Using Machinima as Cultural Probes to Study Communication in Children's Virtual Worlds: An Exploratory Approach

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Abstract
Understanding children's digital play in immersive virtual spaces, specifically those with limited communication affordances, demands new methods and approaches that move beyond interviews and participant observation. This paper illustrates the process of creating machinima videos of scripted play scenarios as "cultural probes" to elicit young users' insider knowledge of communication and socialization practices. We discuss our ongoing development and use of these videos, supplementing other qualitative methods to develop a richer understanding of information sharing, particularly non-verbal communicative action.
Keywords: digital youth, machinima, cultural probes, virtual worlds, play, information sharing
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1 Introduction

If a pink penguin wearing a tutu started chasing you and throwing hearts, how would you react? While most of us do not encounter such behavior in our physical lives, children's digital play is filled with similar interactions. Every day millions of children login to virtual worlds where they play, socialize, create, and explore a digital landscape as avatars, or "virtual characters." Virtual worlds designed expressly for children ages 5-10 years comprise the largest and fastest growing segment of this web genre. These environments represent a new space for childhood socialization rich in interactivity, but they differ in many ways from the communication spaces where most children develop their understanding of language and its use: the home, the playground, and the classroom. Many virtual worlds for children have constrained conversation features that restrict the way users engage with each other. This makes non-verbal behaviors, including the use of emoticons, avatar movements, and playful gestures that much more important to the way meaning is constructed. In these safe yet verbally limited play environments, conversational practices emerge from a blend of verbal and non-verbal cues.

To date, much of the research analyzing virtual worlds for children has employed focus groups and interviews, through which children describe their online behaviors through recollection (Marsh, 2010). New research methods are needed to understand the different ways that children employ site features and communicative affordances of virtual worlds to engage with other users. In particular, ephemeral interactions such as flirting, teasing, harassment, and aggressive or unwanted contact are difficult to capture in words and to reliably communicate. Part of the challenge, then, is bridging child and adult constructions of the same event or phenomena, a problem identified in studies of young people's social media broadly.

Our project is working to overcome some of these challenges through machinima, the process of creating videos from screencasts of virtual play (AMAS, 2005). We use scripted screen capture to create reusable behavior scenarios that become the focus of individual and group interviews about play and information exchange in-world. Scholars in HCI, educational technology, and librarianship have proposed and examined the use of machinima in learning environments (Bardzel et al. 2006; Daly-Swansen, 2007; de Frietas, 2006; Middleton, 2009; Snelson, 201), but these studies have examined adult users. This study breaks new ground by exploring how machinima objects can mediate conversations with young people for

the purpose of understanding situations that are sometimes difficult to put in words. We argue that such video artifacts can be considered "cultural probes", a design tool used in HCI to elicit tacit understandings of the users of information systems and services. Our paper will discuss the process by which we identify scenarios of interest, script, act out, and record these scenarios using avatars in the virtual world, then employ resulting Machinima videos in our empirical investigations of non-verbal communication with youth informants. This work seeks to understand how communicative affordances translate into informative and communicative intents; in other words, how tools facilitate translating thoughts into action and subsequent meanings (Denkel, 1980).

2 Theoretical Framework

Our work is informed by theories of informative and communicative intent (Bratman, 1987; Malle et al, 2001). Engaging with other participants in a virtual world requires a user to infer meaning from a series of cues that can take a number of forms, including textual exchanges, avatar movements and gestures, and emoticons. Making meaning from these aggregate signals depends on the experience of the user, including the users' ability to relate in-world gestures to out-world gestures, as well as the knowledge of in-world norms and practices, such as the use of "l33t speak", slang or jargon. Communication in a virtual world is then dependent on two levels of meaning making: in-world comprehension of digital action and a translation of that meaning to out-world significance. The two levels of meaning combined become a "literacy" of digital play. To be fluent in this kind of literacy requires immersion in the culture of the space. It is this culture of play that we wish to investigate with the machinima probes.

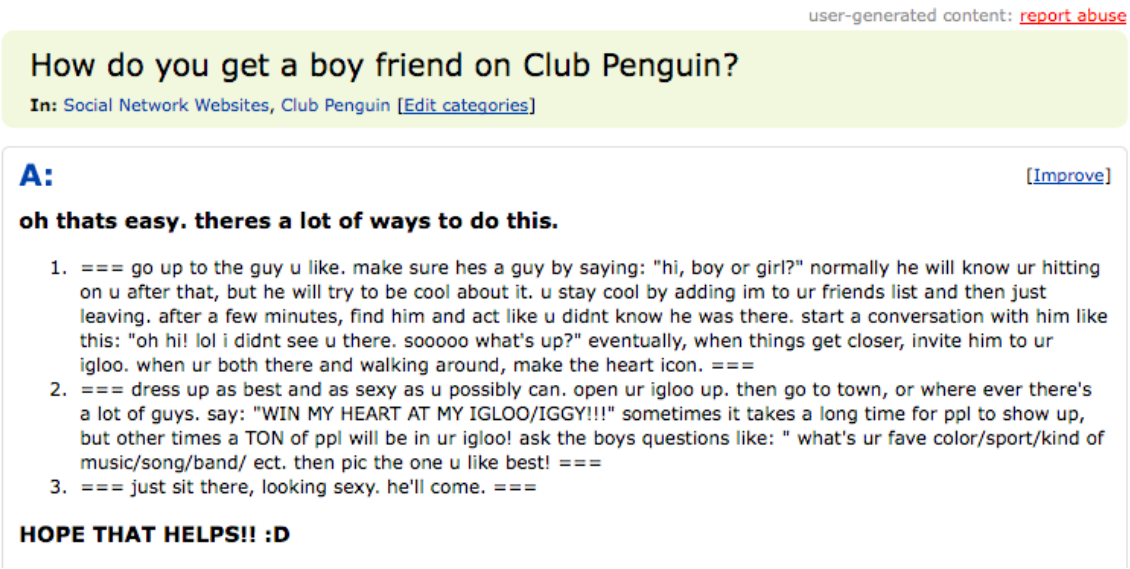

Figure 1: How to get a boy friend in Club Penguin

For example, a participant may wish to establish a relationship with another user, a common scenario in virtual worlds, even those involving young children. We know from children's role-play that acquiring a "boyfriend" models normative gender roles in real play, and thus is frequently seen in digital play as well. The informative intent is the user's intention to inform the audience (other users) of something, or to induce belief in other users (e.g., I want to have a boyfriend). As further means of fulfilling this intention, the participant may communicate this intent, explicitly or implicitly. Figure 1 is a screen shot from a Yahoo! Answers stream in which a participant explains how to translate informational intent (availability and desire) into communicative actions (flirting with other users).

As this communicative engagement requires multiple parties to understand a series of cues and their meaning in context, unpacking these ephemeral moves can be problematic. However, controlling the creation, playback, and reflection upon communicative scenarios by reifying the communicative action, allows us to develop better understanding of children's inferences.

Cultural Probes is one way of describing this kind of research instrument. Gaver and colleagues developed the technique to examine how users reflect on their own practices by surfacing tacit understandings. Cultural probes are a common approach in HCI (Gaver, et al. 1998; 2004); however, they are less often employed in educational research, and then only with older learners.

Studying virtual spaces for children is fraught with difficulty for the researcher who wishes to respect the rights of children while gathering rich data on youth behaviors. By nature of their design, children's social play spaces such as Club Penguin and Pixie Hollow protect user privacy and safety by limiting participant interactions. Unlike studies that take place in Second Life, users cannot consent to participate in research, engage in interviews or voice chat, nor share artifacts and documents. This often confines the researcher's role to engaging with children outside the world, as one cannot be sure those in-world are even children.

This project arose from the desire to gain new insights into sensitive topics (flirting, harassing, and "mean girl" behavior) while recognizing the limitations of children to describe these situations and adults to mediate conversations about these topics with younger participants ages 7-12 years. We are attempting to work at the intersection of three spaces: the ethically responsible, the technically feasible, and legally permissible. We have worked with our Ethics Review Board to design work we feel fits these requirements.

Figure 2: Fairies Interact in Pixie Hollow

We first spent several months exploring the issues we hoped to investigate, and took notes on the communicative practices of users through participant observation in several virtual worlds. We settled on two worlds in which to construct our machinima simulations: Club Penguin and Pixie Hollow. These two worlds have significant user populations, have broad participation among children ages 6-12, and permitted us to explore two variables of interest: avatar form and social status. Pixie Hollow employs hominid avatars of boys and girls (Fairies and Sparrow Men), while Club Penguin allows users to choose a single form: an

anthropomorphized penguin. We hypothesized that the variation in the avatar's form may affect the communicative affordances of users, and thus developed user scenarios that could be played out in either world. We scripted two scenarios: 1) a flirting interaction between two users, and 2) a commercial interaction where a user engages another user by "begging" in the gift store. Figure 3 shows what a virtual "stage" looks like in these probes. Several other scenarios have been proposed in our research group, including a role-play party, but these are not yet in development.

Two research assistants "played out" these scenes in-world using avatars created specifically for the scenario. This required the assistants to enter the same world and server using two computers, one of which was using Camtasia screen capture software to record the interaction. The resulting videos were minimally edited using Camtasia and iMovie '11 into final clips. The intent of the editing was to clean the videos and add an opening title. Unlike cinematic users of machinima, our goal was not to alter the point of view or framing of the interactions. Each scenario lasts less than 90 seconds, but employs 4-6 types of communicative intents, including the use of text chat, emoticons, gifting, avatar proximity and profile views. Our presentation will discuss several lessons learned in the development of these videos, including shooting schedules, rehearsal and storyboarding, and scripting for authenticity.

3 Findings

We are in the beginning stages of deploying our prototype machinima scenarios with participants with the intent of refining them and using them systematically in a study of preteen virtual world bahaviors. To date, we have interviewed five young people (one boy age 9, four girls ages 8-12), conveniently recruited from among the parents in our school's degree programs. Thus, our findings regarding this method's usefulness are very preliminary. Nonetheless, even with this small sample, several themes are emerging from our work that suggest this technique is both viable and engaging, eliciting insights from youth that add value to our research on online interactions. Below we document several themes that emerged in our initial conversations with young users.

3.1 "Oh, that's obvious…"

We introduced our videos to participants with a rather simple prompt: "Can you tell me what's happening here?" and then followed-up with several additional prompts depending on how the young person engaged in describing the activity on screen. Two of our participants read the scenes very quickly and described the phenomena consistent with how we designed the scenes to be "read". However, the variation in terms of our participants understanding of the different communicative intentions suggests that the scenarios were not as obvious as we, the adults, perceived them to be. What we regarded as fairly straightforward activity was confusing to our male participant. As we test our scenarios with more young people, we may find variations in ability to read and interpret social situations based in age, gender, and level of experience. At this point our sample is too small to make claims.

3.2 "That's not how I do it…"

We received several valid critiques of our initial foray into scripted scenarios, with several of our female participants indicating that they approached flirting and interacting with other users in a different fashion. While our videos were based on our participant observation by three research assistants and hundreds of play hours, it is likely that our scenarios will not match every experience. Nonetheless, to the extent that the videos prompted reflection and discussion of participants' own styles of interaction, the probes were an initial success. One of the female participants offered, "I could show you right now!"

3.3 "I could do that…"

Although several of our participants had viewed videos of virtual worlds on YouTube, none of them had actually made a machinima video before. However, viewing and engaging with our videos piqued their

curiosity and inspired interest in developing their own machinima. An extension of this work may be a machinima workshop for youth in which they develop their own scripts and role-play artifacts to share with others. As our work develops, we may move in the direction of a more participatory movie making experience, with the outcomes including youth-focused creativity and expression, in addition to the basic research design originally envisioned.

An important limitation of the work to date is that we have used these scenarios only with a small sample of children. However, we feel that the work is already a contribution to the field in terms of a thought piece and methodological provocation: how can we expand the range of techniques through which we engage with young people to explore their meaning making practices? We suggest that machinima probes is one way forward in developing multi-method approaches to the study of online interactions in immersive spaces.

4 Conclusions

In a world of phatic communication—tweets, pokes, and status updates—it is vital that we understand the role of communicative intents in virtual spaces for children. This method may provide a reliable, replicable approach to studying children's interpretations of virtual interaction that neither compromises the rights of children, nor violates system use policies. For many young children, these virtual worlds may be their first foray into web-mediated communication, thus the practices that emerge from these spaces hold special significance in the development of online literacies.

The development of replayable scenarios as a research tool to probe children's cultural practices allows us to extend our work into areas that have not been examined to date, including how early users of social media make sense of a variety of social stimuli. In an effort to bridge research and practice, we hope to develop a kind of pedagogy from these research objects. Future work will involve the design of curriculum that employs these materials to teach about online behaviors to elementary age children, with a focus on developing inferential reasoning, rather than the memorization of platitudes.

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6 Table of Figures