Game Practices and Educational Design: Applying an Ethnographic Analysis of Game Play to an Educational Design Problem

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Abstract: In this poster I use findings from an ethnographic analysis of young people's video gaming practices to approach an educational design problem. Three categories of practices are identified as a starting point for design principles informing a new virtual environment that simulates school practices. The intended purpose of the environment is to provide young people and their families with a resource for navigating the complexities of American schools.

Negotiating a complex hidden curriculum is an important aspect of academic success in American schools (Jackson, 1968). As students move through educational institutions they make many choices, including decisions about courses, extra curricular activities, and their disposition towards disciplines and school personnel (Stevens, O'Connor, & Garrison, 2005). Navigational practices used in school are often learned while participating in social networks outside of school, consequently students from backgrounds unfamiliar with educational institutions likely do not have resources comparable to their peers for approaching their academic careers. The unevenness of navigational practices frames an educational design problem; how do we provide all young people and their families with the resources to develop school navigational practices that lead to academic success?

In this poster I connect findings from an ethnographic analysis of young people's gaming practices to the design of a prototype virtual environment that simulates many aspects of education. In the ethnographic study, eight participants (4 boys/4 girls, 9-15 years) were asked to play games in their homes as they normally would using their own games and game systems (Stevens, Satwicz, & McCarthy, 2008). While the participants played researchers made video recordings of their 'in-game' and 'in-room' activity (totally over 100 hours). Researchers content logged the videos and coded activities such as teaching and learning, using cheat codes, and engagement in STEM practices for future detailed analysis. I then used interaction analysis techniques (Jordan & Henderson, 1995) to create detailed transcripts of practices from the coded instances to explain the interaction of cognitive, social, and material resources.

One particularly salient finding from the ethnographic study identified several ways in which young people juxtapose their in-game activities with their everyday life (Stevens et al., 2008), suggesting that games or virtual environments might be used to help young people discuss their academic careers. In this poster I explain how three practices identified in the analysis (task identification, resource adaptation, and the use quantitative representations) were used in the design of a new prototype virtual environment I call Rubites. Rubites also is based on the virtual economy of websites such as neopets.com, webkinz.com, and whyville.net (Ito & Horst, 2006). In this sense the Rubites virtual economy is an analogy to the commodification of schoolwork (Nespor, 1997) and the complexity of educational institutions.

Task identification practices

Task identification practices are the means by which players are assigned or select tasks throughout the course of play. My analysis shows that some tasks are assigned by the game, for example a player may be required to beat a particular enemy in order to move forward in the game. Other tasks emerge as the player interprets the game situation. For instance one participant worked outside the explicit rules of *Zoo Tycoon* to build cages for holding guests and zoo workers, a task that the game allows but does not support in the stated goals. The implication is that players attempt to learn how accomplish tasks that are not necessarily embedded in the game, however when doing so they may learn about the internal structure of the game.

To support task setting practices in Rubites I have included designed goals and levels as well as elements that will allow young people to push against the implicit goal of achieving academic success. For instance, if a player attempts to fail out of school Rubites provides the opportunity to take a GED or to enroll in an alternative school. I also anticipate that because of the dynamic nature of the virtual economy players will work to create particular kinds of profiles. From these profiles tasks such as collecting all of a particular kind of 'school supply' or creating a popular extra curricular activity will emerge. I have also limited particular resources in Rubites to promote competition as well as conditions for recurring problems (de la Rocha, 1986; Squire & Barab, 2004).

Resource adaptation practices

Resource adaptation refers to the practical application of strategic assets (i.e., published strategy guides, Internet search engines, the knowledge of others, and memory cards) by game players to accomplish

tasks. Game players organize resources into a variety of learning arrangements that often are not authoritatively assigned as part of the internal game design (Stevens et al., 2008). Consequently, learning is not always explicitly designed into the game but rather brought on as part of an interaction between the player and the game. In these situations, the game acts as a *provider of representational resources*; making available resources such as direct instruction, memory, assigned tasks or goals, images of a situation, a story line, quantitative representations, game moves, diagrams, maps, and text. Game players then engage in practices of adapting the resources provided by the game and those available outside of the game to accomplish emergent tasks.

To design for resource adaptation practices I have made available a multi-modal set of resources for Rubites that will allow for the emergence of a variety of learning arrangements. This includes a discussion board, a profile page, mini-games, along with items in a store that are used to enhance a character. Additionally, Rubites has been designed for use in two settings: after-school clubs and homes. As previous research on virtual environments and game play in similar settings has demonstrated, young people often gather information through unofficial means (Fields & Kafai, 2007; Stevens et al., 2008). To support the unofficial gathering of information not all knowledge of Rubites will be officially published. The environment will include cheat codes and secret moves that allow players to advance their academic career to mimic both videogame play as well as the implicit learning of school-based norms, values, and practices by American children.

Quantitative practices

My analysis also identified several quantitative practices—the various means by which people use quantity in everyday situations. Quantities are an essential aspect of game design and consequently I have found them to be an important dimension to how players organize their gaming activities. Quantitative practices are often evident in the determination of the next move in a game and can involve specialized interpretations of representations. They are also a means by which players prepare for random events, add efficiency to their play, and determine before the game tells them whether they will be successful. By taking up different practices players learn to interpret representations differently as they progress through games.

I have used my analysis of quantitative practices to frame some initial design decisions. In Rubites there is a focus on virtual economies and commodified schoolwork. Quantities exist as 'good grades' and 'activity points' that determine the player's allowance. Grades and points are a function of which classes and extracurricular activities (i.e., mini-games) the player has completed. Grades, activity points, and allowance are designed to support the emergence of a variety of experiences that students can use to juxtapose Rubites with their real world school.

References

de la Rocha, O. L. (1986). *Problems of sense and problems of scale: An ethnographic study of arithmetic in everyday life.* Unpublished dissertation, University of California, Irvine.

Fields, D. A., & Kafai, Y. B. (2007). Tracing insider knowledge across time and space: A connective ethnography in a teen online game world. In C. Chinn, G. Erkens & S. Puntambekar (Eds.), *The proceedings of CSCL 2007: Of Mice, Minds, and Society* (pp. 196-205): International Society of the Learning Sciences.

Ito, M., & Horst, H. (2006). *Neopoints, and neo economies: Emergent regimes of value in kids peer-to-peer networks* Paper presented at the American Anthropological Association.

Jackson, P. W. (1968). *Life in Classrooms*. New York: Holt, Rienhart and Winston, Inc.

Jordan, B., & Henderson, A. (1995). Interaction analysis: Foundations and practice. *Jounal of the Learning Sciences, 4*(1), 39-103.

Nespor, J. (1997). *Tangled up in school: Politics, space, bodies, and signs in the educational process (sociocultural, political, and historical studies in education)*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Squire, K., & Barab, S. (2004). Replaying history: Engaging urban underserved students in learning world history through computer simulation games. In Y. B. Kafai, W. A. Sandoval, N. Enyedy, A. S. Nixon & F. Herrera (Eds.), *Embracing diversity in the Learning Sciences: Proceedings of the sixth ICLS* (pp. 505-512). Mahwah, NJ: Lawrence Erlbaum Associates.

Stevens, R., O'Connor, K., & Garrison, L. (2005). *Engineering student identities in the navigation of the undergraduate curriculum.* Paper presented at the American Society for Engineering Education Annual Conference, Portland, OR, June 12-15.

Stevens, R., Satwicz, T., & McCarthy, L. (2008). In-game, in-room, in-world: Reconnecting video game play to the rest of kids' lives. In K. Salen (Ed.), *The Ecology of Games: Connecting Youth, Games, and Learning* (pp. 41-66). Cambridge, MA: The MIT Press.

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