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## Game-based curriculum and transformational play: Designing to meaningfully position person, content, and context

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### ABSTRACT

Grounded in our work on designing game-based curriculum, this paper begins with a theoretical articulation of transformational play. Students who play transformationally become protagonists who use the knowledge, skills, and concepts of the educational content to first make sense of a situation and then make choices that actually transform the play space and themselves—they are able to see how that space changed because of their own efforts. Grounding these theoretical ideas, in this manuscript we describe one curriculum design informed by this theory. We also describe a study of the same teacher who was observed teaching two different curricula (game-based versus story-based) about persuasive writing. Results showed that while students in both classes demonstrated significant learning gains, the gains were significantly greater for students in the game-based classroom. Additionally, students assigned the game-based unit reported significantly higher levels of engagement, had different goals motivating their participation, and received fewer teacher reprimands to stay on task. Both quantitative and qualitative results are interpreted in terms of the theory of transformational play, which guided the design. Implications in terms of the power of game design methodologies for schools as well as learning theory more generally are discussed.

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### 1. Introduction

As students progress in the American educational system, their academic performance decreases when compared with other countries (UNESCO, 2007). However, while many students are considered to be achieving below their grade level in schools, they often successfully complete and are motivated to perform complex tasks outside the school walls (Gee, 2003). The nation's educational challenge is not simply to engage successful students, but to find ways to create contexts for learning that are meaningful to ALL students, so that they have access to the motivations and skill development necessary to succeed in life more generally. The crisis of motivation is particularly problematic as we continually see interest in learning disciplinary content decline from grades 3–9 with school dropout rates in some areas being as high as 50 percent (Allensworth, 2005). This likely seems due to the ways that k-12 classrooms often position individual learners (as objects to be changed), content (as facts to be acquired for a test), and context (as descriptions of potential value), which proves to be personally disempowering, conceptually inadequate, and consequentially insignificant. This positioning is especially problematic for students who are disenfranchised from classroom structures that focus on compliance without rationale (D'Amato, 1992; Ladson-Billings, 1994; Lareau, 2003; Lee, 1995; Moje, Overby, Tysvaer, & Morris, 2008).

In contrast, our work is predicated on the belief that when students have opportunities to use disciplinary tools to advance personally meaningful arguments, there is a great potential for content learning to be more conceptually illuminating and personally motivating. Such assumptions have been demonstrated in terms of literacy levels, where students who are performing at very low rates in schools are showing high levels of engagement and performance when the content is personally meaningful to them (Moje et al., 2008). Our designed curriculum uses new forms of technology, center on inquiry scenarios, and leverage disciplinary content to enable students to solve socially significant meaningful problems (Barab, Sadler, Heiselt, Hickey, & Zuiker, 2007; Barab, Zuiker et al., 2007). Specifically, the curriculum that is

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investigated in this grant is called Quest Atlantis (QA). QA is an international learning and teaching project that uses a 3D multi-user environment to immerse over 55,000 children, ages 9–15, in educational tasks (see <http://questatlantis.org>). QA combines strategies used in the commercial gaming environment with lessons from educational research on learning and motivation to create interdisciplinary activities that position students as active problem solvers.

More generally, the design is grounded in the educational potential of videogames (Barab, Gresalfi, & Ingram-Goble, 2010; Clark, Nelson, Sengupta, & D'Angelo, 2009; Dede & Barab, 2009; Gee, 2003, 2004; Rosenbaum, Klopfer, & Perry, 2007; Shaffer, 2009; Shaffer, Squire, Halverson, & Gee, 2005; Squire, 2006; Squire & Jan, 2007; Steinkuehler, 2006). Described below, recent developments in the QA project were informed by the theory of transformational play—a theory highlighting the potential of videogames to situationally embody person, content, and context (Barab, Gresalfi, Dodge, & Ingram-Goble, 2010; Barab, Gresalfi, & Ingram-Goble, 2010; Gresalfi, Barab, Siyahhan, & Christensen, 2009). Specifically, transformational play involves positioning students as *change agents* (active protagonists) who must understand and apply academic content as conceptual tools in order to effectively transform problematic scenarios. Here, we examine a study design that involved the same teacher teaching persuasive writing to two comparison classes. Both quantitative and qualitative data are used to justify the value of the curricular designs at the same time providing insight into the means by which the design supported such powerful learning, especially as it relates to the positioning of person, content, and context in pedagogically useful ways.

## 2. Theoretical frame

In her presidential address to the American Educational Research Association over two decades ago, Resnick (1987) stated that the fundamental challenge facing educators is to align the gap between how learning content occurs in schools and how it is used outside of schools. Specifically, she concluded that “schooling is coming to look increasingly isolated from the rest of what we do...the packages of knowledge and skills that schools provide seem unlikely to map directly ... from school to out-of-school use.” Brown, Collins, and Duguid (1989) also stated that educators should abandon the notion that concepts are *self-contained entities*, and should instead (re)conceive concepts as *tools* that are only fully understood through use (c.f. Greeno, 1998). Beyond simply situating content within a meaningful cover story or simply providing learners with opportunities to engage authentic practices, Barab and Duffy (2000) further argued for the importance of situating people as legitimate participants within contexts in which others recognize what they do as valuable because its having situational impact in terms of a problematic issue that needs to be solved.

While such a perspective can inspire new visions of the possible, *realizing* those possibilities in the context of schools has proven to be a significant challenge. Our work attempts to realize some of these possibilities by leveraging the tools and technologies associated with online videogames (Gee, 2003; Salen & Zimmerman, 2004; Squire, 2006). We see videogames as having exciting potential because they, unlike any other form of curriculum, can offer entire worlds in which learners are central, important participants; a place where the actions one takes has a significant impact on the world; and a place in which *what* you know is directly related to what you are able to do and, ultimately, who you become (Barab, Gresalfi, & Arici, 2009; Barab, Gresalfi, & Ingram-Goble, 2010; Shaffer, 2009). In fact, in a well-designed videogame, a player can adopt an intention that is tightly coupled to the environment or situation, and requires not random but *knowledgeable* action. This supports a dynamic unity of individual, concept, and the environment in which all are transformed through participation. This sort of *consequential engagement* (Gresalfi, Barab, Siyahhan, & Christensen, 2009) is very difficult to accomplish in schools and even in non-interactive media; teachers can describe a situation, share a book, or even show a movie, but doing so does not create a context which establishes a setting that the learner can act upon (and change) in personally valued and socially significant ways.

The designs in QA leverage the potential of **transformational play** (Barab, Gresalfi, & Ingram-Goble, 2010) for immersing learners and the content they are learning in perceptually and semantically rich spaces. Transformational play is a theory meant to communicate the power of games for positioning person, content, and context in a manner that supports deep and meaningful learning (see Fig. 1). Merely playing a game does not ensure that one is engaged in transformational play. Playing transformationally involves taking on the role of a protagonist who must employ conceptual understandings to understand and, ultimately, make choices that have the potential to literally change a problem-based fictional context. Informed by this theory, the focus of our work is to examine the potential of a game-based learning environment to provide a curricular drama that positions content with legitimacy, person with intentionality, and context with

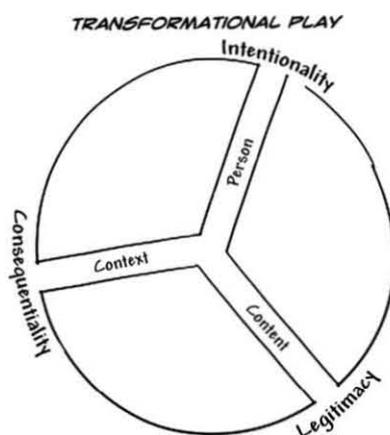


Fig. 1. Diagram depicting the core elements of transformational play and how they are positioned: person with intentionality, content with legitimacy, and context with consequentiality.

consequentiality. In this way, we use gaming methodologies and technologies to engage children in a form of play where they can try on identities and engage in actions that they would not have the opportunity to engage in the real world or with most curricula.

Beginning with person, the important role that play has for learning and development has been well documented. Developmental psychologist Lev Vygotsky (1978, p.74) argued that through play one can act “a head above himself.” In a similar vein, play theorist Hans-Georg Gadamer (1975) and games scholar James Gee (2003) stated that games allow us to stretch who we are into other selves, engaging experiences that we do not have the opportunity to do in the real world. Play pushes on our imaginations and extends our vision of what is possible (Thomas & Brown, 2009), making it acceptable and likely for a ten-year old to become a scientist, an accountant, or a newspaper writer who must write a persuasive article that determines the fate of an entire community. However, beyond imaginative positioning, virtual worlds actually establish a narratively and perceptually rich environment in which players have agency and consequentiality as the impact of their choices changes the game world and subsequent storylines (Jenkins, 2004). Importantly, players' actions also have consequence for the player, changing their status and potential accomplishments that they can achieve in the world. As such, and consistent with Dewey's (1938) notion of a transactive curriculum, in a well-designed videogame one both transforms (through the application of disciplinary understandings) and is transformed by (as one's game character evolves and they can take on more challenging tasks) the virtual world.

While such positioning of content and context are powerful, what makes this so relevant to educators is the fact that in an educational game the designer can ensure that in order to advance in the game the player must enlist academic concepts in functional ways. For example, a player must use their understanding of the concept of eutrophication in order to understand whether and why the water quality in the park is deteriorating. By binding disciplinary content within interactive narrative contexts, there exists the potential to not only change learners' understanding of the utility and value of the content, but also offer learners the opportunity to regard themselves as capable of meaningfully applying disciplinary content. In this way, we view games as extending discussions of designs that situate content in rich contexts (Cognition and Technology Group at Vanderbilt, 1990); that is, using game design methodologies and technologies and the power of play to position the learner in a world that changes in response to their actions, allowing them to have experiential (not simply projective) consequentiality and where they can play out the self (not only master conceptual understandings).

Thus, our designs provide students with opportunities to learn relevant concepts and skills, while simultaneously creating a context with which students can identify (and thus creating a rationale for their engagement) that challenges evolving understandings. In what follows, we briefly overview the results of a design experiment that led to the development of a unit on persuasive writing called *Modern Prometheus*. We then present a comparison study in which we contrasted the game-based unit in QA (see Fig. 2) with a story-based unit that also targeted persuasive writing. In sharing the results of this study, we seek to present both our grounded framework for how we designed for and supported student reasoning and our understanding of the ways the unit shaped student learning, motivation, and their understanding of the use-value of the content as well as themselves as people who use persuasive writing. Importantly, it was not our goal to simply say that there were significant differences but to account for those differences theoretically, showing their resonance with the theory of transformational play that underlies the curricular design.

### 3. Methods

Of particular interest in this study was comparing students' reasoning and engagement in the *Plague: Modern Prometheus* unit in QA to reasoning and engagement in a story-based curriculum traditionally used by the same teacher to teach persuasive argument. It is important to note that although we endeavored to have as many parallels as possible between the two curricular units, the purpose of this analysis was

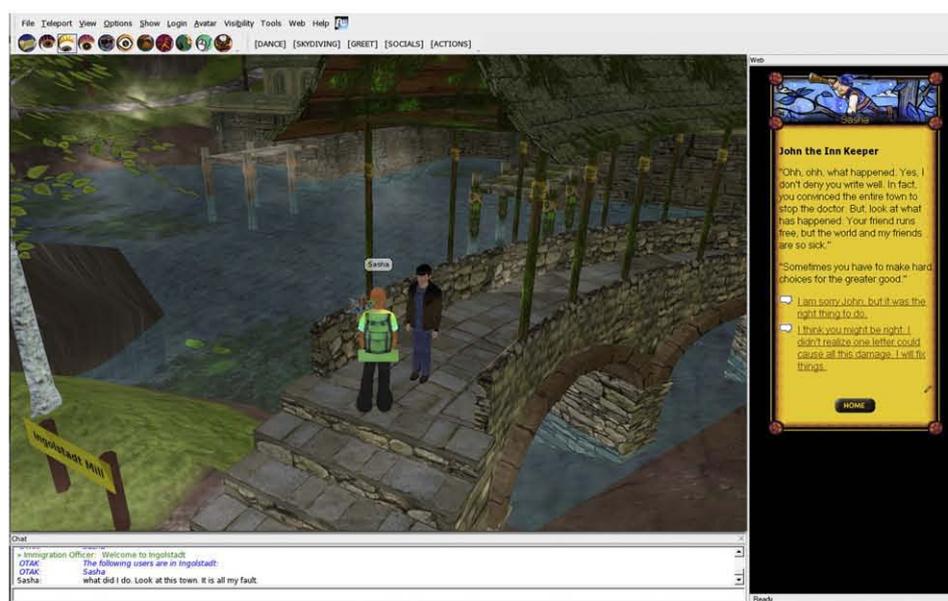


Fig. 2. A Screenshot of the Quest Atlantis gaming project in which one can see the 3D world, the chat interface, and a conversation between John the game character and the player who can choose to respond by choosing a statement indicating that he or she stands by his decision or ask how he or she might fix it.

neither to control out particular variables nor to argue that the two curricula were necessarily equivalent along all variables except for one being a game. Instead, our goal was actually to highlight differences, especially since we argue below that the core differences were in terms of the three key elements of transformational play—positioning of person, content, and context. In fact, differential aspects of the units that might be considered “confounds” (such as the fact that students are immersed in one environment while observers in another) are integrated into our analysis and not factored out, and become part of the comparison story.

In terms of data analysis, we examined pretest–posttest comparison scores, engagement scores, and qualitative characterizations of both classroom activity systems. Specific research questions were:

RQ1: Are there significant differences in terms of persuasive writing and engagement with the curriculum between students using the transformational play unit versus those using the story-based persuasive writing unit?

RQ2: In what ways were students positioned differently relative to person, content, and context in the two curricula?

While the first research question was analyzed using quantitative methods, the second research question (RQ2) drew on more qualitative data in which we interpreted students' submissions, interviews, and our observations to build tenable claims about the power of the designed curriculum in relation to the overarching theory of transformational play. Students from three classes were assigned either the game-based unit or the story-based unit. The teacher initially matched classes based on grades, and then assigned them to treatments so the higher and lower achieving students were equally assigned across the conditions. As reported below, there were no significant differences on the pretest with respect to the four classes.

### 3.1. Subjects

We conducted this research in inner-city, 7th grade classrooms with over 90% of the students in the implementation classrooms receiving free-and-reduced lunch. Students using the game-based unit included 18 boys and 15 girls, while for the story-based unit there was 17 boys and 15 girls randomly assigned from the three classrooms. Through random assignment, the game-based and story-based “classrooms” actually consisted of students from all three classrooms, each drawing approximately equal numbers of students from each of the three classrooms. The teacher indicated no differences in ability among final groupings.

### 3.2. Curricular units

Two units on persuasive writing were studied. The units were similar in terms of the ways they contextualized persuasive writing, in the way students could take on a personal role in the context of the unit, and in the amount of instruction the students received. Both units took place in the context of an emotionally salient narrative that was likely to be engaging to students. Through these contexts, students were positioned as (experiential or imaginative) actors in the narrative, as they were asked to write persuasively either from the perspective of a character, or with the goal of convincing a character. Both units required writing three essays, with the culmination of each unit being to type on the computer a persuasive essay that included a thesis with three supportive reasons and multiple pieces of evidence supporting each claim. Additionally, both units involved the same amount of instructional time (although the story-based unit also included additional time for students to read the text). The two units differed in a number of key ways, most centrally in terms of how they positioned the person, content and the context. Unrelated to the theory, the game-based unit was set in the context of an online immersive videogame, while the story-based unit was centered on an award-winning fictional novel, called *The Clay Marble* (Ho, 1992). However, directly related to the theory of transformational play, in the game-based unit students' choices actually changed the virtual world in which they were immersed, while narrative changes in the context of the *Clay Marble* could only be executed in student's imaginations. As such, students playing the game were (through their avatar) first-person protagonists in the unfolding narrative, collecting evidence to justify their emerging thesis, with their particular choices actually changing the direction of the unfolding story. In contrast, in the story-based unit students could only observe the action from the perspective of an outside reader.

#### 3.2.1. Game-based unit: *Modern Prometheus*

The game-based curricular unit that was the focus of this study is called *Plague: Modern Prometheus*. This unit lasted 12 classroom periods, with nine taking place in the computer laboratory and the other three involving writing and teacher-led discussion in the classroom. The foundation of the unit was based on Mary Shelley's (1818/2003) *Frankenstein: Or, The Modern Prometheus*, and in this unit students learn about a town that is facing a terrible plague. They meet a doctor who might be able to cure the plague, but doing so will involve the creation of—and experimentation on—a creature. As students grapple with the resulting ethical dilemmas, they are asked to use their persuasive writing skills to convince game characters to share their perspective.

As described elsewhere (Barab, Dodge et al., 2010, Barab, Pettyjohn, Gresalfi, & Solomou, in press), the mechanics of persuasive writing (specifically, the goal of connecting evidence with claims) were supported through the development of an evidence-analysis tool and a transition tool that students could use to analyze quotes and write articles. To use this tool, as students interviewed different characters in the space, they collected quotes that they thought were particularly meaningful. The tool was designed such that each quote could be applied to one of three reasons in support of a particular thesis; a quote might earn 5 points if it was aligned with one reason and thesis and only 1 point if positioned in support of a different reason and/or thesis (see Table 1).

The significance of students' decision-making was reinforced by ensuring that students came to associate their decisions and actions in the game with actual consequences, thus reinforcing the importance of being an effective persuasive writer. Students' experience of consequentiality was accomplished in several ways. First, game-based characters treated players differently based on the alignment between players' decisions and the characters' personal agendas. For example, the policeman was unfriendly to them if they chose to allow the doctor to continue his work while the fabric lady was grateful. In addition, players' core thesis statements produced a new narrative ending. Students who decided to support the work of the doctor produced a world in which the plague has ended, but the creature remains unhappily manacled to the doctor's table, and many people are disparaging of the ethical choices made by the player. In contrast, if the

**Table 1**  
Value association to two sample dialog pages from Digital Prometheus.

Assigning Point Values to Supporting Evidence in the Plague Debate	Pro argument: The doctor should be allowed to continue searching for a cure for the plague, using his 'subject' in medical experiments.			Con argument: The creation must be set free, and the doctor must stop his experiments to find a cure for the plague.		
	PRO Reasons			CON Reasons		
	Ends justify means	The doctor isn't harming citizens	The creation won't be missed	The doctor has no right to abuse the creation	Ends don't justify means	The doctor shouldn't be trusted
"As you know, as mayor my loyalties will always lie with what is best for my village. And not only that, this <b>cure will help all of society, not just Ingolstadt.</b> " (P1)	3	1	0	0	0	0
" <b>The doctor is dangerously obsessed with finding a cure</b> —it's all he cares about. And when someone's that obsessed, he's a danger to everyone around him." (C5)	0	0	0	3	3	3

player chose to stop the doctor, then the town is overrun by the plague with only a couple of survivors, including a happy creature who has been able to build a farm on the vacated land.

### 3.2.2. Story-based unit: the Clay Marble

The story-based unit was grounded in the narrative of a novel called *The Clay Marble*. This unit took 12 classroom sessions, plus an additional 45-min per day to read (or listen to) the novel. *The Clay Marble* is a novel written by Minfong Ho, who draws on her personal experience working with a relief organization on the Thai border. Ho tells the story of a Cambodian family fleeing the fighting between the rival factions of the 80's while hoping to gather resources required to return to a life of farming in their homeland. Students' understanding of the mechanics of persuasive writing was supported through lectures and presentations by the teacher, who reinforced aspects of persuasive writing skills as she assigned new activities and writing assignments. Additionally, at times students were given worksheets with activities designed to support their persuasive writing skills.

In contrast to the game-based unit, students had no means of experiencing consequentiality vis-à-vis the novel *The Clay Marble*. Students' connection to the narrative was supported through assignments that asked them to take on different characters' perspectives from which to argue for different outcomes. For example, one of the assignments asked students to write a letter to the Red Cross from a particular character's perspective, which describes her experience of what it was like to look for her parents amongst thousands of fleeing refugees, then proposing a solution to the Red Cross to help the orphaned children of Cambodia. However, these essays could have no impact on the novel itself, and thus there was no way for students to experience their recommendations. Instead, their essays were turned in to the teacher for grading. The teacher did create the unit so that students would at times have a fictional role that required using persuasive writing to convince the novel's key characters of a desired outcome. However, their actions were not requested by the characters (instead by the teacher) and did not have impact on the characters.

## 3.3. Outcome measures

### 3.3.1. Observational data

The entire duration of both units were videotaped for all classes. Each day, one camera was set up to follow the teacher as she moved around the classroom. Two additional cameras were focused on pairs of students in order to capture their conversations as they were playing the game or completing writing activities. In addition, at times the teacher camera was used in order to record informal interviews with students.

### 3.3.2. Pretest-posttest measures

A test was designed by the research team and reviewed with two classroom teachers to test persuasive writing. The items were akin to standard classroom assessments, including items from both standardized assessments and essay-type questions. The consulting teachers helped to ensure that the measures were fair to both curricula and captured persuasive writing more generally. The final test included two brief conflicting position statements that students read and responded to by writing a persuasive essay of their own, and an analysis activity of a set of passages to determine which was the most persuasive and why. In addition to these two open-ended responses, students also had three multiple-choice questions and one focused question in which they described the essential elements of a persuasive argument. Scores ranged from zero to 25, with the highest score earned being 23. In scoring student responses, two raters went through a subset of tests from students in both conditions and discussed ratings until there was 100% agreement, after which one rater scored all the tests without knowing to which condition the student was assigned.

### 3.3.3. Engagement measure

The engagement questionnaire was a version of Csíkszentmihályi's (1990) existing survey, and was administered during the curriculum unit when tasks were highly similar between conditions. Previous work by Csíkszentmihályi and LeFevre (1989) found the internal consistency estimate for one version of the questionnaire to be reliable, Chronbach's Alpha = .75. The instrument asks a series of ten Likert-

type questions about one's cognitive state, including questions such as "how well you were concentrating?," "did you enjoy what you were doing?," "was the activity challenging?" We also added a series of explicit questions about one's main reason for doing the task and whether they would rather be doing something else.

### 3.3.4. Researcher interviews

The two researchers also conducted both opportunistic and semi-structured interviews during the course of the study with students and the teacher. Opportunistic interviews were motivated by either observation of a particular event such as seeing a student expressing remorse to another student about the outcome of a particular decision, and the researcher following up with questions to better understand why the student was remorseful. There were also semi-structured interviews using a series of pre-determined questions, such as follow-up questions to the engagement measure regarding students' motivations for engaging a particular activity.

## 4. Results

### 4.1. Quantitative data

There were significant learning gains for the story-based group from pretest ( $M = 7.16$ ,  $SD = 3.72$ ) to posttest ( $M = 11.22$ ,  $SD = 4.98$ ), [ $t(31) = 8.75$ ,  $p < .001$ ], as well as for the game-based group from pretest ( $M = 8.55$ ,  $SD = 3.77$ ) to posttest ( $M = 14.67$ ,  $SD = 3.52$ ), [ $t(32) = 14.85$ ,  $p < .001$ ]. While both groups had large effect size gains (story-based = 1.22, game-based = 1.83), as would be expected from a two-week lesson with an experienced teacher, the repeated measures using Hotellings (1931)  $T^2$  statistic showed the game-based group had significantly more learning gains,  $f(32,31) = 11.03$ ,  $p < .001$  (see Fig. 3). Of importance is that neither unit explicitly taught to the test; the questions on the test were not explicitly tied to any actual narrative or explicit process of either the story-based or the game-based units. These results are especially interesting given that the story-based unit had more instructional focus on the actual mechanics of persuasive writing, and that in the time period of the unit, a number of students did not complete all the activities in the game-based unit, while all story-based students completed all of the assignments.

In terms of student engagement, we first examined the overall flow measure which was the average of the 10 Likert-type measures and which had an internal consistency of .84. There were statistically significant differences  $t(35) = 7.61$ ,  $p < .001$ , with the game-based group ( $M = 4.16$ ,  $SD = .55$ ) scoring almost 2 standard deviations higher than the story-based group ( $M = 3.24$ ,  $SD = .59$ ), indicating that students in the game-based group experienced much higher levels of flow (see Fig. 4). Closer examination at the item level revealed that 86% of students in the game-based group enjoyed or strongly enjoyed the activity while only 22% of the story-based group expressed similar levels of enjoyment. Also, when asked if they wished they were doing something else, 71% of the game-based group said "not at all," while 70% of the story-based group said "definitely." Lastly, when asked about their main reason for completing the activity, 95% of the story-based students said they wanted to get a good grade or their teacher required them, while only 34% of the game-based group stated that either of these were their reasons for doing the activity and 65% stated that they did it because they wanted to be doing it. As further evidence of student engagement, one researcher recorded an average of 10 teacher reprimands per day to stay on task a day for the story-based classroom, while there were under three per day for students assigned the game-based unit.

### 4.2. Qualitative data

Given these significant differences, we were also interested in better understanding the implementation experiences of the two units. In particular, we sought to understand the role that the two curricula play in shaping the kinds of classroom interactions that unfolded in what, on the surface, were relatively similar classrooms (same school, same teacher, same subject). Toward this end, *positioning profiles* of each classroom were constructed, focusing in on the characterization of each implementation in terms of the positioning of person, content, and context. Video and audio recordings of each day, student and teacher interviews, researcher field notes, examination of student work, and log files of in-game participation were collected and analyzed using the categories of transformational play as methodological categories from which to interpret the various forms of data. As such, these representations are ideological in that they are framed in terms of pre-defined categories (Schwandt, 2007). Using these multiple data forms combined with

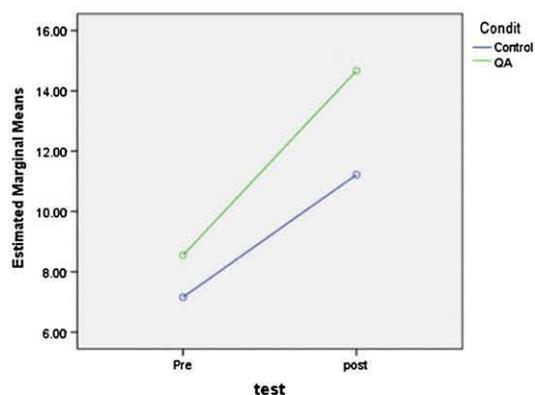
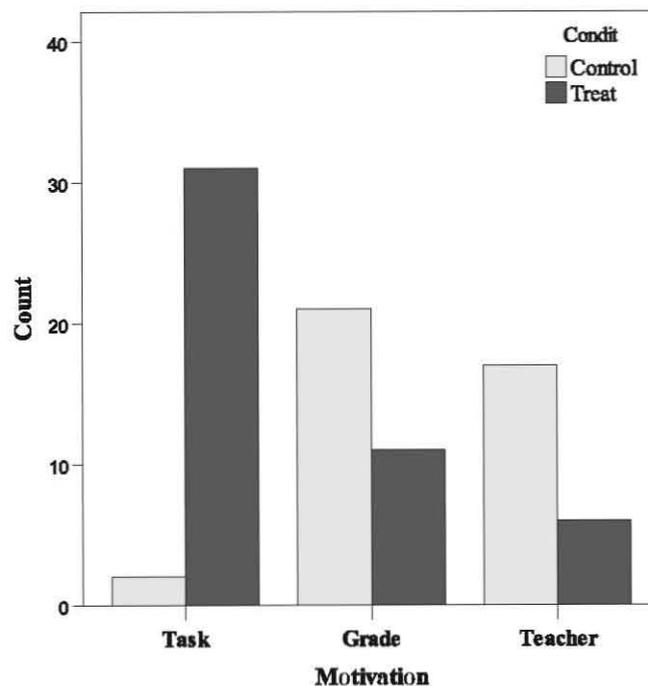


Fig. 3. Test means for the control and treatment condition from pretest to posttest, with statistically significant differences favoring the treatment condition.



**Fig. 4.** Bar graph showing that most students in the treatment condition were doing the work because they wanted to solve the task while the motivation for most students in the control group were to earn a grade or because the teacher made them do it.

the pre-determined focus on the elements of transformational play (person, content, and context), one researcher built initial claims and then worked with another researcher to interrogate the strength of these claims in terms of underlying data, and to further build illuminative descriptions of each classroom that would be useful to the core arguments being advanced in this manuscript. Consistent with other design-based research accounts (Barab & Squire, 2004; Brown, 1992), the characterizations below include empirical data, warranted claims, and particular design descriptions that collectively are intended to aid the reader in understanding both what occurred as well as underlying mechanisms that might account for *why* things occurred, in particular as it relates to transformational play.

Typical with qualitative accounts, these characterizations are not meant to be representative of all students, but are also not simply the opportunistic reporting of a few idiosyncratic cases. Instead, the two researchers cycled back and forth through the data from all students in relation to the theory of transformational play, building various profiles and accounts taken from over 20 of the students in each classroom until we settled on an evenhanded characterization that meaningfully illuminated differences across conditions and were also triangulated through multiple forms of data (Guba & Lincoln, 2005). Consistent with the tensions underlying other naturalistic accounts (Geertz, 1983), the focus was to build a reporting that had experience-near relevance to what actually happened, while at the same time had experience-distance significance to the broader theory being advanced in this paper. Importantly, we are not suggesting that this is the only interpretation of the data. Instead, the goal was to examine the data in terms of the pre-determined interpretive categories that were central to the argument underlying this manuscript and to better understand and represent how they were actualized within each classroom. Therefore, below, we provide two descriptive accounts that use particular instances to illuminate the ways person, content, and context came to be taken up within the respective classrooms. Once the final account of each class was built, it was shared and then revised based on feedback from another researcher familiar with the implementation data and with the teacher who taught both conditions.

### 4.3. Game-based unit: Modern Prometheus unit

#### 4.3.1. Positioning person

On day one of the study, students read and discussed the letter they received from their fictional mother in class before they entered the virtual world. The letter was designed to position students as having aptitude toward persuasion and persuasive writing, a skill that they would use in their game role as an investigative reporter, as well as an individual who was an insider responsible for determining the fate of the citizens in the virtual world. Here is an excerpt from the introduction "Letter from Mom:"

*My Dear Child,*

*As your mother, I have seen you grow into a thoughtful person who makes good choices. I am so proud of your work as an investigative reporter—your skills in gathering facts, examining the evidence, and writing persuasive articles to convince others have helped so many people. You will need to use all of these skills in your latest assignment in Ingolstadt...*

After the students read the letter, the teacher augmented this positioning through a discussion about the nature of their mission.

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Teacher:	Ok, if you could come up with a, come with a job description or a title of a particular job you are going to be fulfilling what would it be? Dominic?
Dominic:	An investigator?
Teacher:	An Investigator, very good. What does an investigator do? Ryan?
Ryan:	He investigates.
Teacher:	Yeah, well you can't answer a question with the same word. What does that mean to investigate?
Wale:	Look for clues.
Teacher:	Look for clues. Sydney.
Sydney:	You have to find clues in order to find out what people are talking about.
Teacher:	You're going to search out the reason why there is a problem. Yes: who else? Who else (the teacher looks around the room). Other side of the room. What does an investigator do? Murray
Murray:	Investigates cases and cities.
Teacher:	Investigates cases and cities?
Alex:	Um, somebody who finds clues and tries to piece together mystery
Teacher:	Ok, could be people who find clues and put together a mystery. Alright Good...Yes..

---

This discussion helped the students perceive and solidify their position and goal of investigative reporter (opposed to student) as they began their work in the virtual world. Students then logged into the virtual world and were immediately teleported to the plagued town. Here, players made their way through the town square, meeting each of the major townspeople and gaining a sense of the desperation regarding the plague. They interacted with fictional people who had lost loved ones, family members, and friends. This established the player as an insider to the story, and also more generally as a visitor needing to care for the well being of others.

When interviewed, students described their intention and position in the curriculum as people who were on a mission to help change Ingolstadt (the virtual town). When explicitly asked, "What's going on in Ingolstadt?" over 80% of students described the conflict or situation in terms of a first person role, as a protagonist, who was there to fulfill a mission with the goal of finding a cure to stop the plague.

---

Jose:	I'm pretty much there to find a cure and stop people from dying.
Alexus:	Um there's like this plague and people are getting sick and possibly dying and we're trying to go and um like people to stop the plague.
Sarah:	Well, I want the whole town of Ingolstadt to be better because I want him to find a cure...
Symone:	I'm an investigative reporter, and my mother's name is Maggie, and she lived in the town where I was raised. So everybody knows me because of my mom know where I work at in the big city and all that junk. So, I come here and meet Scoop, and he's like the head of the newspaper and basically what I'm learning from this is persuasive writing.

---

Importantly, this was not simply a fictional role, but a role that required learning about and successfully utilizing persuasive writing to change a socially significant and personally engaging problem. Most students showed little difficulty with taking on this fictional gaming role, although they did struggle with how they wished to use their sense of agency on the narrative:

---

Int:	So, what did you choose to do?
Jessica:	Um, I'm for the doctor too...and I'm with his experiments but I'm still kind a confused because hearing from the creation, a.k.a. Jimmy, it's like, he's (Dr. Frank) doing him wrong by just trying to get a cure.
Int:	So how do you decide what is the right thing to do here?
Jessica:	Well, I want the whole town of Ingolstadt to be better because I want him to find a cure but I want him to do it in a nice way to heal Jimmy.

---

We also see this struggle in the final submitted essays in which students, after collecting evidence for their particular thesis (either in support or against the doctor), had to justify this position. Below, Timone chose to convince the town to allow the doctor to continue running his experiments:

Timone: Speaking of loved ones, people are suffering, in many ways. Not just in a physical way, from those who caught the terrible plague. There is emotional suffering, for those special people we've lost already, and financial suffering. The town is in decline! Friends and family are dying. People are heartbroken over them. And people are leaving. And before long, through these three types of suffering, Ingolstadt could become a ghost town. To let the creation go would be one more citizen in a slowly dying town. So, to those who already support Dr. Frank, keep going. You're helping Ingolstadt slowly work its way back up! Help the doctor, help him work for a cure for the plague. You could be the last little push *we need* to get us working as a team, as Ingolstadt, to finding a cure. (Italics added)

This complexity, in which there is not simply one straightforward answer, is in part what makes the game-based curriculum so captivating and allows the player to experience that their choices have meaning in that their decision is not simply objective or standardized, but an action uniquely determined by their personal value system; elevating the experience from one of validation of a pre-determined outcome to more truly experiential and personally transactive.

#### 4.3.2. Positioning content

The above portion of the characterization drew on data to illuminate how the game-based curriculum positioned students as having a change agent role on the unfolding storyline. However, if one assumes that there is a relationship between content and context (Greeno, 1998), such positioning also has the potential to change the meaning of the content to be learned. As stated above, plague was designed so that students needed to use the content of persuasive writing to write an influential essay that had the potential of changing the town. The main activity for students was to gather evidence from interviewing townspeople (non-player characters) in order to develop their thesis, either in support or against the doctor being allowed to continue his experiments. Toward this end, students collected quotes in support of their thesis, assembling them into evidence to "beat" the in-game editor tool, and then using them in a compelling essay graded by their

teacher. If students collected unresponsive quotes, the in-game reporter that we named Gracie would send them back into the field to collect stronger supports. Midway through the implementation, we observed a girl named Sydney who was recollecting her quotes because Gracie (the game character) had just informed her in a dialog page that only 4 of 10 original collected quotes supported her thesis, and she need to reevaluate existing quotes and discard unrelated quotes. A researcher who noticed her staring intently at the tool asked her what she was trying to figure out she responded, “When I collect the evidence I can see how it fits with my supports and ...” Another student observed staring at a page with the cursor hovering over “collect this quote” for an extended period commented to another student who told him to just hit the button, “it is my last quote, and I want it to be a good one so I can write my essay,” evidence of the thoughtfulness in which they engaged the tool.

Whereas the in-game editor tool provided procedural accountability, the teacher also engaged the narrative in providing consequential accountability, meaning that she gave feedback not simply in terms of procedural accuracy but in terms of the narrative framing. Below are examples of feedback from the teacher who took on the fictional role of Mother in her reviews:

Review Example 1: My Dearest Child, I am very concerned about your welfare in Ingolstadt and how you are helping Dr. Frank. Your very short sentence is not enough to calm a frantic mother's heart. Please read the directions for this quest carefully and write me soon. Your Mother

Review Example 2: My Dear Child, I received your note this morning and I am a bit confused about what is happening in Ingolstadt. I am asking you to please re-write it in friendly letter format and to remember that you are writing to me, your mother. Please read the directions above to make sure you include all the information I will need to explain the situations in my home town. Mother

Here, we see that the teacher is attempting to play along with the fictional setting, reviewing persuasive writing not as a set of abstracted skills, but in terms of its narrative value as she review student essays. As further evidence of student appreciation of the consequential value of persuasive writing, toward the end of the game they were confronted by Dr. Frank who states that his work as a doctor is far more important than the work of a reporter. In their responses, students reveal their understanding of the extent to which persuasive writing is an influential tool for change.

Matthew: Doctor frank, persuasive writing can change the world in many ways. The way people write persuasive writing makes it powerful!! For example... when I wrote my persuasive argument about wearing school uniforms i wrote to CONVINC people!! If you have good evidence supporting what your thesis is (your side you are on) then people will listen to you even if it a really bad idea.

Emily: Writers have a special way with words. By using certain facts and stringing them together, we writers can change people's minds, give them newer, different perspectives of things. Strong facts and good transitions are essential, and a good writer can change even the stubborn minded people! Persuasive writing could probably convince leaders to change their minds about something stupid or dangerous, or bend or change a law about something.

Crystal: Persuasive writing is very powerful. It can affect almost anything. Especially if you have good supporting details and evidence to support your main topic. For example many people have written about how to help the environment. Because of that, more people are recycling, reusing anything that is possible to be reused, they are even doing things as simple as throwing away trash on the streets. With persuasive writing, you can get your readers to see your side of the story and how you look at things. Maybe even change how they feel about the topic.

Each of these quotes is an indication that students appreciated the power of persuasive writing as a tool for bringing out particular outcomes. We also see evidence of how students drew on their own experience in-game where they were able to be someone who used persuasive writing as a powerful tool.

#### 4.3.3. Positioning context

In terms of positioning of context, game play involved a mission in which the focus was to make decisions and take actions that literally changed the context—a context that was intentionally designed to be changeable by the player. Elsewhere we have discussed the power of videogames for experiential learning in that the player continuously rotates among their role as author, performer, and audience (Barab, Dodge et al., 2010). This positioning of player as first-person protagonist who determines the unfolding narrative was easily and eagerly taken on by the player. At times this meant that the player actually changed the outcome of the story (players lying or the town being saved from the plague), and at times this simply meant that the storyline required player participation to advance. Below is a transcript of an interview where a girl was inferring how helping Dr. Frank would be a right decision for Ingolstadt. Notice how she insinuates that Dr. Frank and other the citizens of Ingolstadt are not fantastical characters, but ones who seem to have volition and are susceptible to this girl's influential words.

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Int:	What are you deciding to do right now?
St:	Umm, I'm writing for the doctor.
Int:	Why did you choose that?
St:	Because I think that is the only way to cure the plague, and he really wants to do this and the “subject” has living qualities but already died and he lived his life so if he (Dr. Frank) is the first to find the cure then he could be technically the first cured and then he could spread the cure.”

---

This potential of the virtual world is in part what makes these spaces so valuable for supporting authentically contextualized learning in that they allow teachers to situate the player as an authentic member of a fictional world who has agency in changing the fate of the world—especially if the player is an effective persuasive writer.

This positioning of context seemed real to students; as indicated in the quotes from essays below, students treated the context as a situation that they were going to change.

Kristina: The doctor has no right to abuse the creation just because he created him. It is just like animal cruelty. When you abuse your pet or any other animal is a crime. People care about animals who are being hurt and care even more about other humans that are being abused like Tim [the doctor's creation]. To sum up, the creation must be set free, and the doctor must stop his experiments to find a cure for the plague..... In conclusion, the doctor's experiments are not justified and should be stopped. Tim deserves better than what he is getting.

Max: ... All in all the doctor should be able to continue his research. He can stop the suffering that people are experiencing. The cure will help all of society. The doctor cares about the town and its well being. So let the doctor do his work and there will be a cure.

This ongoing positioning of the narrative as unfolding in relation to player actions, positions the context as having *experiential consequentiality*—a type of consequentiality that is strikingly different than many problem-based materials that offer more speculative consequentiality or simply a grade as consequence. Below is a transcript from an interview with a girl who had just completed the final mission in the *Modern Prometheus* Unit. In this interview, she explains that from seeing all the people dead, a result from her choice of thesis, she was reconsidering what it would have been like if she would have allowed the doctor to continue his research.

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Int: What did you find out?  
 Girl: Well, I found the creation and Tina and Gene  
 Int: Do you feel that you made the right decision for doing that?  
 Girl: I don't know. I talked to the Fabric Lady and she said that people aren't caring about each other anymore, for the good of Ingolstadt. It's kind-a sad because people are starting to die. Henry died and the Constable is coming down with it (the plague) I feel that a lot of people are dying.  
 Int: Do you feel responsible for their death?  
 Girl: Kind-a, *because of my paper*, they went [thesis was to stop the doctor] I feel bad for the Doctor.  
 Int: Really?  
 Girl: People kicked him out of his lab and his house and ... Because they wanted to stop him from putting in his experiments. And I think they were too extreme

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What is interesting here is the expressed remorse at the consequences of her decision to write a persuasive essay that was printed and resulted in the doctor's being forced to discontinue his practice. This same deep reflection was also evident in the final mission Quest when students had an opportunity to justify or recant the value of their previous decision. This student chose to strengthen their argument by writing:

Tienna: You cannot sacrifice one of a few in the efforts to save many because ends don't always justify the means. The creation was created by Dr. Frank and was created for the purpose of sacrifice. The creation was given no choice on whether or not he wanted to be experimented on. This creation doesn't even *want* to be experimented on but he **has no choice** because of Dr. Frank refuses to grant him any. In addition to the cruelty, the doctor, as you can see, conducts experiments without getting consent. Whether or not you wanted to do something or not Dr. Frank would do **what he wanted no matter WHAT you said**. There could be no telling on what he would do to you without your choice, or without your knowing.

The important point is that the gaming context, one that first requires student action to progress and then literally changes based on their choices, allows for a sense of experiential consequentiality usually absent in school curriculum.

#### 4.4. Story-based unit: Clay Marble

##### 4.4.1. Positioning person

The students were reading the book *The Clay Marble*, with the assignment being to take on the perspective of one of the characters and to write a persuasive essay convincing one's brother who was a soldier to return to the village to help the family. Students were told the goal was to prepare them to succeed on the upcoming tests, and that the curriculum would help them earn a higher grade. In her instruction to the whole class, the teacher told students that they need to spend time *practicing* essay planning, drafting, and revising because of an important upcoming state issued standardized writing test (EOG).

You have a writing test coming up, it is right after the EOG's and that particular writing test will be on the computers, so I want to give you practice planning and drafting, revising on the computers... It's going to be a very quick turnaround because the writing test. You have 70 minutes to complete an essay, and we all have to strive to work up our stamina, get our brains thinking, get our thoughts on paper, and be able read through that and put together a very good persuasive piece we're proud to turn in.

The curricular materials did not support the adoption of a meaningful role by the student as anything other than a student. This is because the primary material was a book, and this book was not explicitly developed as pedagogical material that established a need for a persuasive argument.

The teacher's layering on a persuasive writing requirement in which students adopt the role of a character attempting to convince one's brother to return home is an example of an explicit attempt to create such a feeling of personal engagement. Below is an excerpt of the assignment passed out by the teacher:

Dara (fictional character) is notably disturbed by this decision to use rice seed to feed the army. *From her perspective*, write a letter to General Kung Silor stating her positions about the decision to use rice seed...(Italics added)"

However, researchers observed that the teacher had to work quite hard to keep students aligned to their assigned position as persuasive writer, especially when compared to students in the game-based class who needed little reminder of their task. As evidence, researchers counted the number of teacher reprimands observed in which the teacher reminded students to focus on the assigned task. An example of such reprimands where when the teacher said, "Shssss, quite down...you're supposed to be working on your assignments not talking", or

she changed her register mid sentence of instruction and say, “No, no, no...when I’m talking your listening” or “you need to focus on writing your essay,” or “you need to write well because the test is next week.” On five random days in which we had one researcher explicitly count reprimands, the teacher had to give reprimands to over ten students each day (sometimes one student would receive multiple reprimands) in the story-based group, while less than three students received reprimands each day in the game-based group.

To investigate further why the teacher had to work harder keeping students on task, we interviewed 19 random students from the story-based classes. We wanted to gain student perspective of how they saw themselves positioned by asking them why there were doing these assignments. At a general level, and consistent with the quantitative data reported above, 16 of 19 interviewed said they were completing the assignment to get a grade or because it was required by the teacher—although most also stated that they thought it was a good story. Below are two excerpts from two different students explaining their rationale for engaging in the task.

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Int:	Is this an interesting story to you based on what you’ve read and heard?
Ernie:	I mean, its like alright. It’s not something that I would read personally because I’m pretty much a sports fanatic. You know? But it’s for a grade so...I mean...
Int:	So you want to make sure you get a good grade then.
Ernie:	Yeah
Int:	So would you say this is fun for you? On a scale from 1 to 10, how would you rate what you are doing...
Misty:	So is it helping us? Is that what you’re asking?
Int:	No, is it fun for you?
Misty:	No, I would say, 2, 2 and a half, because it’s not fun, but it helps you write. So its worth it.
Int:	Do these exercises kind of help you become a better writer or does it more discourage you?
Misty:	It helps, but I want to get feedback on how I did on them before the test, and what else I can work on.

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The quantitative comparison along with these and other qualitative data supports the claim that in terms of the core narrative, the students in the story-based classrooms were positioned less as *change agents* and more as people completing an assignment with the goal of the curriculum being to prepare them to succeed on the upcoming test.

#### 4.4.2. Positioning content

Although students were engaged in composing an essay as their assignment dictated, the content was positioned primarily as necessary for earning good grades and succeeding on the upcoming state tests, emphasizing its exchange value. The most explicit and obvious legitimacy of the content was in terms of their procedural competence or eventual grade. This was evident in the following statement from the teacher:

We’re going to be drafting up your essay on the computer. You’re doing to draft it up, you’re going to revise it. And um you’re going to edit and revise it. When you feel that you have a sufficient product, one that you would be proud to be graded on you’re going to email it to me. Ok, and I will read it and if you need corrections then I will send it back to you.

An essay worth being proud of was later explained by the teacher as “having followed all the directions from the prompts, taken the proper character’s perspective, ... supported the thesis with facts and other examples from the book, was neatly and logically organized, ...spelled and punctuated correctly.” These expectations and rules for successful participation were layered on the activity by the teacher, and there was nothing in the novel itself that supported such persuasive writing or even positioned the student in a meaningful role with agency in terms of the narrative.

As an example, when Julia was asked by a researcher to consider how persuasive writing could be used outside of school, she student responded by saying the curriculum would only help her the next time she was given a similar assignment:

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Int:	What would you say is your main motivation for getting these assignments done?
Julia:	My grade.
Int:	Really? Can you tell me what sort of out-of-school experiences or out-of-school value would this have? To know how to write persuasive essays?
Julia:	Um...this one will let me know that I have to listen to the book because if I don’t then I know that I won’t be able to write an essay. Because I didn’t listen to the first book, and I’m lucky that the first chapters were easy enough for me for me to be able to write it, so I started listening to the book and that’s what started me to get through the rest of it.

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While most students when talking about doing the assignment for a grade referred to the assignment in such negative terms, below is an excerpt from an interview with Tianna, a motivated student who articulated how good grades are essential for her future.

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Int:	Why are you doing this assignment in here?
Tianna:	Because we have a big writing test coming up and they’re using them on computers and she (Teacher) wanted us to get use them on computers and not just writing like we normally do.
Int:	Do you enjoy this assignment?
Tianna:	I do because it helps me like; I know it’s going to help me do better on my writing test. I think I will be very prepared this time.
Int:	Tell me about the importance of these tests to you?
Tianna:	They’re very important to me because I have a goal in life and I would like to become a lawyer. I’m trying to learn as much as I can and with writing. My dad, since he’s a lawyer, at the time, I see him writing all these things he has to do with writing so I see that I need to take these things seriously if I want to reach my goal.

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Importantly, it might be argued that this future use is a more legitimate application of the content than, say, to save a fictional village from a fictional plague, even if in the fantastical scenario it is more consistent with the use of persuasive writing in the real world. As D'Amato (1992) notes, a *structural rationale* for engaging, which involves being motivated because of one's recognition of the future importance of learning content, is sufficient for some students who see themselves as having a future for which learning this content is relevant. However, for most of the students in this classroom, college was not a guaranteed option according to the school records and such positioning was arguably not sufficient for motivating content learning. Thus, it was important to support the development of a *situational rationale* for engaging, in which students view their engagement in classroom activities as a means of maintaining valued relationships with teachers and peers, and of gaining access to experiences of mastery and accomplishment.

Another example of the lack of meaningful engagement that provides insight into mechanism was revealed in an interview with Jimmy, an African American student who was observed by researchers as not engaging in his class assignments. He was observed singing out loud to gain the attention of his classmates, spinning in his chair, and consistently asking his teacher to go to the bathroom. Researchers recorded that the teacher worked very hard to reposition Jimmy away from his desired role of peer entertainer, back to a traditional student school role. From our initial observations it appeared that he did not like reading and writing or did not know how to write a persuasive argument, thus the justification for his lack of compliance. But our interview with him revealed a different story, with Jimmy stating that he enjoyed reading and writing and had just finished reading a book at home.

I like writing stories... and I like reading about like stuff that is challenging....Like murders and forensic files from police cases.

Further, when we asked Jimmy about what makes a good persuasive argument it was clear he knew what the correct elements were:

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Int:	In your opinion what makes a good persuasive argument?
Jimmy:	How you write it, and what's it's about, having the right things in it.
Int:	What are some of those right things?
Jimmy:	Like sentence starters, good grammar.
Int:	Ok if you have a list of sentence starters and make sure it's punctuated correctly, then that's all you need to write persuasively?
Jimmy:	[Shifts his posture], Alright, you've got to have evidence to have good persuasive argument.... (Gives a story) Say there's a beach and it's over crowded, and where's all the cars parking at, and you got to write like good evidence why you shouldn't want them (cars) there because it's overcrowded.

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When asked what this motivation was for doing the *Clay Marble* assignment he stated: "Because I want a good grade on my report card." Consistent with the exchange value motivation common to many middle-school classrooms, Jimmy was not alone in his rationale for doing the assignment. As stated above, of the 19 students interviewed, 12 students said they were doing the exercise because they wanted a good grade, 4 said they were practicing for the upcoming standardized writing test, and 2 said because the teacher told them. Only 1 student of 19 students said they were doing this exercise because they were interested in learning about the Cambodian culture, the core focus of the writing assignment.

#### 4.4.3. Positioning context

In terms of the positioning of context, we observed a type of speculative consequentiality with respect to the immediate narrative context. This was in part because the book was not designed as an object to be changed, but simply as a narrative to help the reader appreciate the tensions that Cambodian families experienced around the war. Based on this novel, students were expected to take on the role of one of the characters and write a persuasive argument. The curriculum prompts contained explicit direction as to whom the essay should be addressed to, what is the main idea/perspective which the audience needs to be persuaded toward, and from what character's perspective does the student need to take. Similar to the game-based unit, students were expected to find details that would come to serve as evidence in justifying their later argument. To support such work, the teacher created writing prompts to focus them on their locating relevant details. Here is an observed interaction among students and teacher with respect to that activity.

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Cameron: (To teacher)	I don't understand this. What that is right there (gestures toward his prompt)
Teacher:	What are the details from the first six chapters that make Dora feel hopeful about being in the refugee camp?
Cameron:	What was the last chapter that we read today?
Teacher:	Your not using what we read today.
Cameron:	No, I know, it's just that I get all the chapters all mixed up.
Teacher:	6, 7, 8 is what we read today.
Cameron:	Oh, ok
Teacher:	Now, do 1–6.
Cameron:	ok
Teacher:	OK, this is the first few days in the refugee camp. What are some things that happened in the refugee camp that make her happy, um that make her feel like things are going to be ok....
Cameron:	Ummm....so

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After the teacher walked away, another student, Alexis, asks Cameron to help:

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Alexis:	No, can you help me? ...
Cameron:	Ok, you have to have, what 5 of um? (glances at his prompt) Like the food truck is one of them.
Alexis:	I put the food truck...
Cameron:	Than that is two different things. How many do you have?
Alexis:	I have six
Cameron:	You have six of them? What? (Gets up out of his chair and walks to Alexis desk. As soon as he approaches her, she hides her prompt pages away from her) No you don't you little liar, you only have one (returns to his seat) If you had all of them, then why are you asking me?
Alexis:	(Walks over to Ernie) see I have six.
Ernie:	No, what are you talking about?
Cameron:	You're going to have to put a little bit of description, you're supposed to put a little sentence or something. Like say, Dora was happy when the food truck came, blah, blah, blah. When she meet her new friend, blah, blah, blah.
Ernie:	Oh yeah, when she met her new friends (saying this as he writes it down on his sheet)
Cameron:	Yeah, whatever.

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Students helping each other was more commonly observed in the game-based classroom, where students would talk about the narrative and help each other navigate around the world, even discussing the impact of particular choices. Numerous collaborative interactions were observed in the game-based classroom, as opposed to very few in the story-based classroom, with none observed that involved making sense of and impacting the narrative. Instead, they were more of a procedural nature such as “will this count as evidence?”

Classroom discussions in the story-based condition primarily consisted of the teacher reviewing the nature of the assignment and not articulating the importance of their role on the narrative. For example:

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Teacher:	What does our thesis statement tell our audience? That position statement? It is also called a thesis statement...
Student:	Oh, um, it tells the purpose of what...
Teacher:	It tells your audience your opinion. Right? And why you feel that way. Correct? And in order to support that position statement you need to come up with.
Student 1:	Details...
Teacher:	What things in your body of your essay?
Student 2:	Reasons and supporting....
Teacher:	Very good...
Student 2:	..details
Teacher:	...why you feel the way you do and supporting details to support every one of your reasons. Correct? Alright good job.

---

This is not to imply that the story was uninteresting; in fact, the class as a whole was engaged in the novel with students sitting fairly quietly as it was read in the morning. However, there were almost no instances where the researchers observed students referring to it as a context that required any meaningful action from them. In fact, in the morning students simply listened to a recording of the novel and in the afternoon they worked on their essays. While details of the story were enlisted in their writing, there was no relationship between the work they did in the afternoon and the way the story in the morning progressed—further demarcating their activity as having little narrative consequentiality.

As such, there was little experiential consequentiality except in terms of their potential grade. However, and with that said, we did witness speculative consequentiality in the assignment with students writing from the perspective of the assigned character and submitting an essay in which they were trying to convince their brother to stop being a soldier and come live back in the village where his family needed him. Somewhat surprisingly, given our theoretical perspective, these essays were punctuated with emotion and contextual detail:

Germaine 1: Sarun, I believe that you joining the army is a horrible thing for you to join. I know you recall the time when our village got destroyed by the army. Think about how you felt. Think about the way all of our family felt. It was a devastating time. So I ask why? Why go do something to other families that you would hate for someone to do to you. Our family has already had to go through this, and so once again I beg you to please come home and stop doing something that you know is wrong.

Latisha: We are all very proud of your dedication to Cambodia. It takes a brawny man to sacrifice his life and battle in war. But one thing that you fail to understand is that you have a family and this is not only about you. We can get out of here so that you and Nea and the family can build up on our relationship. It will be very hard to raise Baby when shotguns and bombs go off. We don't want his life to be exposed to war. Remember when we first arrived here. We were telling Nea and Jantu about our village and how we promised to take them there to live a happy life. Although we already lost Jantu, it's worth a try to keep that promise with Nea.

Haven't you seen and heard all of the people that have been injured and hurt in this war? You being apart of this war is putting you life at risk. We don't need to loose you too. We need the man of the house to still lead. If you leave with us you don't need to worry about fighting or loosing your life.

Suran, I am begging you to please let us go home. It is not only us looking up to you, but you are your own controller and we need you to make to right decision. We all need to go home because we have reached our dream and now we have to live it be leaving. I hope you come with us.

At some level, we expected the layering of the assignment to result in less emotive and immersive take-up of the narrative context. However, when one also considers the amount of continual teacher prompting and student self-reports about their motivations, one starts to gain a perspective that this was simply students playing their role quite effectively in that they were providing the teacher what was

expected—what D'Amato (1992) refers to as a structural rationale as opposed to situational rationale. In other words, student consequential enlistment and engagement with the narrative in relation to their final essay appears to be more procedural in nature.

## 5. Discussion

Looking across these two 7th grade classroom conditions, we see not only statistically significant differences in learning and engagement, but very different positioning of person, content, and context. The first type of positioning we examined in terms of the two classrooms was person. Our data demonstrate that for these inner-city students we were able to establish a space in which they felt they had an important role, becoming an investigative reporter who had to use their persuasive writing skills to create a warranted thesis that convinced others of their perspective. Focusing on person, while not all students took up the role to the same extent, the majority of students in the game-based condition were positioned as change-agents who were uniquely skilled to persuade and care for others in order to help resolve the deadly conflict in Ingolstadt. In contrast, the primary role for students in the story-based curriculum solely involved evolving their skills as a persuasive writer. One might argue that in the story-based unit students were positioned as *objects to be changed* and in the game-based unit they were positioned as *change agents*—an important potential of game-based curriculum.

We view this latter positioning as emerging through the technological affordances of well-designed videogame play. Consistent with previous scholars such as Vygotsky (1978), Gadamer (1975), and others, we view play as having rich potential for supporting deep engagement and rich learning, allowing the player to act a head above themselves as they play out new possible selves. In particular, through the establishment of fictional worlds, children can engage in storylines otherwise not possible in their real world. In a game world, a designer can artificially create a narrative context that allows players to be protagonists in a storyline that is pedagogically manufactured to require disciplinary expertise. Allowing even young children to become scientists, historians, or investigative reporters whose work has consequence on a context is one of the powerful opportunities that game-based curricula can afford. By designing the game world to be pedagogically informative, play is not simply for enjoyment, but instead provides experiences to children that involve realizing the potential power of academic content in accomplishing desired goals. Such opportunities are often absent in traditional curricula, which are implemented in the context of a classroom with the goal of earning a high grade.

It is also in this way that game-based curricula allow for contextualizing disciplinary content by providing narratives that require the application of disciplinary content in order to be solved. In the game-based unit, persuasive writing provided a tool for the transformation of a socially significant problem as opposed to an end in itself. Sitativity theorists have now argued for two decades that *how* one comes to know something changes *what* one comes to know (Brown et al., 1989; Cognition and Technology Group at Vanderbilt, 1990; Lave & Wenger, 1991). So, for example, in this case, learning persuasive writing to transform a problematic situation as opposed to scoring highly on some future test transforms it from a content to be acquired to a tool to be applied. Here, we additionally argued that such positioning changes the role of the student and ultimately how the student comes to consider context.

Focusing on content, our observations indicated that for the game-based group, persuasive writing was positioned as a tool that possessed *use-value* in that it was the means to resolving the town conflict. In contrast, the story-based group uptake of persuasive writing was positioned as having *exchange-value* in that it could be exchanged for a future grade. The narrative enlistment, for these students, was simply a storyline for thinking about the meaning of the context as opposed to a problematic situation that actually established and was transformed through application of the content. More generally, there were naturalistic relations among person, content, and context in the game-based unit, creating narrative congruity, as opposed to the more artificial relations of their role of student, the novel, and their assignment of writing persuasively. Additionally, in terms of motivation, the goal of transforming the fictional world was consistent with their immediate experience as opposed to doing the work for some promise of a future payoff of doing well on the state standardized test. The idea that one is positioned as a student with the payoff of some future grade or test score in the hopes of college obtainment is motivating for some students, but not for many, especially those who are disenfranchised from schools and do not see themselves as having academic futures (D'Amato, 1992; Ladson-Billings, 1994; Lareau, 2003; Lee, 1995; Moje et al., 2008; Ogbu, 1978). Returning to our initial theory, helping students appreciate the functional utility of the content they are learning beyond a grade is the focus of the transformational play theory that underlies the design of the game-based unit.

As reminder, playing transformationally in our work involves positioning players as individuals with a role in which they use conceptual understandings to make sense of and ultimately inform decisions that transform a partly fictional context. Focusing on context, it was clear that students felt that their actions were important to the fictional people of Ingolstadt. They saw themselves as having to make decisions that affected the town's future, with the teacher even signing some of the submissions as if they were being reviewed by a fictional character. Changes between iteration one and two were explicitly targeted to create a greater sense of consequentiality, with players' choices being taken up and referenced by game characters. Somewhat ironically, it might be argued that the fictional consequentiality afforded by the game play was more "real" in terms of legitimizing the content and the student than was the real world potential of doing better on a future test. This was in part because of the design decisions we made to more meaningfully position context as transformable, but also because of the ways the content of persuasive writing was positioned as the necessary tool for achieving such a game transformation.

## 6. Implications

While Dewey (1938) and others advocated for a more experiential education, such pedagogies are often dismissed as being impractical given schools' emphasis on gains on standardized tests. However, with properly-designed educational games, the educational system might be able to provide "designed" experiences that are semiotically meaningful in that children are positioned in personally and socially important ways at the same time they must understand particular knowledge in order to succeed. This is because with the fictional world, it becomes possible to position even an eleven year old as a reporter with the fate of a town in their hands, or as a scientist determining the fate of a park (see Barab, Zuiker et al., 2007). Importantly, as demonstrated in this study, by constraining the game rules and task choices in pedagogically useful ways it becomes possible to have rich experiences yet also be prepared to score highly on tests using items that are not specific to the learning experience. In this way, we view games as providing a curriculum for the 21st Century, one that moves beyond simply situating academic content and additionally positions learners and the spaces within which they interact in transformational ways.

To be clear, transformational play is not simply a theory about designing contexts in which players have transformational potential. It is a theory about the need to establish curricular experiences that position non-experts as change agents who, through their successful application of conceptual tools, can have experiences involving actually changing contexts at the same time they come to see themselves as people who successfully use academic experiences. Somewhere in this country's desire to improve all schools, we have created systems in which content simply exists for its exchange-value of earning a high test score, and not as having meaningful use-value of its own because of its functional utility on the world. The implications of this study are that properly designed educational games can address the crises of content meaning that we see as plaguing our schools, rewriting the narrative of content as having functional value in the world and providing students opportunities to see themselves as the type of person who can and has used such content to achieve personally meaningful and socially significant ends. While we are not advocating that all schooling should take place in the context of videogames, if we can provide students with three weeks a year in which they engage in such transformational play, by the end of their academic career they could have 36 weeks of experiential learning—a goal that is quite achievable even in the context of our current educational system.

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