

Replaying History: Engaging Urban Underserved Students in Learning World History Through Computer Simulation Games

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Abstract: A growing number of educators are exploring digital games for engaging students in learning experiences, but relatively little is known about how games engage players, how learning occurs through gameplay, or what interactions occur when complex games are brought into school culture. This case study examines what happens when *Civilization III* was brought into an urban school for underserved students. Engagement in gameplay was a complex process of appropriation and resistance, recruiting students' identities and intentions. Learning occurred through recursive cycles of failure and revising strategies, which led to frustration, engagement and learning. Students developed familiarity with game concepts and deeper understandings of relationships among history, geography, economics, and politics.

Introduction and Purpose

A growing number of researchers and scholars are acknowledging the cultural impact of digital games and exploring the potential for using game technologies and design features to engage learners (i.e. Media-X) (Gee, 2003; Prensky, 2001). It is theorized that games require players to master rich semiotic systems, marshal resources and solve complex problems, and engage in sophisticated forms of literacy, which scholars such as Jim Gee (2003) have compared with the relatively impoverished context of schooling. Most interesting to learning scientists may be the way that they motivate engage learners in complex problem solving tasks and sophisticated learning communities in the process of completing personally meaningful goals, a (Games-to-Teach Team, 2003; Gee, 2003; Cordova & Lepper, 1996). Commercial quality games, however, costs millions to produce, and before educators spend millions on development, perhaps lessons can be learned about their design and enactment by examining how existing games can support learning. Historical simulation games (i.e. *Civilization III*) require players to master geographic facts, anticipate the interactions among geographic processes, become fluent with historical concepts, and understand relationships among geographical, political, economic, and historical systems. Given that history is consistently listed as the least favorite subject among students and that marginalized students frequently reject the study of history altogether (Loewen, 1995), these games have interesting potential for stimulating students' interest in history while helping them develop deep conceptual understandings (e.g. Kolson, 1996).

This study examines what classroom practices emerge and how learning occurs when *Civilization III* is used as the basis for learning about world history in an Humanities enrichment course in an inner-city school. Using case study techniques (Stake, 1995), we examine the following three research questions:

1. What practices emerge when a game is brought into a formal learning environment, and, how do gaming practices (e.g., competition, learning through failure) intersect with schooling practices?
2. How does *Civilization III* engage players in a formal learning context?
3. What learning occurs through gameplay?

Becoming engaged by *Civilization III* as a tool for studying history was a complex process of appropriation and resistance that mobilized students' identities. Learning arose through students' questions, intentions, and the affordances of *Civilization III as mediated through social practices*. *Civilization III* was a powerful organizer of activity, and gameplay led students disaffected with history to deep thinking and enriched understandings of history. Bringing *Civilization III* into a classroom was not without its problems, which are described as well.

Background

In the past, educators have treated history as an apolitical scientific enterprise and learning history a linear developmental process whereby students enter the classroom as naïve thinkers and gradually acquire facts in order to master the "correct narrative" (Downey & Levstik, 1991). Critics of the "best story" approach have noted how

little this process of "learning history" reflects how actual historians engage in historical inquiry (Seixas, 2000). Whereas students read textbooks, memorize facts, and recite "ready-made" knowledge, academics, curators, journalists, and social activists do a lot more: They consider research topics of theoretical and/or practical importance, consult original sources, produce arguments, interpret data in dialogue with existing theory, and negotiate findings within social contexts (Greene, 1994; VanSledright, 1998). History is presented as received, uncontested truth, free from social context and beyond debate. Seixas (2000) argues that what passes as history – the memorization of a collection of facts, causal explanations and sanctioned narratives – might better be described as the construction of myth or heritage than doing history in any real sense.

Treating history as myth or heritage, a "cultural literacy," tends to lead to many misconceptions about the nature of history, alienate students, and as a result, leave most students unaffected, or even hostile towards school-based history (Greene, 1994; Loewen, 1995; Seixas, 2000; Wineburg, 2001). The majority of students perceive this history which is cleaved from social context as the meaningless recitation of names, dates, and facts and fail to understand the practices through which historians construct and judge historical arguments (Seixas, 2000; Wineburg, 2001). Perhaps also not surprisingly, most students also list history as "the most boring" of all 21 subjects studied in school (Loewen, 1995). Students frequently resist or reject dominant, state-sanctioned narratives when they contradict lived experience, family history, folklore, and underground channels (Wertsch, 1998). Wertsch distinguishes between students learning history and students appropriating historical texts, arguing that texts serve as "identity resources" that are mastered and employed according to situational demands. A challenge for educators, then, is how to provide opportunities for historical inquiry where they explore their identities and reconcile their historical interpretations within communities of inquiry (Barnett et al., 2000).

How to design learning environments around these principles is a topic currently under investigation among learning scientists (e.g. Barnett, et al., 2000), and the solutions are not entirely clear, particularly in urban classrooms. If students come to school disinterested in, or even rejecting school-sanctioned histories, how do we engage students in the hard and painful work of historical inquiry– the processes of seeking out and engaging with multiple histories, practicing introspection, and exploring one's own (multiple) identities? Within a world history context, how do we honor students' desire to affiliate themselves with cultural traditions (whether European, Native American, Asian, or African) with the very real politics of colonial history?

World history, a concept which arose in response to critiques of traditional "Western Civilization" courses, seeks "to encourage students to ask large and searching questions about the human past, to compare patterns of continuity and change in different parts of the world, and to examine the histories and achievements of particular peoples or civilizations with an eye to wider social, cultural, or economic contexts" (National Standards for History, cited in Dunn, 2000, p. 122). An emerging body of world history scholarship suggests models for how world history can be used to investigate patterns of change (e.g. Diamond, 1999). However, such inquiry-based world history demands that students have an organizing framework for interpreting understandings and generating questions that spans thousands of years and the six populated continents. Studies of students' reading historical texts have shown that students frequently lack the background knowledge to comprehend even the most basic passages in historical texts, lacking any understanding of even basic concepts such as "England" (e.g. Beck, McKeown & Gromoll, 1989).

One intriguing approach to engaging students in studying world history might be through computer simulation games such as *Civilization III*, an entertainment game with deep historic, geographic, and political simulation. Success demands that players understand the basics of geography, using knowledge of geography is a "tool" for gameplay, such as where to focus food production. Players confront political dilemmas such as whether to pursue isolationist politics, enter complex alliances for protection, or gain natural resources (i.e. oil) through military force. Finally, players can view use tools included in the game (i.e., maps, charts, and graphs) to examine how their civilization grows culturally, geographically, scientifically, and politically over time. Using *Civilization III* as a simulation tool changes the method of studying history from one of memorizing facts and mastering sanctioned narratives to one of exploring the emergent properties of a simulated system. The specific trajectory of events comprising any one game may have no analog in real life history; however, the rules binding the game – the core variables included in the model, the interrelationships among political, economic, and geography systems – allow players to gain insights into each of these areas and therefore the unfolding of history itself.

Methods

This paper uses case study techniques within a design experiment methodology in order to both develop research findings that uncover and extend theoretical issues and a tangible educational program (Barab & Squire, in press; Brown, 1992). Consistent with Cobb and colleagues (2001), we created an instructional context with specific research goals and manipulated the local context to achieve the desired ends in a recursive process of theory building and instructional intervention. Such a flexible approach allows us to manage multiple unknowns, including (but not limited to) the affordances of the game as a tool for learning, the trajectory of students' understanding of history throughout the game, or simply how a given group of students and their teacher will react to its use in formal instruction. In this phase of the design research project, we use a case study methodology which employs multiple data gather and analysis techniques to examine the practices that emerge, how engagement unfolds, and what learning occurs (Stake, 1995). Critically, pre and post tests were designed and administered, but students *refused* (even under threat of grade reduction) to complete the pre-test, making pre and post-test comparisons impossible.

Context

One researcher participated as an instructor-researcher while a second researcher was a participant-observer. Both researchers took field notes on all classroom activities and interactions attending especially to individual actions, social exchanges, and broader patterns of activity within the classroom. The second researcher focused specifically on interactions likely missed by the first researcher. The researchers also partnered with a practicing world humanities teacher who helped design the unit but due to time constraints and minimal experience with the gameplayed a less central role in organizing activity. After each session, we met (along with the students' regular teacher, when possible) to compile our observations, explicate our shorthand field notes, and discuss/debate what transpired in class. A third researcher reviewed data and evaluated the research program.

In this case, *Civilization III* was used in a six-week (three times per week, 45 minutes per class) period in a high school classroom at a Media and Technology Charter School designed to cater to inner-city youth in a large Northeastern city. 18 students participated in the study, playing *Civilization III* as a part of an interdisciplinary world cultures course. The school does not specifically teach history or geography, instead folding social studies into humanities and technology courses. The class was comprised entirely of students who had failed ninth grade the previous year and were being held back for a year before advancing to tenth grade. Roughly 75% of the students were African-American, 15% were Latino, and 10% were of European descent. Five of these students participated in a one week, 15 hour extension camp at the end of the unit. Consistent with Stake's (1995) case study approach to data collection and reporting, we use observations, interviews, and document analysis to triangulate sources and generate more trustworthy and credible data.

Data Collection

Observations focused on two objectives: 1) Capturing students' gameplay practices (including use of offline resources) and 2) capturing social interactions. We focused on the (1) content of the talk among participants, (2) the character of the social interactions surrounding the gameplay, (3) how knowledge was shared among them, (4) what meanings became taken-as-shared with in groups of players, (5) instances when players use *Civilization III* to discuss understandings of other social phenomena (and instances when they did not), and (6) occasions when cooperative or competitive play emerged. Both researchers adopted an active stance as educators in the classroom, making regular use of informal interviews to clarify observations and learn more about players' own understandings of their activities and context. Each day, we collected students' journals and inscriptions created in support of their gameplay. On most days, participants wrote a short description of what happened in a journal, noting any major game decisions they had made. We tried a variety of activities in each case, ranging from student timed-writings to having students submit questions on post-it notes, which were also used to triangulate observations.

Students were interviewed throughout the study in order to investigate emergent hypotheses, gain participants' views and triangulate interpretations. In addition, nine participants were given semi-structured interviews following the unit. We queried interviewees about their attitudes toward social studies and probed their conceptual understanding of social studies phenomena, using both discussion and performance tasks dealing with historical timescales, maps and texts. All interviews were audio-taped and transcribed.

Data Analysis

Observations, transcribed interviews, and student artifacts were combined into a primary case document. The primary data, roughly 300 pages was worked into a coherent narrative flow of events by combining relevant data from multiple sources and removing redundancy. Working through several iterations, we reduced the text through what Stake (1995) calls winnowing and sifting the data. Due to space allotments, the full case study has been omitted from this paper. Using the constant comparative method (Glaser & Strauss, 1967), we analyzed the case events based on emergent themes and patterns that bear on the original research questions, scanning the data for counter-factual evidence, competing contradictions and informally verifying the inferred patterns with the second researcher as they were established. Specifically, the analysis focused on: (1) the gaming and social practices that emerged, (2) moments of engagement or lack thereof, (3) students' displayed understandings of historical phenomena and how the game might (or might not) be remediating those understandings, and (4) the affordances and constraints of *Civilization III* as a tool for learning within this context.

Findings: Engagement and Appropriation

Learning to play *Civilization III* was a very complex process which could be described as one of *appropriation* (Wertsch, 1998), whereby participants learn not just how to use it but why – in effect, making the tool their own, which affected the practices students engaged in and in turn, the kinds of learning that occurred. Many students at initially rejected the activity, much as they rejected school-based history education or most any externally-mandated activity that was not perceived to be in their immediate best interests. Even for those students who were gamers, it took a few days before *Civilization III* was appropriated as a tool for gaming, let alone as a tool for learning history. Students all felt that *Civilization III* was very complex, perhaps too complex to learn. In addition, many students did not see how it could help them in school or real life.

It was not until day four, when students realized that they could use the game to *replay history*, using the game as a tool for exploring hypothetical history that they began to appropriate *Civilization III* (See Figure 1). The researcher drew a map of the world on the board, explaining where students' in-game civilizations were on the map, making links between the curriculum and the game explicit. The teachers suggested that students could try to reverse colonization, and make the Americas African, which intrigued students. They quickly began to play-out historical hypotheticals, such as: "Why did the Europeans colonize the Americas as opposed to the reverse?" Some students wanted to make the Americas African, while others wanted to examine Japanese / Chinese history. Other students became engaged in the game as a tool for exploring geography and spent most of their time investigating the map, locating resources, and in the case of one student, designing experiments to see under what conditions cities grew the quickest. One student simply enjoyed nurturing her civilization as one might a pet, becoming peeved when other civilizations threatened it and engaging in long, contested battles over strategic territories. Other seemed more engaged in the social aspects of the activity, describing their goals as, "playing with my friends."

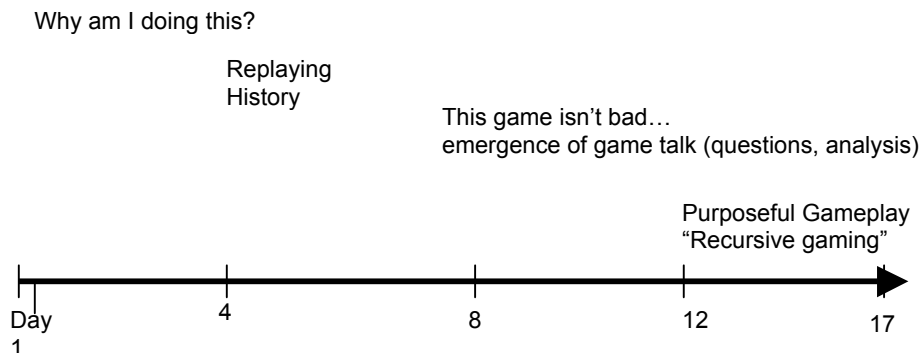


Figure 1: Outline of emergent activities when *Civilization III* entered a classroom.

Identity was central to the appropriation process. When students perceived the game as in their interests, helping them express ideas they believed in or investigate questions they cared about and defined who they were in their world, the game was more easily appropriated. When students perceived the game as an external agent, one inscribed with values different from theirs, they rejected it. When students did appropriate the game, it was only after a significant time investment in playing the game; it was a process of trying different strategies and examining the game's affordances. While games can be motivating tools, the process of appropriating games as learning tools is complex. Wertsch's (1998) describes how one cannot assume that just because an individual uses a tool that they have *appropriated* it: "Cultural tools are not always facilitators of mediated action, and agents do not invariably accept and use them; rather, an agent's stance toward a mediational means is characterized by resistance or even outright rejection" (p. 144). Building on the work of de Certeau (1984), Wertsch argues that appropriation of a tool is a productive act in that users of tools are always remaking them by repurposing them for their own use. For these students, appropriating *Civilization III* also meant making it their own, but it was not until a several days of play that students developed unique goals and, in so doing, repurposing and fully appropriating the tool.

As such, "motivation" was a complex phenomenon, occurring at the intersection of personal goals and fantasies, the possibility space of *Civilization III* as a simulation, a desire to learn world history through the game, and at times, the social pressure to complete the presentation for the other classes. This multi-dimensional view of motivation closely resembles Cordova and Lepper's (1996) proposed framework of fantasy (or context), control, challenge, and curiosity. However, the social situatedness of this activity – the way that the social context of the school and the camp played a role in students' motivation and the way that students' goals shifted and changed throughout the activity in response to the context – suggests that framing students' practice not as motivation, but as goal-driven activity may be fruitful. For these students, *Civilization III* was an endogenous historical game; studying and replaying history was part and parcel of the fun.

Findings: Fostering Deep Learning

Several taken as shared meanings arose, as students played their games and asked one another for advice, examined the consequences of decisions, and predicted how events from one game might relate to the unfolding of others. Students starting in "the Old World" (Egypt, Babylonians) came to see their long-term survival dependent on colonizing the new world for resources. This pattern was influenced by several factors, including a scarcity of resources, an awareness of the relatively unsettled lands in the Americas, the need to accommodate expanding populations, and perhaps a mobilization of historical understandings of the Americas. Second, understandings of the importance of horses in military history and lack of horses in the Americas arose as both lessons from students' gameplay and just-in-time lectures and emphasized the military importance of horses.

Two key understandings emerged specific to students playing in the Americas. The first was a hypothesis that American tribes could avoid European settlement of the Americas by sailing to the Old World, making contact with other civilizations, trading technologies, and then securing a supply of horses. At first, most students simply wanted to build a defense against colonizers (who were assumed to be Europeans). Once the Celts landed on the shores of Nova Scotia in Dan's game, students realized that they would need to trade for technologies and horses to survive. They learned that they could "reverse engineer" either Native American migrations across the Bering Strait or Viking voyages across the North Atlantic (along Greenland) to reach other continents. As students played out these experiments, a second understanding emerged: Such voyages were hypothetically possible, but gaining horses or trading technologies alone were not enough to compete with the Europeans.

The majority of basic concepts employed in *Civilization III* were new to students, and the most common student practice was asking about game concepts. In one 15 minute period, students asked about: theology, steam power, free artistry, coastal fortresses, mutual protection pacts, wealth, the corporation, embargoes, astronomy, refining, espionage, and cavalry, as well as if threatening civilizations affected diplomatic relations. These questions ranged from simple queries about terms (e.g., What is the Colossus?) or geographical facts (e.g., Is there oil in Greenland?) to functional questions (e.g., What are the effects of democracy?) to procedural questions (e.g., How do I improve trade?) to questions about the simulation (e.g., Does the game include World War I?). Who the Celts were and where they came from was a common question for students playing in North America. Old World players asked similar questions about the Babylonians, Greeks, or barbarian tribes (i.e. Mongols). A few students simply learned to read or pronounce terms; others learned rudimentary definitions and could point to an illustrative example in history. In a somewhat unanticipated outcome, students reported learning many geographical facts, such as where Egypt,

Nova Scotia, or Greenland are located. The partnering teachers were encouraged by the sincere questions that students posed – a stark contrast to their typical school behavior. Rarely, however, did students ask “why” questions about history itself. More often, teachers introduced historical narratives as explanatory devices to understand games, such as the causes of World War I, which became tools for thinking about their games.

Much of the impetus for learning came through failure. Failures in problem-solving – most notably cities in disarray, barbarian attacks, poorly balanced economies, and ineffective uses of natural resources – caused students to restart their games periodically. Early in the game, these failures were routine and predictable but caused a lot of frustration. At this point, most students had not established any goals, did not understand the game controls, and frequently perceived their failures as the result of bad game design rather than as a consequence of their own actions. Consistent with classic attribution theory (Bandura 1976), many students perceived the causes of failure as outside of themselves and became embittered by failure. Later, students began to understand the game system and saw how failure was a consequence of their own decisions. In time, students could recap game events and developed theories about why their civilization collapsed, such as a poor defense or economy. As Tony explained, “Playing the game forces you to learn about the material. It actually forces you to learn about other civilizations in order to survive.” For Tony, this meant understanding who the Celts were, where they came from, what resources they were likely to have. Andrea struggled to fend off the Greeks and subsequently explored Europe to learn where they originated. Helping students construct narratives for unfolding play and devising strategies that brought knowledge of geography or history as a tool for gameplay became a teacher’s primary function.

Failure drove recursive cycles of identifying problems, developing causal interpretations of events (such as why a civilization grew slowly), devising solutions (possibly drawing from knowledge of history or geography), implementing solutions, examining results, and repeating. Solutions to these problems became more complex as students started perceiving issues (i.e. domestic happiness) as the result of more and more factors (i.e. available luxuries, entertainment, luxuries, religion, and economics). There was a movement away from simple, one variable solutions to problems (i.e. create entertainers to make citizens happy) toward more complex solutions that incorporated several variables as long-term success in the game demanded that students examine several underlying game systems and devise solutions that leveraged the affordances of each. Restated, students realized that they could needed to design elegant solutions that addressed multiple needs. As a result, by the end of the unit, students all agreed that a major understanding was that “you can’t separate geography from economics from politics.”

Knowing what natural and strategic resources were available was a common thread for most students, and world history served as a tool for thinking about how resources would help them. The quest for resources turned many students to examining South America, a continent that they knew little about. As a result, several students spent days mapping South America and an interplay emerged between the joy of exploring a new world and learning where resources were located. Tony reported that how geography and natural resources affected his civilization was the most important thing he learned in the unit, stating, “I always knew that certain locations helped certain people but with this (game) I have a better understanding of it.”

Powerful learning moments occurred outside of the game itself, when students reflected about the interplay of history, geography, politics, and economics. As students prepared to present what they learned to other students, they attempted to classify lessons that they learned by discipline. Because geography, politics, economics, and history are all connected (in *Civilization III* as in life), it was difficult for them to discern where one domain began and another ended. Tony found it impossible to talk about the importance of the Nile River without talking about economics, which then had political implications. This became clearer as the class discussed amphibious warfare.

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| Tony: | Could be bias...could be history and politics. In a way it's history...it allows you to bombard other countries. But politics-wise you can demand stuff now. |
| Researcher: | Unifying Africa made us powerful. Dwayne, where would you put that? |
| Dwayne: | Politics and geography. I got all of these resources then I could trade them with other countries. So it made my politics stronger. |
| Tony: | It makes more production. Everyone can work faster and more efficiently...Well, in some ways, they're all related to each other. (Students nod) |
| Researcher: | We could make that one thing we learned. How would you write that? |

Tony: Well, money is the key... money is the root to everything. With money you can save yourself from war, and that also means that politics...with money, that ties everything together.

Tony argues that money relates all these factors, perhaps prodded by my encouragement to find a single unifying theme, perhaps due to his own interpretations of the game, perhaps from his own personal beliefs. The class discussed connections between geography and politics. The majority of our topics – amphibious warfare, luxuries, geography, uniting Africa – were now in the middle of the chart connecting history, geography, and politics.

Researcher: One thing we learned is that history geography and politics are all related. Why?
 Tony: Luxuries buys you money and money buys you everything. The right location gives you luxuries gives you income more income gives you technology which affects your politics. It all connects.
 Kent: Geography affects your diplomacy because it gets your more resources and affects how they treat you.
 Tony: Geography can affect the growth of your civilization.
 Dwayne: It affects your war.

The game helped Tony see interconnections between geography, economics, and politics. His idea then spread through the class. In closing interviews, he expounded on these relationships:

Tony: If you're next to the ocean, that's a good place for any city to be. It has food, water, the climate would be moderate, and that's a good place for a city to flourish. If you have luxuries around water, that brings in trade – brings in money that you can talk with other Civilizations. If you have enough money you can buy a lot of things and you can sell a lot of things.

Reflecting on what they learned through the game drew students to system-level conclusions about the game and about history. Tony then made a critical, materialist reading of the game, arguing that the game is ultimately about the accumulation of wealth which is geographically driven. This kind of reading of the game is akin to developing a Marxist, feminist, or “great man” theory of history.

Many students played *Civilization III* as an historical simulation – particularly a colonial simulation game and derived pleasure from comparing gameplay to history, affecting how learning that occurred. Although this *Civilization III* scenario was not designed to be a colonial simulation per se, many students appropriated it as such, beginning with their engagement on day 4 and continuing through their fascination with the arrival of the Europeans, or, for the Egyptian players, by their efforts to discover sailing technologies and find a route to the Americas in order to expand. Turning *Civilization III* into a colonial simulation affected the kinds of questions students asked, observations they made about their games, and the solutions they posited to problems. Students mostly read their game events off of pre-existing notions of colonization or geography, expanding and modifying their understandings of colonization in the process.

Students' emergent understandings of factors behind colonization were an amalgamation of several factors. In post-interviews students said that colonization was the result of a combination of several interacting factors (with each student having his own particular take): population density, access to strategic resources (specifically horses), relations with other civilizations, and access to global trade networks. Dan also included culture in his model of colonization; Chris privileged geography more. Bill, who played as the Bantu learned that sub-Sahara Africa was full of luxuries (ivory, gems) but lacking farmland and removed from global trade by the Sahara desert. Tony derived particular pleasure in comparing his game to history. Tony spent the last few days sailing about, examining how history played out in his world. Of particular interest to Tony was how isolated civilizations (i.e. Aborigines) developed and how nomad populations thrived in remote islands and went undiscovered into the 19th century. Tony deduced from these exercises that access to resources (farmable land and other natural resources) and geographical proximity to other civilizations were critical factors in how a civilization developed.

Educational Implications

This study suggests that games can be powerful tools for engaging learners, but that engagement is a complex process of appropriation, interacting as a relation among individuals' goals, identities, the affordances of the game, encompassing community cultures, and emergent social practices. In this case it was not until students perceived that the game would allow them to explore power dynamics and potentially reverse history that the game was appropriated. Whereas many educators (perhaps naively) assume that "games will engage students," in this study at least, playing *Civilization III* was at times engaging, and at times frustrating (or even uninteresting). Students' perception of the politics of the game and identities as learners were critical components in this appropriation process, as were local social patterns and emergent interpretations of the tool. *Civilization III* was repurposed and reshaped by players in various ways, yet its affordances also affected classroom interactions.

For most students, world history and geography became tools for playing their games, a stark contrast to how history is frequently taught. Failure to understand basic facts (such as where the Celts originated) drove them to learn. For students such as Tony, powerful systemic-level understandings emerged through gameplay, which he used as tools for understanding history. It is critical to note that this game practice emerged only after Tony had played for some 30 hours, and there were significant comparisons to be made between his gameplay and history. As such, learning occurred through interpretive cycles of reading his gameplay off of history. This learning was highly interpretive, driven by his own goals and mediated by classroom discourse. Finding more ways to integrate historical texts as resources and allow students to develop representations of understanding might further mediate gameplay away from purely learning about the simulation and toward understanding history.

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