their enjoyment. Wang and Burton noted that the use of avatars “can decrease the feeling of social disconnection” found in more typical distance education.

Increased interaction enhanced the affective sense of belonging and community, which is important for collaborative learning. In her 2012 study “Learners and Collaborative Learning in Virtual Worlds: A Review of the Literature,” Hanewald noted that “This generation of learners gets pleasure from interacting with people online, by building connections, in becoming part of a community through online social networking and through the use of collaborative tools” (244).
The researcher argued that the design and functionality of virtual worlds provides a platform for collaboration. Her study examined the issues, choices, and challenges of collaborative learning in virtual environments. She concluded that the rise of virtual worlds will continue, and with it, collaborative learning.

Cruz et al. note that “Embodiment, the use of avatars, is referred by several publications as being a strong contribution towards collaboration” (52) The use of avatars increased interaction and collaboration among students by providing three important features: a style of communication similar to the real world; the ability to manipulate objects, “which enables various modes of feedback and the expression of intentions in non-verbal-somatic ways”; and a sense of control. “Not only are these features relevant to cooperation, they are also regarded as relevant to enhance presence” (48). Avatar features that allowed for non-verbal communication, such as the use of gestures, emotions, embodiment, proximity, orientation, eye contact, etc. were important for increasing presence as well as collaboration (53). The researchers concluded that presence is related to collaboration by common features, mainly non-verbal ones, and that presence can influence collaboration “because a stronger feeling of presence helps to understand the virtual world, and allows a more intuitive and easy use of it” (53).

Bulu concluded that avatars were important for creating a sense of presence, a feeling of “psychological togetherness in virtual worlds” (159). The use of avatars helped allow for more intimate interactions by incorporating both verbal and non-verbal communication channels thereby making it possible for students to connect to each other socially and psychologically.
In his study, “Student as Avatar: A Study of Informational Preferences in a Virtual World Class,” Mabrito examined how being embodied as avatars affected students’ preferences for receiving information, either in the form of text, in machinima clips (videos created in-world), or through direct in-world explorations. He found that direct exploration as an avatar increased as the course progressed and the students became more familiar with the virtual environment. It “became, by far, the preferred method of obtaining information.” The use of avatars increased learners’ presence, allowing them to subjectively interact with one another and with their environment, supporting a constructivist style of learning. According to Mabrito, “Presence is explained by the avatar’s ability to interact with the environment and the ability to learn by doing that provides an enriched experience through watching, thinking, feeling, and acting.” Mabrito noted that further study is needed as to how students “read” information in a virtual world and the multimodal literacy implications of student avatars becoming “a living part of the text.”

Sanders and Melton, utilizing a custom built 3D virtual world, called the AETZone, found that the use of avatars allowed students to feel less isolated. The avatars increased learners’ presence and collaboration, creating “a learning environment that emphasizes the social construction of knowledge.” The researchers developed a framework of Presence Pedagogy for studying the actions and behaviors of students and faculty in a virtual world. Three basic themes emerged from their study: 1) the use of avatars increased interaction between/among learners and increased their sense of community; 2) avatars increased the students’ sense of presence and co-presence, “adding a sense of realism, humor, and levity to the interactions between students”
which resulted in students “feeling more engaged in their courses”; and 3) the impact on learning was that students “were active and engaged in a larger learning community of practice in which they were empowered through the presence of others.”

Huang, Rauch, and Liaw noted that the use of avatars increased collaborative learning and “have been shown to significantly improve learner motivation and retention” (1179). The researchers suggested that avatars might also help the learner navigate the virtual environment. According to the researchers, navigation is one of the common difficulties with the usability of the VR interface design and one of five issues to consider when designing VRLEs (1180). The others are the ease of accessibility for non-technical instructors, students’ expectations and attitudes, cost effectiveness, and effect on the user’s performance.

The use of avatars allows learners to insert their perspective or point of view into the learning process, which supports the active construction of knowledge. In “An online graphic novel: students’ experiences and research literacy gains” (2010), Shipwright et al studied a custom built tutorial that placed the learner into the first-person role of a Citizen Researcher to help improve research literacy. The researchers found that learners’ insertion into a learning “narrative” (a story) resulted in increased interest and motivation, as well as increased memory of the material learned.

According to Shalin, the creation and participation in such a storyline has many advantages. “Such stories enhance learner sense-making, enjoyment, immersion and arousal. Overarching
narratives provide coherence and shared histories; they offer a framework (or schema) through which people may experience the virtual universe and the experiences and characters who are found there.” Human-embodied avatars led to increased social presence, “both in individuals and groups.” But their “communications heavy interactivity” also encouraged the development of parasocial relationships, “one way relationships with a media character or avatar representation, without a true human connection.” In their mildest form, parasocial relationships increased the engagement and enjoyment of learners and aided a constructivist approach to learning by increasing collaboration with other human-embodied avatars and building a sense of community. However, Shalin warned that more extreme parasocial effects included voyeurism, obsession, addictiveness, and even stalking could emerge. Addressing and assessing parasocial concerns is extremely important in the construction of immersive VR learning spaces. (Exploring the Immersive Parasocial 2009)

Avatars & Identity

In addition to complicating relationships, the use of avatars in VR learning environments can have complicating effects on learners’ construction of a virtual identity. In “Identity, Power, and Representation in Virtual Environments” (2008), Vander Valk pointed out that although technology provides a new medium for doing so, humans have always fabricated their identities to some extent (and, to a large extent, they have done so unconsciously). Designing an avatar is simply a (more conscious) extension of this ontology. Therefore the process is still fraught with the same political, economic, cultural and social perils. Vander Valk examined whether virtual
identities in the classroom can “escape the culturally constructed power configurations of the offline world.” In analyzing whether design elements of virtual environments reflect or reinforce socio-economic assumptions and stereotypes, Vander Valk found that participation in virtual environments is not usually transformative, rather “a surprising number of norms are replicated.” This included how participants design their avatars to “reflect their own stereotypical gender traits.” Although how gender, race, and ethnicity factor into the virtual learning experience needs more study, the existing research “has found that online racialized presences are unlikely to transcend the socially constructed stereotypes found in real life.” Vander Valk noted that the privileging of the visual in virtual environments might actually encourage stereotypical thinking because it leads to the “privileging of the avataristic representation of self rather than some other medium or form of representation. Students are thereby encouraged to present themselves, but not themselves. They are encouraged, as we have seen, re-present themselves...themselves, only better. The prominence of stereotypically attractive attributes is reinforced, and digitalization puts a premium on representation perfection. This potential for visual fidelity offers benefits...but it also warrants careful consideration in terms of the pedagogical implication it entails.”

Hew and Cheung also found that avatars complicate the representation of identity. In “Use of three-dimensional (3-D) immersive virtual worlds in K-12 and higher education settings,” the researchers found that “anthropomorphic avatars were perceived to be more attractive and credible, and people were more likely to choose to be represented by them.” Additionally, feminine avatars were reported to be more attractive than masculine ones. The researchers
suggested that further study is needed to see how these responses affect interaction and communication between avatar/learners.

**Establishing Self-Efficacy**

Another important consideration when designing a VR learning space to enhance presence and collaboration is developing a learner’s sense of self-efficacy in the virtual learning environment. Students need guidance in order to gain self-efficacy in virtual learning environments, as pointed out in a study by deNoyelles, A., Hornik, S.R. & Johnson, R.D. (2014). The researchers measured three dimensions of self-efficacy in a virtual learning environment that used Second Life (SL) to teach introductory accounting: Virtual World-Environment Self-Efficacy (VWE-SE), Learning Domain Self-Efficacy (LD-SE), and Virtual World-Learning Domain Self-Efficacy (VWLD-SE). The researchers noted “Given that LD-SE emerged as its own dimension, the idea that perceptions of self-efficacy are domain-specific and conceptually distinct from the virtual world environment is supported. This reiterates the idea that supporting students in learning the content is related yet distinct from the technological platform used” (266). This distinction means that instructors “must realize that teaching discipline specific content in the environment is not enough to guarantee learning of content. The other two dimensions of self-efficacy, virtual world-environment and virtual world-learning domain, must be considered” (266).
To help students gain technological efficacy, the study reinforced the importance of training tutorials that provided “varying types of orientation for the learner, beginning with an overview of basic skills necessary to use the environment in general and moving on to the methods necessary for interacting with the learning content objects” as well as “early opportunities to succeed” (266). In addition, the researchers suggested that future research assess how specific pedagogical strategies guide students to gain self-efficacy in virtual learning environments.

Developing self-efficacy in virtual world learning environments was also a major consideration for Shalin. In “Scaffolding Discovery Learning Spaces,” the researcher discussed “how self-discovery learning exists and is effectively deployed in immersive 3D environments, augmented reality, augmented virtuality, and hybrid learning.” Shalin constructed a “Normative Model for Virtual Discovery Learning Spaces,” which presented a “process view of a self-regulated learning moving through a discovery learning space.” Orientation and acclimatization to the learning space was the first stage in creating a learner’s sense of self-efficacy. This was followed by guided discovery, which should be scaffolded for independent learners, and offer feedback and self-monitoring. The final stage was Collaborations and Communities, where learners created “partnerships for shared learning and problem-solving, and to organize themselves into strategic virtual teams.” Shalin encouraged frequent communications to alleviate anxiety and facilitate interaction, as well as backchannel communications. Specific strategies for building a learner’s sense of confidence and control were important for cultivating self-efficacy. But since “independent learning does not mean learning alone,” the creation of learning communities based on Bakhtin’s concept of dialogicality was important for the co-construction of knowledge.
The Use of Minecraft in Education

MinecraftEdu, which is based on the extremely popular game Minecraft and was developed specifically for use in education, allows students to embody avatars and explore and build spatial environments in collaboration with other students. It supports a constructivist style of learning and may help develop common ground (grounding) among students, enhancing collaboration.

Game-based learning has been much researched and discussed in recent years. "Scientists are discovering a powerful alignment between good game design and effective learning….That is the good news. The bad news is that a large gap exists between the potential and the reality. Most game-based-learning projects have great difficulty making the transitions from research into widely used educational projects. As a result, the rhetoric around games and learning can feel overhyped." (Gershenfeld, p. 3).

"So far, though, the best example of a game that transcends commercial and educational boundaries has to be Minecraft" (Gershenfeld, p. 5). Go to YouTube and search for "Minecraft in schools," and you'll find more than 800,000 results. Gershenfeld is co-founder and president of E-Line Media, a publisher of computer and video games, and a Founding Industry Fellow at Arizona State University's Center for Games & Impact.
MinecraftEdu has been shown to be successful for establishing collaborative learning scenarios and for teaching soft skills, like motivation and teamwork. In "Designing a Collaborative Serious Game for Team Building Using Minecraft," the authors created "a collaborative gaming experience focusing on solidarity and teamwork." The authors hypothesized that a digital serious multiplayer game for cooperation would provide better user experience for the player, lead to more trust in the other group members, and lead to more cooperative behavior than a common non-digital game with cooperative aspects. Using Minecraft the authors were able to incorporate five essential elements of game design: Positive interdependence, individual accountability, Face-to-Face Promotive Interaction, Social Skills, and Group Processing. The authors were also able to incorporate important lessons and avoid specific pitfalls of designing collaborative games as stated by Zagal et al. (2006). Viktor Wendal et al. concluded that using Minecraft Mod provided a better game experience and group experiences as a non-digital game with cooperative aspects, although trust and cooperative behavior did not differ significantly between the two games.

Trekles examined how virtual worlds like Second Life, Minecraft, and other privately developed simulated worlds "can be married with problem-based learning (PBL) to encourage creativity and critical thinking in the English/Language Arts classroom, particularly for middle school, high school, and undergraduate college education." These worlds provide the "engagement, social interaction, and the ability to direct their own learning" that Digital Natives are accustomed to. A balance of scaffolding and freedom of choice is important in PBL environments; so is including "constructivist as well as game-based principles, in order to
promote engagement and connections between the academic and creative worlds." Although the media facilitates the learning process, it "should not be confused with the message," warns Trekles who references Clark (1994) when she notes that "The important factor is the instructional methods used to achieve the objectives, and not necessarily the media itself."

Game-based learning using Minecraft may also "level the playing field" for disadvantaged students by "allowing skills and expertise that are not articulated by formal curriculum to manifest as engaged, constructivist learning" (Elliott).

A number of other articles describe teachers experiments using Minecraft to embrace students' gaming interest and facilitate group/collaborative learning to teach STEM subjects, history, language arts, media literacy, environmental issues, and urban planning (Barack, Bilton, Griffiths, Grove, Ramos). “Why Minecraft Rewrites the Playbook for Learning” by Mimi Ito, an educator who co-founded an online summer camp in Minecraft, sings its praises “as a tool for helping kids find and realize a passion for learning.”

Articles about MinecraftEdu as well as video examples can be found on its wiki 
http://services.mineRAFTedU.com/wiki/What_is_MinecraftEdu#Articles_about_MinecraftEdu

MinecraftEdu is made by TeacherGaming, an independent game development company started by teachers and developers from the United States and Finland. The company’s mission is “to expand game-based learning into classrooms worldwide.”

https://www.teachergaming.com/index.html#home One of its co-founders is Joel Levin, a private school teacher in NYC who began using Minecraft in the classroom shortly after the game was
released. He has quickly gained a global following as the "Minecraft Teacher" (Gershenfeld, p. 5-6).

**Theory Overview/Common Ground Theory**

MinecraftEdu may help promote a constructivist style of learning by establishing a sense of common ground that encourages collaboration between/among students.

Common ground theory was developed by Herbert H. Clark, a psycholinguist who is currently Professor Psychology at Stanford University. Common ground theory posits that language is a collaborative activity, where existing common ground is used to help develop further common ground. Common ground helps individuals to communicate more efficiently. “Individuals engaged in conversation must share knowledge in order to be understood and have a meaningful conversation” (Clark, 1985). In conjunction with Deanna Wilkes-Gibbs, Clark also developed the collaborative model, a theory that explains how people engaged in conversation coordinate with each other to determine definite references. [from Clark’s Stanford website]

Andrew Monk and others have applied Clark’s theories to electronically mediated communication. Monk, a psychologist at the University of York, argues that the science of Human-Computer Interaction and the designers of such equipment (electronic devices for the purpose of communication) can benefit from theories of human-human interaction because many of the questions they have to answer “depend on a knowledge of how we use language” (1).
Theories of language have typically been divided into the cognitive and the social. The former holds that information processing takes place inside an individual’s head; whereas the latter, which includes ethnomethodological and other sociological accounts of language use, focus their attention on the structure exhibited in the behaviour of groups. Monk views grounded theory as a bridge that can be used to productively bridge these two opposing perspectives.

Monk uses an example of an architect conversing with her client using a desk-top video conferencing package to discuss the plan for the client’s house to show common ground at work in a technologically mediated conversation. Three distinct kinds/categories of common ground are exemplified: Conversational Conventions, which are “the assumptions Clark states we must make in order to converse at all.” These assumptions are partly based on knowing what communities a person belongs to. Communal Common Ground is “common ground that can be assumed from our experience of these different communities.” Personal Common Ground is “the common ground personal to the particular conversants under consideration” (7). These different kinds of common ground can be achieved before the conversation or developed during the conversation.

In contrast to many linguists, Clark argued that face-to-face communication, rather than written language, should be the basis of a theory of language (8). Face-to-face conversation involves more than just words. We facilitate a conversation through our tone of voice and by using our hands, face, eyes and body to signal meaning, for example pointing, smiling or other iconic gestures. Face-to-face conversation is also a “joint action” involving two or more people. As
with other joint actions, such as playing a duet or shaking hands, “there is a need for
‘coordinating devices’ such as conventions or jointly salient perceptual events that are part of
common ground” (9-10). For Clark, “The key characteristics of a joint action are that both
people involved intend to do their part and believe that the joint action includes their part and the
other’s” (10). Face-to-face conversation uses common ground in order to minimize the effort
required to communicate. “By making assumptions of common ground face-to-face
conversation becomes extremely efficient...This extreme efficiency is only possible because the
joint action of language includes an intention to communicate efficiently” (10).

Face-to-face conversation further develops common ground by testing, reformulating, and
adding to these assumptions. Clark refers to the process of developing common ground as
“grounding.” To facilitate the process, four levels of shared action are necessary. Clark
conceived of these levels of joint action as a sort of “action ladder,” in which the different levels
work toward “the principle of upward completion.” See Table below.

<table>
<thead>
<tr>
<th>Speaker A’s part</th>
<th>Addressee B’s part</th>
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<tbody>
<tr>
<td>4 A is proposing a joint project w to B</td>
<td>B is considering A’s proposal of w</td>
</tr>
<tr>
<td>3 A is signalling that p for B</td>
<td>B is recognizing that p from A</td>
</tr>
<tr>
<td>2 A is presenting signal s to B</td>
<td>B is identifying signal s from A</td>
</tr>
<tr>
<td>1 A is executing behaviour t for B</td>
<td>B is attending behaviour t from A</td>
</tr>
</tbody>
</table>

[Table 4, p. 12]

Tracks and layers are two other fundamental concepts of Clark’s theory. “The concept of tracks
is a way of distinguishing between ‘the official business’ of a conversation and talk about the
communicative acts by which that business is conducted” (12). For example, words or sounds
that indicate approval or understanding. The concept of layers is used to deal with “the problem of pretence in fiction, irony, teasing, and so on” (12).

**Applying Common Ground Theory to Electronically Mediated Conversation**

Clark expanded his theory to incorporate mediated communication as well as face-to-face conversation. He found that different communication media “present different costs to different parts of the grounding process” (13). For example while written communication can be read and re-read, which allows for reviewability, face-to-face communication allows participants to give simultaneous affirmation of understanding by nodding or grunting.

Clark and Brennan (1991) analyzed the differences between various communication media in terms of which “constraints on grounding” they do and don’t provide. Constraints, a word that generally has negative connotations, is used in a positive sense here. Constraints reduce ambiguity in communication, which makes the process of finding common ground more efficient. Another way of conceiving of constraints on grounding is to view them as “resources for grounding” notes Monk (13). Another term for this is affordances (Deeny).

Affordances are outlined for: copresence (group members share the same physical environment), visibility (group members can see each other), audibility (group members can hear each other speaking), contemporality (group members are receiving information as it is produced by other group members), simultaneity (group members are receiving and producing information at the
same time), sequentiality (group members are receiving information in a consecutive sequence),
reviewability (group members can review information they previously received from other
members), and revisability (group members can review their own messages before imparting
information to their fellow group members).

The more of these affordances that are present in mediated communication, the better the
grounding. “The consequence of some medium lacking one or more of the constraints is to
increase the costs of some part of the grounding process” (Monk 14). Based on how many of
these affordances are available, useful predictions can be made in regards to the costs and
benefits of using different electronically mediated communication. “Equipment for mediated
communication that provided all these constraints would be very good” (Monk 13). Monk
presents case studies that apply the theory to mediated forms of communication and show how it
might be useful for purposes of design. He concludes that more “practical experience of using
the theory in real design contexts” is needed “to make the next shift to a set of well specified
guidelines for use in particular contexts” (20).

Monk’s work “has value for those interested in human-centered design because he frames an
approach to human-computer interaction (and human-computer-human interaction) that is based
on the subtleties and nuances of how people share information, and not on a conduit theory of
communication, where the mental model of the technology might dictate the interaction”
(Deeny). The affordances of different media should be considered when designing a system to
help participants achieve common ground.
Wikipedia’s article on “Grounding in Communication” stressed the importance of shared visual information in terms of facilitating the grounding process. “Findings from the paper ‘Using Visual Information for Grounding and Awareness in Collaborative Tasks’ (Gergle, Kraut & Fussell), supports previous experiments and show evidence that collaborative pairs perform quicker and more accurately when they share a common view of a workspace.”

3. Conceptualization

Definitions of Virtual Reality as applied to (higher) education

Common themes in these definitions of virtual reality focus on a learner who is constructing knowledge by actively engaging with the virtual environment as well as with other learners.

Cruz et al. noted that a virtual world has three distinctive characteristics: multi-user interactivity; physicality; and persistence (47-8).

According to McKerlich et al. virtual worlds are defined “as digital, immersive environments that have three predominant characteristics: They are not a game (in that there is no artificially imposed goal or competitive activities), navigation is by graphic representation, typically an
avatar, and the 3D environment is constructed and augmented both by the participants and
designers” (325).

According to Shalin, 3D virtual spaces in higher education “involve multi-sensory, real-time
interactivity with other learners through high-fidelity, human embodied avatars as well as
automated ‘bots” (Exploring the Immersive Parasocial).

According to Mabrito, “‘Virtual world’ is an umbrella term that can refer to a variety of different
types of virtual space, ranging from a MMORPG (massively multiplayer role-playing game)
such as World of Warcraft and Half Life 2 to a MUVE (multi-user virtual environment) such as
Second Life. In both instances, users inhabit these spaces as avatars. However, the relevant
distinction between these two types is that the former has a pre-established structure or narrative
to it (e.g., completing a quest or mission) while the latter is totally user controlled and created.”

Huang, Rauch, and Liaw used the term Virtual Reality Learning Environments (VRLE): “A
VRLE allows the visualization of three dimensional (3D) data and provides an interactive
environment that reinforces the sensation of an immersion into computer-generated virtual
world” (1171). The researchers defined VR as “Immersion-Interaction-Imagination” (1172).

**Definitions of Presence as applied to (higher) education**
Common themes in these definitions of Presence focus on active interaction with other learners in the virtual environment, resulting in an increased sense of engagement and community.

Ferguson defined presence as “an impression that their mediated presence is not mediated.” It includes realistic representations, sophisticated social interaction, and immersive experiences” (137).

Cruz et al. defined presence as “the perception of the virtual as if it were real “(47). They also note that presence is “a subjective personal experience” (48). They explained the evolution of the theory of social presence and the various types of presence that have been defined in the literature (personal, social, environmental, spatial, sensory, etc.). Although presence is mostly measured through subjective measures, objective measures relating to physiological responses have been developed (51).

While noting there is no consensus in the literature as to a definition, McKerlich et al. defined Presence as “having a sense of active participation” (324) The researchers distinguished between three types of presence identified by Garrison, Anderson, and Archer (2000): social, cognitive, and teaching. Social presence is “the extent to which a student’s true self is projected and perceived in an online course”; teaching presence “is the direct and indirect role and influence of the teacher and perhaps senior students in the design, direction and facilitation to ensure a meaningful educational experience;” and cognitive presence is “the extent to which a learner can construct and confirm meaning through discourse in a critical community of inquiry” (327). All
three types of presence manifest themselves in virtual worlds and can be aligned with the categories and indicators for each type of presence developed in the Community of Inquiry Model, which incorporates constructivist goals.

Sanders and Melton also referred to these three types of presence developed by Garrison, Anderson, and Archer (2000). In addition, they also included the definitions of Schroeder, et al (2001), who defined presence as “having the experience of being in a place other than the one in which you are physically present” and co-presence as “the subjective sense of being together or being co-located with another person in a computer-generated environment.” According to the researchers, the combination of these two conditions “create an environment in which students are aware of self in relation to others and share in the collective use and manipulation of persistent resources and artifacts collocated throughout the virtual world.”

Tugba Bulu also distinguished between (Place) Presence, Social Presence, Co-presence, as well as the relationships among these different types of presences, their relationship to learners’ satisfaction, and the user characteristics that play a critical role on the sense of presence (155-6). All types of presences were related in virtual environments. Social presence was found to be the best predictor of the learners’ satisfaction, although place presence and co-presence were also important factors affecting learners’ satisfaction (159-160).

4. Methods
My project is a learning space that uses the three-dimensional space environment of MinecraftEdu to help teach American Literature to community college students. My learning space is based on Constructivist theories and the suggestions and caveats contained in the literature that I have read about the use of virtual reality in teaching higher education. It will incorporate the increased sense of presence that MinecraftEdu affords, especially through the use of avatars who are able to communicate with each other through various modalities. The use of MinecraftEdu may increase common ground between/among students, thereby enhancing collaboration among learners.

**Considerations in Choosing a Platform**

MinecraftEdu has developed a strong following in elementary and secondary education, primarily in the sciences and math, although there are increasingly more examples in the humanities and social sciences. However, there has not been as much experimentation at the college level.

When I started to research the topic of virtual reality and its use in higher education, and started to look for possible platforms for my tutorial, I first considered Second Life.

Reviews of the research literature on the use of VR in higher education show that Second Life (SL) has been one of the most-used virtual reality platform in higher education/most popular
virtual environments used in higher education for many years. Consequently, it has been among the most studied. Much of the research that has been done about VR in higher education uses or refers to SL. The affordances of SL (such as the ability for multiple users to simultaneously interact), and the financial advantage of using a technological platform that has already been developed, is relatively easy to learn/use, and has already gained widespread general acceptance have been the main reasons for the use of SL in higher learning.

Private platforms, designed by institutions for their own use, are not as widespread because of their prohibitive cost. This is especially true in the humanities. “Although custom made material offer greater levels of control, flexibility and functionality, the trade-off for these benefits however involves a higher time and cost commitment in the development of such a specifically designed platform,” notes Hanewald (240). The prohibitive expense of creating a unique virtual reality platform makes it unfeasible for most educational institutions, especially for courses in the humanities.

As a result, the commercially available Second Life emerged as the platform of choice for those who wish to use VR to teach at the college level. In “Second Life in education: A review of publications from its launch to 2011,” Wang and Burton noted that SL’s growth as “the next-generation technology tool in education” was due to its ability to provide learners “with innovative ways to construct, communicate, and collaborate.” In their extensive review of how Second Life “has been discussed, investigated, and applied in education,” Wang and Burton examined how the research on the use SL has evolved. They found that studies have shifted from
examinations of how SL was being used to having more of a focus on affective issues, including “the existence of cognitive presence, social presence, and teaching presence” (370-1).

However, SL has seen a peak and decline in usership. This is due in part to the increasing sophistication of technology, especially the aesthetic and technological achievements in video games, which make SL look “dated” by comparison. The somewhat difficult nature of the building process can discourage a Constructivist style of learning since it can retard or hamper a learner’s engagement with or perception of the platform. It also impedes Constructivism by placing the instructor rather than students more in control of the site’s construction. Another major disadvantages that discourages its use as a platform is the open nature of the online environment. The use of SL for educational purposes has mostly been confined to higher level institutions because of the age restriction for using the platform. Other concerns are privacy issues and the possibility of encountering “adult” material in the online environment. Since students are free to wander throughout the entire world of SL, they can easily become distracted or encounter material that is problematic, offensive, or worse. (There was a version of SL for young adults called Teen Second Life, but it became defunct.)

Proprietary virtual worlds escape these and other disadvantages. In a scoping study of 3-D virtual world applications by universities across Australia and New Zealand, Delgarno, Lee, Carolson, Gregory and Tynan (2011) warned against the use of commercial multi use virtual worlds since they are vulnerable to market forces and might be shut down if not profitable. The development of “bespoke” or custom made virtual worlds hosted on university owned servers and networks
give independence from commercial platforms. They also allow for greater amount of customization and thus a less generic design.

In “Three-Dimensional Virtual Worlds: Research Trends and Future Directions” (2014), Tokel and Karatas also noted that a review of the literature showed SL to be the most commonly used platform in higher education. However, the authors concluded that other platforms have seen an increase in recent years, and they anticipated “that with an increased use of open-source platforms and game engines, proprietary virtual worlds will become more widespread in the near future” (10). As these platforms become more advanced and easier to use, more educators will experiment with using them. More users, in turn, will boost demand for development of new platforms.

**The Choice of MinecraftEdu**

MinecraftEdu has emerged as a platform that bridges the commercial and proprietary worlds. It is based on the popular Minecraft video game that lets users, who navigate the world in the form of avatars, build spatial environments from blocks that they “mine” from the landscape. They do so working either individually or in conjunction with others. MinecraftEdu is a version of the original game designed to be used in the classroom; consequently it is private and some of the original features of the game have been adapted to suit educational purposes:
“Since late 2011, MinecraftEdu has made its way to thousands of classrooms around the world. It has been used to teach all kinds of skills and subjects from math to foreign languages to social justice to fair trade. The overarching idea of MinecraftEdu is to retain the magic of original Minecraft while adding elements that facilitate its use in classroom….It can act as a powerful bridge between physical and virtual classrooms, fostering critical 21st century skills.”

http://services.minecraftedu.com/wiki/Teaching_with_MinecraftEdu

MinecraftEdu allows an instructor and his/her students to build within their own private world that is off limit to outsiders. Classroom management tools, an easy-to-use graphic interface, It streamlines the game, which makes it easier for beginners to participate, and grants the instructor a lot of control over the game environment, including the ability to oversee students by activating various features. These include options for the instructor to move more quickly than students and pass through barriers. Instructors can control the behavior of their students by turning various features, such as audio communication and texting, on and off. These student moderation tools can limit student interaction with the world - or not - based on the requirements of the lesson. Students can be given various capabilities that make it easier for them to build and to navigate, such as being able to “spawn” (i.e. return to the point of entry) or “teleport” (return to the surface if they fall down holes or pits and can’t jump out by use of the space bar). Special building tools allow teachers to quickly add and modify their own content in the game. Teachers can insert specially designed informational blocks, signs, and journals to present contextual background and assignments. Hyperlinks can be embedded to send students to online assessments or material beyond the game. Many of the buildings that have been created in the original Minecraft can be
imported into MinecraftEdu. Instructors can give students tools and other items necessary for building; track students as well as their work; and transport students.

Other considerations for using MinecraftEdu are its relatively inexpensive cost and the Hosting service it offers instructors at a nominal price. Many students may already be familiar with Minecraft due to its commercial, mainstream popularity. This cohort will have an advantage due to their prior knowledge, but will need to be informed of the differences between the original Minecraft and MinecraftEdu. A complete comparison of the two systems is provided [http://services.minecraftedu.com/wiki/What_is_MinecraftEdu](http://services.minecraftedu.com/wiki/What_is_MinecraftEdu).

The MinecraftEdu wiki page [http://services.minecraftedu.com/wiki/Main_Page](http://services.minecraftedu.com/wiki/Main_Page) offers plenty of resources and support in various forms for both instructors and students, including instructional guides, videos, blogs, discussion forums, and handouts (on how to use MinecraftEdu controls, basic crafting recipes, etc). An orientation tutorial was designed by Joel Levin for the purpose of introducing students to the MinecraftEdu environment and teaching them how to navigate through the three-dimensional space environment and perform the basic building functions that they need to know in order to create worlds of their own. A lesson plan is provided to support the use of the orientation tutorial: [http://educade.org/lesson_plans/getting-started-with-minecraftedu](http://educade.org/lesson_plans/getting-started-with-minecraftedu). MinecraftEdu also gives instructors access to various templates and lesson plans/activities developed by other teachers for their own use that they have given permission for other instructors to download and use [http://services.minecraftedu.com/worlds/](http://services.minecraftedu.com/worlds/). Offline functionality means that no internet connection is required beyond installation.
After experimenting creating my own MinecraftEdu space, I decided to use a generic template that was developed by Joel Levin as a “tabla rasa” (blank slate) that can be adapted for teaching a range of different subjects and age groups. I adapted the MinecraftEdu template for my American Literature learning space by the addition of Information Blocks and adjusting the commands in the teacher menu.

More detailed information in re the design and pedagogy of my American Literature MinecraftEdu learning space is provided in Appendix A: Game Design Document and Appendix B: Instructional Design Document.

5. Analysis

The use of MinecraftEdu will help students achieve common ground by meeting all of the “constraints”/affordances outlined by Clark and Brennan (1991).

MinecraftEdu allows students to communicate through various modalities, including voice, text, and visual. The use of avatars enhances their sense of presence in the virtual world. The game can be used as a part of a campus-based classroom, which allows for additional face-to-face interaction among/between students; students can also collaborate on their spatial environments outside the classroom, either in synchronous or asynchronous time.
Constraints/Affordances of the MinecraftEdu Environment

Copresence (group members share the same physical environment): In MinecraftEdu, students share the same three-dimensional space environment.

Visibility (group members can see each other): In MinecraftEdu, students see each other in the form of avatars. To some extent, they are able to choose the look of their avatar.

Audibility (group members can hear each other speaking): In MinecraftEdu, the audio function allows students to communicate orally with each other. It can also be turned off (muted) by the instructor.

Contemporality (group members are receiving information as it is produced by other group members): In MinecraftEdu, students can communicate with each other and construct their spatial environment together “in real time” (i.e. understanding what is said at the same time or very soon after it is conveyed).
Simultaneity (group members are receiving and producing information at the same time): The various modalities of MinecraftEdu allows students to receive and produce information simultaneously.

Sequentiality (group members are receiving information in a consecutive sequence): Text and audio features impose a sequentiality on students’ communication.

Reviewability (group members can review information they previously received from other members): Students can review the construction work of other students and alter/add to it.

Revisability (group members can review their own messages before imparting information to their fellow group members): The text function fulfills this constraint for grounding, allowing students the ability to review a message before sending it.

6. Anticipated or Potential Conclusions

I plan on using this learning space to complement campus-based courses rather than for use in fully online courses. This will allow me to help guide students through the initial orientation tutorial that MinecraftEdu offers for educators’ use; to show them the Wonderful World of Humanities by Eric Walker for inspiration and ideas

http://services.minecrafter.com/wiki/Wonderful_World_of_Humanities; and to oversee their
initial entrance and building activity in the MinecraftEdu template that I have adapted to teach American Literature.
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Mabrito, M. (2012). Student as Avatar: a study of informational preferences in a virtual world class. *Journal of Online Learning and Teaching (JOLT)*. 8(2)

MinecraftEdu wiki. [http://services.minecraftedu.com/wiki/Main_Page](http://services.minecraftedu.com/wiki/Main_Page)


Appendix A: Game Design Document

Game design template from Google docs

Index

1. Game design
   a. Summary
   b. Gameplay
   c. Mindset

2. Technical

3. Level Design
   a. Themes
   b. Game flow

4. Development

5. Graphics

6. Sound/Music/Style Attributes
1. Game Design

Summary

The MinecraftEdu learning space that I have sketched out for my thesis project will have students work collaboratively in groups to create a space that reflects their reading and research of a particular author, time period, or theme in American Literature.

I will orient students by using MinecraftEdu’s Tutorial World, created by Joel Levin to be used by instructors in order to familiarize students with the basics of the game (how to navigate, build, communicate, etc.).

I chose to utilize another template by Levin as the foundation of my tutorial, “Group Building Areas” [http://services.minecraftedu.com/worlds/node/51](http://services.minecraftedu.com/worlds/node/51)

It consists of a central observation platform that branches out into 10 separate work areas. Students “jump” off the platform into designated spaces where they can work without interference from other groups. Joel Levin designed this template as a generic platform that can be adapted by instructors to teach various subjects and age groups. It will serve as the starting [spawning] point for the students in my American Literature course, who will be represented by avatars.

Students will have been assigned to specific Building Groups beforehand. The students’ avatars, guided by appropriate Signage will gather into their respective groups after they enter/spawn into the MinecraftEdu world.
To form student groups, I will ask individual students to submit their three top choices of author/time period/theme. I will try to accommodate their choices in forming groups of 3-5 students.

Groups will work to create spatial environments representing various time periods/authors in American Literature. For example: Native American Creation stories; Puritanism (William Bradford’s *Of Plymouth Plantation*); American Romanticism (the short stories of Washington Irving, Nathaniel Hawthorne, and Edgar Allan Poe); Transcendentalism (Ralph Waldo Emerson’s *Nature*, Henry David Thoreau’s *Walden*). The natural building world of Minecraft lends itself especially well to the representation of earlier American literature, which emphasizes the land and different people's relationship to the land. (How they “built” a nation, both literally and metaphorically.)

My MinecraftEdu learning space allows for a constructivist approach to teaching the literature since students will be doing the building themselves. It also requires cooperation and communication among students who will be collaborating in their common goal of building a MinecraftEdu spatial environment. It would be best used in a classroom-based course, so an instructor could help guide the learner’s sense of self-efficacy in the virtual learning environment. However, it could potentially be used in a hybrid or a totally online course.
As discussed in my thesis, the MinecraftEdu learning space incorporates all of the constraints/affordances of communication discussed in Common Ground Theory: co-presence, visibility, audibility, contemporality, simultaneity, sequentiality, reviewability, and revisability. The more of these affordances that are present in mediated communication, the better the grounding.

**Gameplay**

Even though the MinecraftEdu tutorial isn’t exactly a game (i.e., it’s purposely not competitive), certain game aspects are still important. Each team’s goal is to work together to create a spatial environment that reflects a certain literary time period or the contextual environment of an individual author. These spatial environments will be used to introduce other students to the time period or author. (They might also be added to/developed further by other classes.)

Other game design aspects such as narrative and character are important in creating these spatial environments. (For more on these aspects, I have looked at Professional Techniques for Video Game Writing, edited by Wendy Despain, A K Peters, Ltd.; Wellesley, MA, 2008.) The narrative follows that of American Literature. Although students are fairly limited in their choice of MinecraftEdu avatars (in terms of gender, ethnicity), they can research and adopt the characters of people associated with the time period/spatial environment.

**Mindset**
I opt to choose the “Peaceful” setting of MinecraftEdu for several reasons but principally because collaboration (teamwork), rather than competition is the ultimate goal or purpose of student groups building these spatial environments within the MinecraftEdu world.

2. Technical

MinecraftEdu platform will be utilized. Students will be allowed to build, so creative mode is turned on. [Include details/screenshots of what other MinecraftEdu parameters/settings will or will not be turned on.] They will have access to tools and other building material.

Other technical considerations: When implementing my MinecraftEdu American Literature Tutorial in the classroom, I would prefer hosting it on MinecraftEdu. There are several advantages of doing so, including technical support.

Specific Issues

Barrier walls (fences) will keep student groups separated while they build. Groups will be able to present their own spatial environments and look at each others’ creations at the end of the semester.

I will also turn on teleport mode, so students can get themselves out of tight spots (caves, holes, etc.) by returning to the surface or back to the starting/spawning point.

3. Level Design
Themes

The spatial environments created by groups will be based on the basic chronological themes incorporated into many college-level American literature courses and textbooks (including Norton, Bedford, etc.):

1. Native American creation stories
2. Puritanism
3. Enlightenment
4. American Romanticism
5. Transcendentalism, etc.

Game Flow

After completing the MinecraftEdu tutorial, all avatars (students) will spawn in the MinecraftEdu world. At this point, the students’ avatars, directed by appropriate signage, will separate into groups. Group members will “jump” off the main platform into their own building space below. Each group will then collaboratively design and build a spatial environment that reflects the texts/authors that it has been assigned.

4. Development/ Components

Each group has an ample space in which to build. The spaces are divided by barrier walls. Although they are blocked from moving into other groups’ territory during the building process, at the end of the construction period, they will be allowed to visit/view other groups’ work.
5. Graphics

I will be using the default texture and graphic settings of the game. [Some settings can be altered; explain my choices. Include screenshot of settings menu.]

6. Sound/Music/Style Attributes

VoIP may be used to speak with the students.

The building world of MinecraftEdu supports a constructivist style of learning, which values active learning and encourages learner construction of information and projects.
MinecraftEdu Template

“Group Building Areas”

http://services.minecrafteedu.com/worlds/node/51

Published by GentlemanG

A central observation platform that branches out into 10 separate work areas, students can work in designated spaces without interference from other groups. Perfect for any kind of group projects. A very flexible map.

Ages 5-18+

Social Studies > Citizenship - General Use, Group Building Projects

World Details and Requirements

Created by: TeacherGaming

World version: 1.7.10.1

Supported MinecraftEdu Versions: 1.7.10

World Type: Mission Based, Observation

Tags: Team Work, Building, Competition

Description

Designed for multiple simultaneous projects overseen by an instructor, this world is perfect for group or solo activities. Each section is small enough that a single student could navigate it quickly, yet large enough that groups of ten could fit nicely into each section and have space to
maneuver and construct. Each section is bordered with a fence that limits player movement to the designated area, allowing participants to focus on their projects without interference from other groups. Beyond the fence is an expansive world to explore. Sections feature topography unique to the nearby ecosystems, resulting in differentiated sections that each have access to basic building and challenge materials such as a source of water.
Appendix B: Instructional Design Document

American Literature is generally taught chronologically, covering such time periods/styles as Exploration, Puritanism, Romanticism, Transcendentalism, Naturalism, Realism, Modernism, Postmodernism. It is often broken into American Literature I (early to mid nineteenth century) and American Literature II (late 19th century to present). My MinecraftEdu learning space is focused on the texts commonly taught in American Literature I because these texts are better able to be spatially represented in the “naturalistic” world of MinecraftEdu. The natural world of Minecraft lends itself especially well to the representation of earlier American literature because it emphasizes the land and people's relationship to the land. (How they “built” a nation, both literally and metaphorically.)

For my MinecraftEdu learning space, I adapted a generic template developed by Joel Levin for the purpose of being adapted by instructors for use in a variety of different courses and for different age groups. Student will be divided into groups. Each group is responsible for creating a spatial environment based on the assigned texts. Groups will build in separate spaces, although they will be able to visit each others’ spaces at the end.
Orientation:

Before students gather at the starting point in my American Literature learning space, they will learn the basics of how to navigate and build in the MinecraftEdu environment by going through the MinecraftEdu Tutorial World.

I will also have students explore the MinecraftEdu template The Wonderful World of Humanities, created by John Miller. This will give them some idea of the types of spatial environments that players can create in MinecraftEdu.

Starting:

Students will spawn into the MinecraftEdu as avatars. The class will have been assigned to specific Building Groups beforehand, partly based on their choice and partly on my need to cover a range of different texts. The students/avatars will gather into their groups, guided along Paths with Signage.

Typically, there are about 20 students in a section of American Literature. Building groups will consist of 3 students, so there will be 6-7 groups in total.

Requirements:

Student groups are to build a spatial environment based on the assigned reading texts; additional research is highly encouraged. Groups can build in a more imaginary/conceptual or in a more realistic/factual style. Several information blocks should be placed around the space to provide
background information on the authors or their texts, relevant quotations from their works, etc.

After all student groups have completed building their MinecraftEdu spatial environment, they will be able to visit and view each other's work. Afterwards, students will write a brief reflective account of their experience.

Building Groups for American Literature will include the following:

1. Native America:
   
   Text:
   
   Iroquois Creation Story, *A Tale of the Foundation of the Great Island, now North America: The two Infants born, and the Creation of the Universe*

2. New England/Puritanism (17th century):
   
   Texts:
   
   John Smith, from *A Description of New-England, by Captaine John Smith*
   
   William Bradford, from *Of Plymouth Plantation*

3. Enlightenment (18th century):
   
   Texts: Benjamin Franklin, from *The Autobiography*
   
   Thomas Jefferson, from *Notes on the State of Virginia*

Texts:

Washington Irving, *Rip Van Winkle* and *The Legend of Sleepy Hollow*

Nathaniel Hawthorne, short stories

Edgar Allan Poe, short stories

[Three groups.]

5. Transcendentalism (19th century):

Texts:

Ralph Waldo Emerson, *Nature*

Henry David Thoreau, *Walden*


Texts:

Walt Whitman; Emily Dickinson

The Building Groups are based on selections from the textbook that I use for American Literature I, which is Penguin Academic’s American Literature, Volume I by William E. Cain, copyright 2004 by Pearson Education, Inc.

My MinecraftEdu learning space incorporates most of the principles proposed by Alessi and Trollip to create educational environments that facilitate the construction of knowledge (32):
Emphasizing learning rather than teaching.

Emphasizing the actions and thinking of learners rather than of teachers.

Emphasizing active learning.

Using discovery or guided discovery approaches.

Encouraging learner construction of information and projects.

Having a foundation in situated cognition and its associated notion of anchored instruction.

Using cooperative or collaborative learning activities.

Using purposeful or authentic learning activities.

Emphasizing learner choice and negotiation of goals, strategies and evaluation methods.

Encouraging personal autonomy on the part of learners.

Supporting learner reflection.

Supporting learner ownership of learning and activities.

The two principles that my learning space does not incorporate are:

Encouraging learners to accept and reflect on the complexity of the real world.

Use authentic tasks and activities that are personally relevant to learners.
Appendix C: Screenshots from MinecraftEdu

How the affordances of MinecraftEdu help establish Common Ground

Common Ground Theory was developed by Herbert Clark. His theory proposes that language is a collaborative activity, where existing common ground is used to help develop further common ground to facilitate more efficient communication and collaboration. Originally, Clark based his theory on face-to-face communication but later expanded it to include electronically mediated communication.

The theory poses that eight “constraints” reduce ambiguity in communication and facilitate the process of finding common ground. These constraints are fulfilled by affordances of MinecraftEdu as shown in the following screen shots.

The more of these affordances that are present in mediated communication, the better the grounding. Shared visual information is especially important in terms of facilitating the grounding process.
Copresence (group members share the same physical environment): In MinecraftEdu, students share the same three-dimensional space environment.

Figure 1: Students will work collaboratively in groups to build a space that reflects the literary world of the author(s) or text(s) they’ve been assigned.
Visibility (group members can see each other): In MinecraftEdu, students see each other in the form of avatars. To some extent, they are able to choose the look of their avatar.

Figure 2: This is my avatar. Students can choose gender and ethnicity of their avatars.
Audibility (group members can hear each other speaking): In MinecraftEdu, the audio function allows students to communicate orally with each other.

Figure 3: The audio feature can also be turned off (muted) by the instructor in the Menu controls under Player Settings.
Contemporality (group members are receiving information as it is produced by other group members): In MinecraftEdu, students can communicate with each other and construct their spatial environment together “in real time” (i.e. understanding what is said at the same time or very soon after it is conveyed).

Figure 4: Students are given access to all building materials. They can work on their spatial environments together or separately.
Simultaneity (group members are receiving and producing information at the same time): The various modalities of MinecraftEdu allows students to receive and produce information simultaneously.

Sequentiality (group members are receiving information in a consecutive sequence): Text and audio features impose a sequentiality on students’ communication.

Figure 5: Students are able to text each other, which allows them to communicate both simultaneously and sequentially.
Reviewability (group members can review information they previously received from other members): Students can review the construction work of other students and alter/add to it.

Figure 6: Students can add to or alter the work of other members in their group.
Revisability (group members can review their own messages before imparting information to their fellow group members): The text function fulfills this constraint for grounding, allowing students the ability to review a message before sending it.
Appendix D: Thesis Video 1

Link to Jing Video 1:

https://drive.google.com/drive/my-drive
Appendix E: Thesis Video 2

Link to Jing Video 2:

https://drive.google.com/drive/my-drive