

Designed Controversies: Creating teachable moments about research ethics through games

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Abstract: In this “working example” paper, we argue that designers and researchers need to reflect more on the way controversy and transgression can create teachable moments and memorable experiences in learning games. In doing so, we present a “worked example” (Gee, 2009) of our design choices related to controversial and transgressive play in a game series about research ethics, called *Gaming Against Plagiarism* (GAP). Employing data from usability trials, we argue that building controversy into learning games can force students to think critically and deeply about ethical issues.

Introduction

The experiential learning paradigm embodied in many games makes them more powerful learning tools than skill-and-drill tutorials because it offers learners the opportunity to make meaningful decisions and enact compelling experiences. The experiences found in games are compelling in part because games offer players psychosocial moratoria (Gee, 2003)—safe spaces where they can experiment with a simulated system that has lessened real-world consequences. But few learning games take advantage of this feature commonly found in commercial games by providing players with opportunities for transgressive play. Fewer still mobilize the “safe space” of games to force players to confront “designed controversies” that make them think critically about a given issue.

In this paper, we argue that designers and researchers need to reflect more on the way controversy and transgression can create teachable moments and memorable experiences in learning games. In doing so, we present a “worked example” (Gee, 2009) of our design choices related to controversial and transgressive play in a game series about research ethics, called the *Gaming Against Plagiarism* (GAP) project. Furthermore, we present data from usability trials to ask whether building controversy into learning games can create a space for students to think critically and deeply about ethical issues.

Background

As the saying goes “good research is ethical research.” But what is the definition of ethical research? Based on a study conducted at the University of Florida, results show that Science, Technology, Engineering and Mathematics (STEM) graduate students have varying degrees of understanding the basics of what makes good, ethical research, especially with regard to falsification of data, fabrication of data, and plagiarism (FFP) (Leonard et al., 2010). The push to make American STEM education initiatives more successful lead to a search for new curricula, pedagogical techniques and learning technologies that can aid in this endeavor.

As a learning technology with the potential to engage students, computer games stand out at the forefront of this push. (Gee, 2003; Shaffer et al., 2005). This project, supported by a National Science Foundation Ethics Education in Science and Engineering grant, employs a series of interactive, digital “mini-games” to educate and inform graduate STEM students about the dangers of research misconduct and cheating. It seeks to not only teach students the facts of what constitutes research misconduct, but to also educate them about the values associated with ethical scientific research conduct and procedures.

Theoretical Framework

The past decade has seen a tremendous proliferation of research on learning games and virtual worlds. From this scholarship, a number of worked examples provide researchers with general lessons about how to create successful social learning environments around games (Squire et al.,

2008; Steinkuehler & King, 2009). Seeking a better understanding of the social learning and literacy practices embodied in gaming, basic research investigated commercial game-based learning spaces (Steinkuehler, 2006) and identified characteristics of gaming spaces that make them productive learning spaces. This basic research has informed the design research projects that seek to create intentional game-based learning spaces. However, one finding of basic research that has not been translated into design practice is the relationship that controversy and “transgressive play” have to learning.

For the purposes of this worked example, we call transgressive play that which goes against the grain of expected social conduct—an act or series of acts that would be considered taboo, unethical, immoral, or otherwise inappropriate in the real world. We hypothesize that transgressive play may prompt a player to reflect critically, because of the cognitive dissonance or projective identification associated with a given game context, on her real world actions. Other studies of game-based learning communities have found that the desire to playfully transgress often drives the pleasure and engagement derived from a game. Squire (2007) found that transgressive play often heightened players’ engagement with *CivWorld*, a history-focused game-based learning environment centered on the Civilization game series. This transgressive play drove students to explore and experiment with the game’s model of world history, and propelled them further into an identity transformation from a user of popular media into designers of world history simulations (DeVane et al., 2010).

Other research has drawn similar conclusions. Consalvo (2009) found that “cheating”—the use or development of walkthroughs, hacks, tips, etc.—drives players acquisition of “gaming capital” in gamer communities. Kafai & Fields (2009), drawing on data from cheat sites for the *Whyville* virtual world, argued that cheat sites help players build their competencies as designers. In a study of youth who played *Grand Theft Auto: San Andreas*, DeVane & Squire (2008) found that the opportunities for play-based transgression, ranging from silly to violent, were key motivators for players. Play that pushes back against the defined structures of a game, or against defined social norms, can heighten player engagement.

Some evidence suggests that ethically-ambiguous situations, and transgressive role-play, can help players build metacognitive models of a given moral context. Simkins and Steinkuehler (2008), for example, contend that controversial role-playing scenarios foster critical and experiential engagement with ethical systems and values. This research indicates that transgressive play can heighten player engagement, and promote learning through experimentation, critical thinking and design. In this spirit, the *Gaming Against Plagiarism* project seeks to create “designed controversies” and opportunities for transgressive play in order to foster engagement and critical ethical thinking.

Methodology

Methodologically, this paper draws from the project’s in-progress usability testing and evaluation. Other in-progress evaluative research not reported in this paper focuses on assessing learning gains. The game design and development team employed the iterative framework of *agile development* for our development processes, which emphasizes incremental and iterative organizational solutions to deal with that uncertainty (Rajlich, 2006). Using a design document as a flexible guidepost, the agile development process allows for easier adjustment of the virtual game environment as the content and design teams refine their understanding of how to fit pedagogy and playability together through rapid prototyping and usability testing.

Game design context

The data presented in this paper comes from usability tests of two game prototypes, the first and third mini-games of a three-game series. The design metaphor of these two games, titled *Cheats and Geeks* and *Murky Misconduct* respectively, were crafted to allow the player opportunities for transgressive play. Designed to appeal to casual game players by drawing on classic game design metaphors, the player inhabits two distinct roles in these games. In the first game, *Cheats and Geeks*, players inhabit the role of a desperate graduate student who competes with his colleagues in a race to garner funding for his graduate career by publishing papers. As players sprint towards their goals across a “chutes-and-ladders” style board, they can plagiarize, falsify or fabricate their positions, all while trying to keep campus authorities off their trail and testing their own knowledge of research misconduct (see Figures 1 & 2). In short, the players of this game can build their basic knowledge of research ethics by strategically committing research misconduct in-game. The opportunity to learn by doing is also the opportunity to play transgressively.



Figure 11: Cheating one's way to research funding

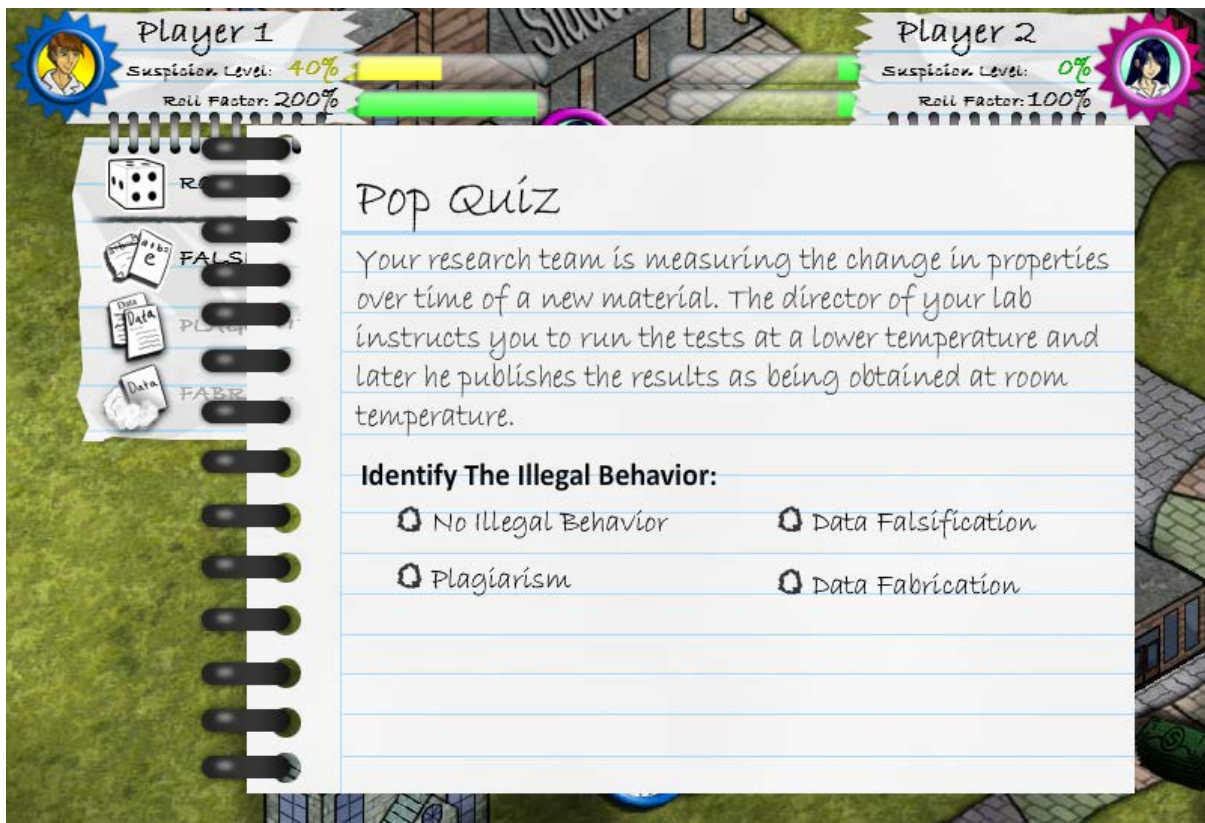


Figure 12: Peer reviews panels inquire about research ethics

The third game, *Murky Misconduct*, finds the university in near-chaos because research misconduct is rampant. After the first game, the player is drafted into the Research Ethics office as a detective, the fictional agency of the university dedicated to tracking down research misconduct. Now the player's character is out to find and convict the unethical researcher whose sinister work is threatening the university itself. In doing so, the player untangles a series of cases in which they have to analyze materials, make arguments, and provide supporting evidence (see Figure 3). The misconduct mastermind the player must confront, it turns out, is a distinguished professor who has been mistreating his graduate students (see Figure 4). Research misconduct, it turns out, is not only *done* by graduate students. It is also *done to* graduate students.



Figure 13: Argumentation & evidence interface



Figure 14: Confronting the serial cheater

Usability testing & protocol analysis

As part of the iterative design process, usability testing forms the core mechanism for acquiring player feedback on virtual environment design and player experience. Our usability testing centered on interface design issues, content refinement and level of playability for each game prototype.

Depending on the game prototype's format and the feedback needed, the usability team conducted "think-aloud" protocols of game play. The overall test cycle lasts fifteen days (three work weeks) and consists of testing initiation, participant recruitment, protocol development, user testing sessions, and a usability report.

From these testing sessions we gathered and analyzed verbal reports from players using "think-aloud" protocol analysis (Ericsson & Simon, 1984; Jourdenais et al., 1995), and then used that data to inform and refine the game design and content development. Using the "think-aloud" method, we asked two groups of four users to verbally and continually report what they were thinking as each group played one of two games in the series. Consistent with standard protocol analysis methods, researchers gave each participant the same introduction to the usability testing procedure, and audio-video recorded their verbal report and game play. As Ericsson & Simon (1984) note, these recorded utterances and actions provide us with a glimpse players' knowledge schema and problem strategies.

Results

The game's designed controversies provoked very different reactions amongst the usability testers, but usability test results suggest that it may be a means to create "teachable moments" about research ethics issues. In usability tests for Game 1, *Cheats & Geeks*, players decided whether or not to cheat to advance their fictional research career. Likewise, players of Game 3, *Murky Misconduct*, confronted a professor, who had falsely blamed one of his graduate students, with allegations of research misconduct. These designed controversies created openings for some testers to engage with and discuss the game's fictional situations and material.

Discovering models of cheating

The portrait that emerges from the usability data gathered to date suggests the issues surrounding ethics and learning in play are complex. In *Cheats and Geeks*, the first game, most players availed themselves of the ability to cheat in-game, but it appears these choices had little to do with their ethical stances. Instead, most players framed their choices in terms of experimentation with the game's underlying model of the rewards of cheating and the risks of getting caught. Two of four usability players cheated repeatedly throughout their game play, and complained that the games' chance to catch cheating was high. To the detriment of their chances to win, these two players frequently attempted to cheat despite frequently being "caught" by the game and penalized. One remarked that there was a high chance in-game cheating would be caught, which probably did not reflect the real-world risk. These players were focused on investigating the game's model of the risks posed by cheating.

Cheating, however, was not universal amongst the play testers of the first game. Two other players cheated once and twice in the game respectively. Only in the case of one player did this seem to be tied to an ethical stance. This player cheated once, was caught, and then cheated no more. She said that "the option to cheat was not an option" for her, and that she had only cheated the one time to see what would happen. The other player cheated twice, got caught both times, and remarked that there "seems to be a higher chance of winning if you don't cheat." For one player, cheating in-game seemed to be a moral issue, while the other player thought not cheating provided a pragmatic advantage in-game.

Accusing the professor

In order to complete the third game, *Murky Misconduct*, players had to track down a serial cheater who was tarnishing the university's reputation with his research misconduct. This cheater turned out to be a distinguished professor at the university, whom players had to confront with evidence of his misdeeds. The four play testers of this game had differing views of the controversy designed into the game. Upon realizing, after 25 and 33 minutes of game play respectively, that the professor was the wrong-doer, two play testers reacted positively. One remarked that he liked that the professor falsely accused the student when the professor was actually to blame. The other let out a loud and extended laugh at the moment of discovery, and proudly exclaimed, "I like this—[I'm] going straight to the top!"

Two other play testers, however, reacted differently. One expressed discomfort accusing a professor for research misconduct and wanted more sympathy for the character. The player indicated that many people "have issues with not knowing the basic definitions [of research misconduct]" and discussed how he would try to help Professor Gibbons rather than accuse him. Another, in an after-game

reflection, seemed dismayed that a professor might be involved in wrongly accusing a subordinate student.

Conclusion

We here make an argument that creators of learning games, especially designers of games for ethics education, need to confront issues of transgression and controversy in game design. Thus far design research has mostly ignored them, which is a disservice to the experiential affordance of games. We believe, as do Simkins & Steinkuehler (2008), that simulated dilemmas provide players with a space to engage critically with ethical issues.

But at the same time these design choices provoked strong reactions from institutional stakeholders, who sometimes worried that graduate students would learn to cheat from the game. For example, one stakeholder, a researcher interested in ethics education, worried that experimenting with research misconduct inside the game might lead students to try to cheat outside the game. Another stakeholder was concerned with the constrained choices players faced in these controversial game-based situations. These concerns are founded in a belief that a game should produce outcomes and not starting points for discussions.

For many play testers, the designed controversies appeared to engage them and stimulate their interest in exploring the games' model of research ethics. Others, conversely, seemed offended that there were even options to cheat and commit research misconduct. We hypothesize that these points of excitement, or distress, open up "teachable moments" for discussion of the complex ethical issues that face graduate researchers.

But questions remain about how we understand transgressive play relative to learning in games. For example: How does transgressive play enter into dialogue with the ethical and educational intentions of learning game designers? Does transgressive play change the way that players construct knowledgeable identities in game play? Are some players intimidated or disgusted by design paths that incorporate transgressive acts? These and other questions related to controversy, transgression and ethics remain open in the learning games literature. We hope this "working example" can spark more discussion on, and investigation into, these important issues.

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