Fostering Civic Engagement by Building a Virtual City

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Abstract
This article focuses on the design and use of networked technologies to create learning environments to foster the civic engagement of youth. First, we briefly describe the Zora three-dimensional multi-user environment that engages children in the design of a graphical virtual city and its social organization. Anecdotal data are then used to help define different aspects of civic engagement, namely civic actions and civic discourse. Finally, we present descriptive results from a pilot study of young people using Zora in the context of a multicultural summer camp for youth. During this experience, children developed a virtual community that became a safe space for experimenting with decision-making, self-organization, and civic conversations, as well as for testing democratic values, behaviors, and attitudes. Using Zora as a case study, this article shows the potential of networked technologies to facilitate different aspects of young people's civic development.

Introduction
Youth today are often criticized for their lack of civic participation and involvement in political life (Andolina, Jenkins, Faison & Flanagan, 2001; Grant Maker Forum on Community & National Service, 2000; Keeter, & Zukin, 2002; Michelsen, Zaff, & Hair, 2002). Technology has been blamed, among many other causes, for fostering social isolation and youth's retreat into a private world disconnected from their own communities (Kraut et al., 1998, 2002; Nie, 2001; Nie, Hillygus, & Erbring, 2002; Putnam, 2000). However, current research is beginning to indicate that both of the above statements represent inaccurate perceptions (Guest & Wierzbicki, 1999; Wellman, 2001; Wuthnow, 1991, 1998). On the one hand, today's youth are indeed engaged in civic life, albeit in ways very different from their parent's generation. Activism, volunteerism, and community work are some of the new avenues through which youth engage in civic life, as opposed to more traditional means such as voting in elections or participating in political parties (Andolina et al., 2002). On the other hand, the Internet has provided a new way for youth to create communities that extend beyond geographic boundaries (Howard, Rainie, & Jones, 2002; Kraut et al., 2002), to engage in civic and volunteering activities across local communities and national frontiers (Barab et al., in press), to learn about political life, and to experience the challenges of democratic
participation (Bers, 2001b; Cassell, 2002; Howe & Strauss, 2000).

Research shows that adults are more likely to vote and be engaged in civic life if they were involved in community-based organizations or extracurricular activities as youth (Verba, Scholzman, & Brady, 1995; Youniss, McClellan, & Yates, 1997). New technologies can extend the opportunities offered to young people to participate in community life. Although preliminary studies have shown the potential of new technologies to engage young people in on-line civic life (Blumler & Coleman, 2001; London, 1997; Youniss et al., 2002), there is a lack of research on how technology-based interventions particularly aimed at fostering civic engagement can promote participation not only in the virtual world, but also in the face-to-face world. Many of today's youth are fascinated by new technologies. The question is how to leverage this interest to develop successful programs that complement already on-going interventions aimed at fostering civic engagement and to develop new interventions to interest young people who might not otherwise become involved in contributing to their communities.

A growing amount of research on virtual environments concentrates on technical and social characteristics that foster the development of community. Research in computer-mediated communication has shown that networked environments afford quick access to a wide range of information and resources as well as communication mechanisms for engaging in critical debates (Jones, 1998; Scardamalia & Bereiter, 1996). Work has also focused on the Internet as a medium to support collaboration by providing tools for young people to become active builders of their communities and to enable new expressions of social life (Bers, 1999, 2001b; Bers, Gonzalez-Heydrich, & DeMaso, 2001, 2003; Bruckman, 1998; Morningstar & Farmer, 1991; Pinkett, 2000; Resnick, Bruckman, & Martin, 1996; Shaw, 1994; Smith & Kollock, 1998). While there is a growing body of research on the educational and social potential of Internet-based multi-user virtual environments (Barab, MakInster, Moore, Cunningham, & the ILF Design Team, 2001; Clarke & Dede, 2005; Squire & The Games to Research Team, 2003; Steinkuehler, 2004), few studies have been conducted to purposefully evaluate technology-based interventions in the area of civic engagement (Bers, 2001b; Cassell, 2002; Woodard IV & Schmitt, 2002).

Scholarly work on youth civic engagement has focused on two areas: the political identities of youth as an integral part of adolescent development (Wellman, 2001; Wellman, Carrington, & Hall, 1988; Yates & Youniss, 1999), and the role of schools in teaching civic content and skills as well as in promoting communities where democratic and civic values are experienced (Andolina, Jenkins, Zuzin, & Keeter, 2003; Torney-Purta, Lehmann, Oswald, & Schulz, 2001). Some research, such as the "Student Voices" program, has tapped into the potential of the Internet for connecting young voters to the electoral process by providing access to web-based information about candidates and politics (Woodard IV & Schmitt, 2002). While that research shows the benefits of using the Internet to gain knowledge about politics, the pilot project described in this article suggests that the Internet can provide a safe space for youth to experiment with civic life by forming on-line communities. This could potentially augment the possibilities for young people to engage in civic conversations and deliberations. The idea of a safe space for involving youth in participatory democracy, social institutions, group decision-making, and self-government is not new. It was proposed by Kohlberg in his "just community" model as critical in shaping an individual's
moral development (Kohlberg, 1976, 1985; Reed, 1997).

Researchers in the social sciences have asked the question, "What are the ways that people under the age of 18 get engaged in civic behaviors and what other opportunities besides electoral politics do they have to experience themselves as members of a polity?" (Sherrod, Flanagan, & Youniss, 2002). Using a pilot study, we examine how Zora, a multi-user virtual environment specifically designed with the goal of promoting positive youth development (Bers, forthcoming), can provide a safe space for experimenting with decision-making, self-organization, and civic conversations, as well as for testing democratic values, behaviors, and attitudes in an authentically meaningful way. We begin our discussion of Zora by briefly describing the design of the computational program. We then present anecdotal data to help define the construct of civic engagement as it relates to virtual communities. Finally, we use descriptive and quantitative methods to summarize data from a pilot study to reveal how civic engagement may be exhibited in young people's interactions in virtual communities.

**The Zora Virtual World**

Zora is designed specifically to provide the tools necessary for users, especially children and youth, to hold conversations with each other, to express ideas easily and safely in both synchronous and asynchronous ways, to tell stories, and to create virtual objects that are personally meaningful to them. Zora is a three-dimensional multi-user environment in which American youth end-users design and inhabit a virtual city (Bers, 2001b). In a graphical multi-user environment, several users can interact and communicate with each other in real time. Users are immersed in a virtual space containing representations of data, objects, programs, and other users. The design of Zora is based on the constructionist educational philosophy, which asserts that people learn better with computers when they are engaged in building personally meaningful artifacts and sharing them with others in a community (Papert, 1980).

Zora is an identity construction environment (ICE), a web-based technology explicitly designed to help young people explore issues of identity and to foster positive youth development (Bers, 2001a). Computers are powerful tools for self-exploration. Although they were originally conceived as instrumental machines, computers have another potential. They can serve as a "second self" or a psychological machine, not because they have a psychology but because they provoke us to think about our own (Turkle, 1984). However, most computer applications do not engage users in sophisticated learning about the self. While many researchers in the field of educational technology have focused primarily on students' learning of math and science through the use of computers, ICE focuses on using technology to learn about the self and the community. In previous research, Zora has been used to study how a multicultural group of teenagers in an intensive summer program expressed their sense of self and explored the relationship between personal identity and moral values (Bers, 2001a), and how young patients in the Dialysis Unit at Children's Hospital Boston used Zora to escape the harshness of the dialysis treatment and to begin the creation of a network to facilitate mutual support and new kinds of interactions with hospital staff (Bers et al., 2003).
In Zora, users can populate the virtual world with their own interactive creations. They can design objects, characters, personal spaces, and a virtual community in which values are realized and put to test (see Figure 1). Users begin their experience with Zora in an empty room, and by uploading images they have taken or downloaded from the Internet, they create objects to furnish their rooms. Avatars are graphical representations of users in Zora. An avatar construction kit allows users to design their own avatars and their corresponding profiles that specify personal heroes and villains (these are models of identification and counter-identification), cherished values, and biographies. Avatars can navigate around the virtual city, converse with others in real time through a graphical chat system, and construct the city's private and public spaces.

Furthermore, users can program objects and characters to engage in conversations that often require perspective taking. Understanding other people's motivations and actions is a fundamental mechanism for broadening one's perspective and recognizing that events can be understood through multiple points of view (Eisenberg, Zhou, & Koller, 2001; Levine, 1976; Selman, 1976, 1980; Selman, Beardslee, Schultz, Krupa, & Podorefsky, 1986). Thus, perspective taking is an important aspect of the development of civic engagement.

Figure 1. The Zora interface: A virtual space created by a child
The construct of civic engagement used in this article will be described in a later section. However, in order to understand how Zora design features might encourage civic engagement, it is important to know that our focus goes beyond the procedural aspects of democracy to the many facets of a deliberative democracy, such as the ability to participate in civic actions like community service and to engage in "civic conversations" (Putnam, 2000). Since the present research focuses on two aspects of the umbrella construct of civic engagement, civic actions and civic discourse, design features that address each of these are presented in the next paragraphs.

In order to provide opportunities for young people to experiment with civic actions, the notion of "case" is introduced in Zora. A "case" is an object representing an event or a circumstance to be discussed and agreed upon by all community members. In the same spirit as a legal case, a Zora case requires community members to take action to resolve conflicts. This kind of participation in a learning environment might serve as a model for the larger political community in which children will participate as adults. Users can create new cases as new issues arise. For example, in the pilot study presented later in this article, children created a virtual City Hall in Zora where several types of cases were presented. Most dealt with setting up the social organization of the virtual city, such as "I think that people should not change or put things in other peoples [sic] rooms. Unless they have permission," or "Anyone should be able to drop anything anywhere, but with a consequence. This should be like breaking a law, punishable by imprisonment of one hour." Other cases were about controversial current events reported in the newspaper. These cases fostered thinking not only about the Zora virtual community but also about the society-at-large.

Aside from cases, Zora also provides a "values dictionary" into which users can append new values, add definitions to existing values, and contrast viewpoints on users' created values and definitions. This dictionary can be used to establish common values, ethics, and rules that are shared and deliberated among users of the Zora virtual world (see Figure 2).

In sum, the Zora virtual environment has design features that make it well suited for supporting the development of civic identities. The city metaphor invites young people to make decisions about civic life, the special virtual object called "case" engages youth in discussion and deliberation about current controversial issues, and the values dictionary enables community members to reflect upon shared values that have impacts on their on-line civic and social life.

Zora offers tools to evaluate participants' learning experiences. Zora keeps a log, with date and time, of everything users say or do on-line. Analysis of system logs is a well-known practice in research on computer-mediated communication (Herring, 1996). By analyzing the log, researchers, teachers, and mentors can reconstruct what happens on-line at any moment in time. However, the resulting vast quantities of information can be confusing. A Zora log-parser organizes the information in an
easy-to-read format and allows for the control of different variables in order to retrieve and display items in separate categories. This enables researchers to identify the frequency and quality of participants' actions and discourse online.

Zora's design is strongly influenced by Piaget's belief that development emerges from action; that is to say, individuals construct their knowledge of the world as a result of interactions with the environment. In his work on moral and civic development, Piaget (1965) found that youth construct knowledge about morality through experiences rather than pure imitation. In other words, morality is not learned by simply internalizing the norms of a group, but by a developmental process that involves personal struggles to arrive at fair solutions. From a design perspective, Zora provides a safe space and affordances to engage children in those struggles. Each group of children who use Zora (i.e., each virtual community formed through the use of Zora) might take advantage of this in different ways.

**Civic Engagement: The Construct**

Some conceive civic engagement as being a good neighbor, obeying rules, and participating in the community, while others think of it as engagement with political processes, such as voting. In this study, the construct of civic engagement goes beyond a focus solely on the procedural aspects of democracy to one that embraces the many facets of a deliberative democracy. This includes the ability to participate in civic actions such as community service and initiatives to further improve the public sphere, to engage in "civic conversations" (Putnam, 2000), and to develop publicly deliberated civic knowledge, attitudes, and decisions.

The present research focuses on two aspects of the umbrella construct of civic engagement: civic actions and civic discourse. In the pilot study presented in this article, these aspects were analyzed by looking at the Zora logs and examining on-line conversations, as well as virtual actions such as creating value definitions, hero objects, and villain objects.

**Civic Actions**

In the present pilot study, civic actions refer to on-line behaviors aimed at the writing and sharing of stories associated with user created virtual objects and values definitions that represent a civic stance. While multi-user virtual environments afford many opportunities for civic actions in the development of the virtual community, this goes beyond the scope of this article. The combination of conventional media, such as television, radio, and magazines, and new media such as the Internet, provides today's youth with almost unlimited access to information about the realm of politics and public services. Researchers have
suggested that new media provide tools for people to share information and make political and civic issues more accessible and transparent to the public (Oblak, 2003; Thomlinson, 1999). One of the ways in which the Internet mediates youth's ability to participate in civic actions is by providing them with tools to produce, share, and consume information about civic issues and personal opinions (Youniss et al., 2002). Through personal, political, and organizational websites, youth can access a wide range of information with diverse views on civic-related issues. Furthermore, today's youth are not only subject to consume political media passively online, but the Internet also provides the tools for them to become creators and producers of civic opinions and civic information (Coleman & Gotze, 2001; Tapscott, 1998; Youniss et al., 2002).

Zora provides users with two very specific ways to create and express their own civic ideas and opinions in an asynchronous, non-interactive way, similar to creating a website or other Internet content: hero-villain objects and value definitions.

**Hero and Villain Objects**

To construct a virtual space on Zora, participants create objects that belong to each virtual room. Essentially, objects placed in each room define the identity of the virtual spaces. Any objects, including heroes and villains (models of identification and counter-identification), may have a story or a description attached to their properties windows as well as values that define their meaning for its creators. For example, one participant in our pilot study with 11-15 year-old youth defined Eve, a popular rap musician, as one of her hero objects in her room with the following definition: "Eve is a rapper, she is my role model because she started from the bottom and worked her way to the top, and she never stopped trying to accomplish her dreams now that she has a number one song, and is constantly appearing in other music videos."

The purpose of attaching a story or value to an object is so other visitors can understand why the builder of a space has chosen to include the specific object in his or her space. Through these stories, participants express rationales and opinions behind each object they create. Similar to creating websites and other Internet content, the creation of objects and their associated stories and values are ways in which participants can communicate ideas to the broader audience (i.e., other participants of the virtual world) without directly "talking" with others. Furthermore, not only may objects tell about the civic opinions of the particular user who created them, each participant's collection of objects accumulates to describe that participant's civic identity.

**Value Definitions**

While the creation of objects and their associated stories describes participants' personal values, the values dictionary allows participants to share a common set of values that is important to the whole community. All participants of the community have access to modify and add on to this dictionary, and they can append multiple definitions to each value. Through this dictionary, users learn about the diverse perspectives held by the virtual community regarding each value definition. The dictionary affords users the
opportunity to witness how different people may share similar values but at the same time have different definitions regarding them. For example, in our pilot study, described in a later section of this article, one participant added the value Equality to the dictionary with the definition: "being treated the same as everyone else black, white, Hispanic, etc." Other participants then added different definitions to the same value in later days, such as, "because we are all made in God's image and, therefore, have an inherent equivalence," and, "every person is equal and have [sic] the same number of basic rights."

Although objects and value definitions only afford participants asynchronous communication (i.e., participants do not engage in real-time interaction or discourse when creating, reading, and editing objects and value definitions), by interacting with other people's objects, participants might begin to critically evaluate their own and other people's opinions and values. For example, during a post-study interview from our pilot study, a fourteen-year-old participant said that he liked the Zora values dictionary because he learned, "how to see values in things by attaching values to things you realize what your values are and you also make other people more likely to know you better. Right now when I see something, somehow I wonder what values it has, and what certain people think its values are."

This way of thinking about values as properties or attributes of objects and people is in line with the object-oriented computational paradigm imbedded in the design of Zora. It opens up the possibility for users to approach these abstract issues in a concrete way and to share with others in the community civic opinions that otherwise might be hard to express for young people. Thus, in this paper, civic actions, i.e., the on-line creation of civic-themed objects, is one of the ways through which users can participate as active citizens in the Zora community.

**Civic Discourse**

Engaging in civic discourse is one of the most important aspects of being an active participant in a public sphere (Conover, Searing, & Crewe, 2002; Wyatt, Katz, & Kim, 2000; Wyatt, Kim, & Katz, 2000). For one thing, civic discourse exposes citizens to a wide range of information and opinions, thus creating a more diverse and informed public. The Internet and online content, being high-density media, not only bring information to the public audience but also increase interactions among people across the globe, expand people's social networks, and "create a global village consisting of sparsely-knit communities by removing space constraints and allowing for far-flung interactions" (Quan-Haase & Wellman, 2002, p. 5; see also Stromer-Galley, 2003). Research in civic engagement and civic discourse has identified two types of discourse: 1) conversation that is based on information-sharing and does not require participants to alter their own opinions, and 2) discourse that takes the form of a deliberation, requiring participants to first exchange information and then move beyond one's egocentric view to reach a publicly deliberated opinion or decision (Sunstein, 2001). In this article, we term the first type of civic discourse Civic Dialogues, and the latter type Civic Deliberation. As will be illustrated below, both of these types of civic discourse took place in our Zora pilot study.

**Civic Dialogues**
Civic dialogues can be viewed in light of Kuhn's (1991) position that, "The democratic principles on which our society was founded lead us to accept, to respect, all views, to welcome the diversity they represent" (p. 4). When held among a heterogeneous group of people with different background and opinions, civic conversations air disagreements and include a diversity of perspectives (Fishkin, 1995; Gutmann & Thompson, 1996). Given these ingredients, Bennet, Flickinger, and Rhine (2000) suggest that dialogues that focus on civic issues have the power to enrich democracy by questioning and refining the quality of public opinions and "enhancing citizens' civic-mindedness" (p. 101). Some researchers have argued that the Internet has shown potential as a tool to facilitate civic dialogues because of its power to afford anonymity and reduced interpersonal cues (Ng & Detenber, 2005; Spears & Lea, 1994; see also the SIDE theory as described in Postmes, Spears, & Lea, 1998). Appendix A is an excerpt from the Zora log that represents an example of civic dialogue by young people participating in a summer workshop in the Boston area of Massachusetts, United States.

Civic Deliberation

Although civic dialogues are vital to developing civic attitudes and opinions in youth and adult citizens (Conover et al., 2002), some scholars argue that 'ordinary' civic dialogues are not enough to truly build a community based on deliberative democracy (Bohman, 1996; Gutman & Thompson, 2000). While contrary attitudes and opinions about civic issues may be proposed and acknowledged, public opinions need not be deliberated, agreed upon, and established during civic dialogues. In other words, although civic opinions are expressed, civic dialogues do not guarantee mutual understanding among members of a community. On the other hand, civic deliberation forces a group of people to justify their attitudes, decisions, and opinions publicly. Civic deliberation requires the public to move beyond information gathering and opinion exchange (i.e., beyond civic dialogues) to come together as a group to debate and form public decisions (Bohman, 1996; Sunstein, 2001), which may result in the development of group/community norms that participants agree upon and respect. Civic deliberations might be uncomfortable because participants are publicly exposed and are challenged to justify their opinions, values, and civic attitudes. However, deliberation serves to enhance a democratic society because differences in civic opinions are addressed and confronted in order to help the community-at-large move forward to establish public decisions. Recent research has shown the Internet's potential in mediating Internet users to engage in deliberative online exchanges (Agre, 2002; Dahlberg, 2001; Papacharissi, 2002). Appendix B is an example from a Zora log that exemplifies civic deliberation.

In summary, this article decomposes online civic engagement that happened in Zora into two main types: Civic Actions, which involves the creation of virtual hero-villain objects and value definitions, and Civic Discourse, which is composed of civic dialogues and civic deliberations (see Figure 3).
Figure 3. Decomposition of the construct Civic Engagement

Although it is not this article’s intention to suggest that one form of civic engagement is more appropriate than another, distinctions between forms must be made in order to illustrate the various ways in which participation in the development of an online community can foster civic engagement in today’s youth.

The Pilot Study

Anecdotal data have thus far helped describe the Zora virtual world and define the various aspects of the civic engagement construct. In what follows, we present descriptive quantitative summaries of a pilot study to describe participants’ level of civic engagement in Zora. Several variables are of particular interest: the types and definitions of values in the values dictionary, the types of heroes and villains defined in participants’ own virtual spaces, and the dialogue exchanged in the different chat rooms.

Participants and Setting

Twelve participants (six males, seven females) volunteered to take part in this summer workshop as part of a free summer camp activity. Participants’ ages ranged from 11 to 17 (mean age = 12.92, SD = 1.83). These participants came from urban schools in the Boston area of Massachusetts, United States, with mid to low SES levels; they came from a mix of ethnic backgrounds including African American, Chinese American, European American, and Hispanic American. The majority (n = 10) of the participants physically attended the workshop, while two participants logged onto Zora remotely from their homes.

The workshop lasted for nine sessions spanning a seventeen-day period. On each day, participants came
for about five hours in the afternoon (a total of 45 hours in the workshop). Each session was broken down into two parts with a short break in between. Because each session lasted for a long period of time, participants were freely allowed to leave their computer station for brief breaks when they grew restless. Participants also chose usernames to log onto the system, allowing the data and chat logs to remain anonymous. Although the participants did not know each other before the pilot study, they interacted online and those who attended the workshop interacted offline during breaks and before and after each session. As a result, some participants also grew to know each other outside of Zora.

During the first half of each session, the participants explored Zora freely without an adult coordinating the experience. Adults were only available to solve technical problems. The assumption was that Zora's design, as an ICE, would engage participants in exploring civic identities on their own. During this period, the participants built their own virtual spaces, visited and chatted in each other's personal rooms, wrote definitions in the values dictionary, and created cases to be discussed by the community. Other than the metaphors inherent in the Zora computer program (e.g., "case," "hero," and "villain" objects), there were no direct instruction on how and with what participants should create and furnish their virtual spaces. For the second half of each session, all members gathered in the City Hall, which they had constructed in one of the first sessions, to discuss their cases and any other issues and disagreements. Other than technical problem solving, there were no adult interruptions in participants' activities in either half of each session.

Coding Method

Two coding procedures were used in this study. First, the Zora log parser provides a detailed summary of all hero and villain objects and value definitions created in the Zora world. According to our previously defined construct, data pertaining to objects and value definitions would be described as civic actions.

Second, the Zora log records all conversations exchanged in the virtual world, providing us with a transcript for content analysis. Data pertaining to conversations were coded according to our construct of civic discourse, composed of civic dialogues and civic deliberations.

Civic Actions

We coded objects and values definitions by first reading the stories and descriptions attached to each creation. For hero and villain objects, four categories were derived after reading the descriptions: celebrities, personal acquaintances, fictional characters, and historical-political-religious figures. All hero and villain objects were coded into one of these four categories. For value definitions, four categories were derived after reading the descriptions: civic issues, personal-emotional issues, fun activities, and others. All value definitions were coded into one of these four categories.

Civic Discourse

All dialogues in the chat system were coded according to the previously-defined construct of civic discourse. First, conversational data from the log were read and each line was categorized as either related to civic issues or not. Chats not relating to civic issues were designated as non-civic discourse and no further analysis was performed on them. Further, any dialogues that did not receive a response from other
participants (e.g., a participant raised a civic issue, "let's discuss rules," but did not receive any response) were also designated as non-civic discourse, because no actual discourse took place. Chats relating to civic issues were read again, specifically looking for whether participants only exchanged ideas and opinions (which we coded as civic dialogues), or whether they carried on the conversation to deliberate different ideas and come to any sort of agreement (which we coded as civic deliberation). Thus, each line from the Zora log file was coded into one of three categories: non-civic discourse, civic dialogues, and civic deliberation. Finally, in order to assess the types of topics to which civic discourse related, lines of discourse were also grouped into events, such that each complete conversational exchange was considered one event.

Reliability

All materials were coded by two coders. Due to the small data set pertaining to civic actions (objects and value definitions), both coders coded all of the data. For hero and villain objects ($n = 44$), a 95% inter-coder agreement was achieved. For value definitions ($n = 35$), an 83% inter-coder agreement was achieved. Coder 1's coding of civic action data was retained in this paper. For conversational data, two coders divided the coding of the Zora log, with 10% overlap in the number of lines coded between the two coders for evaluating inter-coder reliability (Elder, Pavalko, & Clipp, 1993; Hodson, 1999). Using Cohen's Kappa as an index, the two coders achieved moderate inter-coder reliability, $kappa = .53$ (Fleiss, 1981; Landis & Koch, 1977).

Results

Civic Actions

A total of 44 hero and villain objects were created among all participants in the pilot study, of which 25 were hero objects and 19 were villain objects. The majority of heroes were celebrities ($n = 14$), followed by personal acquaintances ($n = 6$). For villains, the majority were fictional characters ($n = 8$), such as cartoon monsters, followed by celebrities ($n = 6$). Table 1 summarizes the types and frequencies of hero and villain objects created in the pilot study; examples of each type of hero and villain objects are also provided.

Regarding values in the value dictionary, 35 values were created by participants, with a total of 75 definitions appended to the dictionary. On average, each value contained 2.14 definitions. Out of the 35 values in the dictionary, 11 (32%) were related to civic issues, such as equality and tolerance. Table 2 summarizes the types and frequencies of value objects in the values dictionary.

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hero Objects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Celebrities</td>
<td>14</td>
<td>Eve, Tim Duncan</td>
</tr>
<tr>
<td>Personal Acquaintances</td>
<td>6</td>
<td>Parents</td>
</tr>
<tr>
<td>Fictional Characters</td>
<td>3</td>
<td>Theo the stripper</td>
</tr>
</tbody>
</table>
Historical-Political-Religious 2 Einstein

Villain Objects

Celebrities 6 Backstreet Boys
Personal Acquaintances 0 --------
Fictional Characters 8 Glob Monster
Historical-Political-Religious 5 Saddam Hussein

Table 1. Types and frequencies of hero and villain objects

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Sample Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civic issues</td>
<td>11</td>
<td>Equality, charity, money and wealth</td>
</tr>
<tr>
<td>Personal-Emotional</td>
<td>11</td>
<td>Love, happiness, pride, identity</td>
</tr>
<tr>
<td>Fun activities</td>
<td>5</td>
<td>Singing in city hall, entertainment</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
<td>Discovery, home</td>
</tr>
</tbody>
</table>

Table 2. Types and frequencies of value objects

Civic Discourse

In the course of the nine-session workshop, participants exchanged 3,256 lines of chat in the chat rooms. The distribution of the three conversation categories, from greater to smaller, included 1,815 lines of non-civic discourse, 976 lines of civic deliberation, and 465 lines of civic dialogues. In comparison, 44% (1,441 lines) of the participants’ conversations exchanged over the nine-session workshop were on topics related to civic engagement. Given that there was no direct adult supervision over the chats, and that the workshop did not follow any explicit civic curriculum, this high number showed that Zora’s design was in fact conducive to engaging participants in civic interactions. In comparing the deliberativeness of the civic discourse exchanged on Zora, 32% of civic discourse was considered civic dialogue and 67% was considered civic deliberation.

We also grouped lines of civic discourse into sets of chat or events. Looking only at civic discourse, we found 39 events, of which 22 (56%) were coded as civic dialogues and 17 (44%) were coded as civic deliberations. The topics of civic dialogues included participants’ religions, ethnic backgrounds, and current affairs. Topics of civic deliberation included definitions of and possible solutions for racism and discrimination, and social structure (e.g., selecting a mayor) in their Zora community. On average, there were 21.1 lines per civic dialogue event ($SD = 33.71$) and 57.41 lines per civic deliberation event ($SD = 83.42$).

Conclusion

This descriptive quantitative summary of the pilot study provides a picture of how Zora can afford a virtual sphere for youth participants to engage in civic activities in their on-line community. Although participants
were allowed to explore Zora and interact with each other freely without direct adult coordination, the data showed that Zora was conducive to engaging participants in the creation of value objects and exchanges of dialogue that communicated individual ideas, opinions, and information about civic life, as well as in participating in civic deliberation to promote community development. By allowing participants to create objects that reflected a personal set of values and to conduct dialogues that provoked perspective taking and the sharing of information about civic life, participants were able to cooperatively build a virtual community through engaging in meaningful civic actions and civic discourse.

In terms of civic actions, participants used heroes, villains, and value objects to articulate a personal moral vision or set of values without the need to communicate directly and verbally with other users of Zora. In the pilot study described above, participants created a wide range of heroes and villain objects, including personal acquaintances (e.g., parents and rabbis) and very general role models (e.g., Tim Duncan, an athlete). There was also a wide range of values, encompassing everything from general terms that youth valued (e.g., fun, entertainment, humor) to serious civic issues (e.g., equality, wealth). In terms of civic discourse, the data showed that although there were many more civic dialogue events exchanged among participants, this type of discourse tended to be brief. On the other hand, although civic deliberation events were less frequent, deliberative discourse constituted more in-depth and elaborate conversational exchange on Zora.

Although the presented pilot study of the Zora summer workshop showed the potential of networked technologies as a mediating tool to afford and facilitate youth's civic development, there are several limitations to the present discussion. First and foremost, Zora was designed to be secure and safe for youth and children to use. Only participants from our workshop could participate, and all online discussions and activities, although not directly instructed, were constantly monitored by an adult coordinator. While the chat system and the 3-D computer environment emulate many of today's networked computer technologies, the setting of the study was only a contrived version of the publicly-accessible Internet. Second, given the large spread of ages (11 to 17), the small sample size of twelve participants posed another limitation to our findings. Future replications of this study could target more specific age groups (such as early adolescents or mid-adolescents) to further investigate and contrast developmental differences in participants' use of networked technologies as a venue or stepping stone for civic engagement and civic development in the face-to-face world. Finally, the type of in-depth transcript log analysis required for this type of study limits the amount of data that could be analyzed. Moreover, although a large amount of interesting qualitative data was collected over the nine-session workshop, by no means do we suggest that participants could truly establish a civic identity in nine sessions. Especially given the low social cue bandwidth of the Internet (Kiesler, Siegel, & McGuire, 1984), future studies should lengthen the amount of time and days that participants engage online and examine possible relationships between degree of civic engagement and the establishment of a civic identity.

Despite these limitations, the present study illustrates the potential of a multi-user environment specifically designed to foster positive youth development to promote technology in young people's civic engagement and civic development. As shown in this article through the example of the Zora environment, new
technologies can provide a safe environment for youth to experiment with civic engagement with respect to sharing, constructing, defining, and deliberating personal and civic opinions. Future research should expand on these results and examine the use of networked technologies to foster civic development in other age groups, as well as to explore the relationship between on-line and off-line civic engagement. Similar technologies could also be applied to special populations, such as children in marginal settings (e.g., hospitalized children, immigrant children) as a means to foster communication and to build social relationships while developing positive civic identities. Future research could also investigate how the active participation of a teacher or mentor may increase the effectiveness of Zora by adding an adult supervisory component to the Zora experience or setting up a curriculum to specifically target particular learning encounters or lessons. Finally, longitudinal research is underway, extending the current study to investigate potential effects of Zora in developing long-term changes and development in youth's civic knowledge and identity, and the relevance of these potential changes to civic engagement and contribution in the real world. Many of today's youth are fascinated by networked technologies and computer innovations. However, connectivity is not enough. The question is how to design programs purposefully that leverage youth's interest in technology and foster new ways of civic engagement and participation.

References


**Appendix A**

Following is an excerpt from a Zora log illustrating an example of civic discourse. As shown in this excerpt, civic dialogue started to emerge among these young people through engaging first in a civic activity (i.e., getting together in the virtual City Hall to discuss the new cases posted by community members) and then by discussing their opinions regarding a civic issue, such as the way to punish lawbreakers in Zora. There were no teachers or adults guiding the activities and discussions in the summer workshop. The goal of the workshop was to observe how participants would behave on Zora in order to assess the success or failure of its design features to engage youth in civic activities.

User 1; Is everyone in city hall. we need to start discussing.
User 2; why is everybody in the floor except for me
User 2; mayor, start discuss the cases
User 1; Did everyone read the cases?
User 2; yes
User 3; Yes
User 4; there's only 1 new one
User 2; yes we do
User 5; First of all, everyone read the rules on top of the desk
User 5; want any changes??
User 1; what is the new case
User 2; everybody, read the new case the biggest box is the new case
User 4; I don't get the punishment case
User 4; physical punishment?
User 6; The punishment idea is absurd.
User 1; well i think the physical punishament is ridiculous.
User 4; oh...of course
User 5; ye
User 2; no its not
User 6; It's ridiculous. Why would we, in a peaceful city that
User 1; yeah it is.
User 5; yes it is
User 4; lets ignore that one
User 2; its the only thing that will work
User 5; no it won't
User 6; s not even real, want to start off with hitting or otherwise hurting people?
User 1; it's not like we committed a crime
User 1; if someone breaks a rule, they shouldn't be beaten like a piece of meat. That's ridiculous

**Appendix B**
Following is an excerpt showing civic deliberation in Zora. Some of the participants were using as avatars a cartoon character with stripping capabilities. As a result, participants could hit "pose" and their avatar would strip off its cartoon-like clothes. The "stripping" issue engaged participants not only in civic dialogue, but also in civic deliberation since participants felt that they needed to come to a decision regarding whether stripping (posing) would be permitted in their virtual city. It is important to note that the actual stripping did not reveal any body part, just the cartoon's underwear. This example illustrated how civic deliberation engaged youth not only in expressing their opinions, but also in justifying these opinions and even engaging in civic behavior, e.g., voting. This example also illustrates how in the absence of adult interruption during participants' interaction, some youth would take initiatives acting as moderators or leaders of the group. Note especially when User 2 takes a moderator role in the dialogue below.

User 1: FORGET ABOUT THE STRIPPING [USER 8]
User 2; [User 8,] shut up, I can strip where ever i want, whenever i want, to whomever i want
User 8; why?
User 5; @!#$%^*^ [User 8]
User 2; poses.
User 9; stop posing
User 4; quit that
User 8; why?
User 5; pose
User 9; indecent exposure should not be allowed
User 2; freedom!!!!!!
User 2; poses.
User 1; who cares if someone poses. it's not that big of an issue. if u want to see someone nude, then just watch yourself take a shower or something.
User 2; poses.
User 1; [User 2] keeps posing and distracting every1
User 5; !#%^$&%$*& [User 2]
User 2; kiss my @$@$@
User 6; Note to self: The girls on this program are remarkably more mature than the boys. I never realized the difference before.
User 2; stripping is our natural birth right
User 5; yes it is
User 6; Birthright? You mean because you were born naked?
User 2; it is the symbol of absolute freedom
User 5; no it isn't
User 4; just quit it, would you?
User 2; it is DEVINE
User 5; no way.
User 6; Then, by the same theory, it's your birthright to stay as mature as infants I'm glad you're at least consistent.
User 5; protest
User 2; I LOVE STRIPPING
User 3; But it is are birth right to say we don't want to see you naked
User 5; stripping is ok
User 6; Stripping is fine, as long as it doesn't get in the way of the reason we're all here.
Which is to discuss the rules.
User 1; could we drop stripping for now
User 2; all that agree to the bar stripping rule say aye
User 7; Okay, I don't care
User 8; aye
User 5; nei
User 3; aye
User 6; What are we ayeing?
User 2; it says that you can only strip in the bar
User 8; thats 20- 4 for only stripping in a bar

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