Civic Participation Among Seventh-Grade Social Studies Students in Multi-User Virtual Environments

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Technological advances on the Internet now enable students to develop participation skills in virtual worlds. Similar to controlling a character in a video game, multi-user virtual environments, or MUVEs, allow participants to interact with others in synchronous, online settings. The authors of this study created a link between MUVEs and participation in civic activities by seventh grade students. The purpose of this case study was to evaluate how face-to-face cooperative structures would translate to an online setting. The study also assessed whether working cooperatively in a MUVE would have an effect on student civic participation. The virtual environment did provide an authentic setting for students to practice the civic lessons they learned academically. Student involvement in a participatory culture translated to an increased tendency to be civic-minded.

INTRODUCTION

As early as pre-school, students are taught the basic values of a democratic society. They learn about our founding fathers and celebrate America's independence. In a democracy, they are told, everyone is free to have their own voice. These principles embody the United States as a nation. In

pre-school, students are told to raise their hands for what they want to do-
-play duck-duck-goose or 7-Up—and the majority rules. As they advance
in their education, however, opportunities to make decisions in their class-
rooms tend to diminish. Unfortunately, teaching the fundamental facts and
ideas about citizenship, however, does not create active citizens. Democ-
racy only thrives when its citizens participate. The students who are most
involved within their school will likely grow up to become the most active
citizens in their own communities. These are the members of society that
apply what they have intellectually learned.

A standardized test is administered to measure civic knowledge in
schools in New Jersey. The National Assessment of Educational Progress
(NAEP) Civics Project evaluates students three times: at grades 4, 8, and
12. It is difficult, however, to measure student participation and involvement
in their communities. The participatory skill questions that are on the test
ask about how students collaborate in groups, how students follow news
and current events, and how students vote, lead, and influence their peers
("NAEP Civics Assessment Specifications," 1996).

In the NAEP assessment, a portion of the test questions examine wheth-
er a student can recognize a participatory skill, such as reading a newspa-
per or voting (Lutkus & Weiss, 2006). Further questions ask students to
describe the function and purpose of having those skills. It is not enough
for students to merely identify participatory skills; what is important is that
students know why they are taught these skills. The Nation's Report Card
showed that there was no improvement in test scores from 1998 until 2006
(p. 1). This implied that students showed no growth in learning about par-
ticipatory skills in the eight years between the assessments.

Students may develop participatory skills in school. Although students
are encouraged to be individuals, they may also be taught to work well with
others. When working in a cooperative learning structure, students are typi-
cally assigned individual tasks to carry out. Then, as responsible members
of their classroom community, students may be encouraged to help their fel-
low classmates. In this environment, students have the opportunity to apply
their civic knowledge about community directly to their classmates.

Students, of course, encounter other influencing factors beside what is
taught in school. For instance, 97% of teenagers regularly play video games
(Lenhart, Kahne, Middaugh, Macgill, Evans, & Vitak, 2008). With that in
mind, former Supreme Court Justice Sandra Day O'Connor launched the
website Our Courts in 2009. Our Courts' goal is to engage middle school
students with civic-themed, educational video games ("About Our Courts,"
2009, ¶ 3). The games featured take the constructivist approach to teaching

civics ("Our Courts – For Teachers," 2009, ¶ 1). The site also features lesson plans.

The proliferation of the read/write web, or Web 2.0, also plays a role in developing a student's participatory skills. Students are now able to create, remix, repurpose, and share their own media content on the Internet (Jenkins, 2008). In fact, more video is uploaded to the video sharing site, Youtube in 60 days than all three major U.S. networks have created in sixty years. The setting where these creations are shared is formally called a participatory culture (Jenkins, 2008). Participatory cultures are relatively easy to join to form a community of practice. When a new member creates content, for instance, posting a self-created video on YouTube, other members offer feedback (Jenkins, 2008). The rules and values of the virtual community are transmitted by its members (Jenkins, 2008). It can also be said that those who are more engaged in political discourse online will tend to be the members who lead in their own real-world communities (Jenkins, 2008).

Recent technological advances on the Internet now enable students to develop participation skills in virtual worlds. Similar to controlling a character in a video game, multi-user virtual environments, or MUVEs, allow participants to interact with others in synchronous, online settings. MUVEs usually involve sophisticated software that allows users to simulate interactions with other users in a real-time, synchronous setting. MUVEs have a framework that "enable multiple simultaneous participants to (a) access virtual contexts, (b) interact with digital artifacts, (c) represent themselves through 'avatars', (d) communicate with other participants, and (e) take part in experiences incorporating modeling and mentoring about problems similar to those in real world contexts" (Dieterle & Clarke, n.d., p. 10).

Some MUVEs, such as Second Life, enable visual representations of its users to interact with others in photorealistic worlds. Other MUVEs, such as Tapped In, are more text based. Tapped In, which is an entirely web-based MUVE, was originally launched in 1997 as a teacher-centered professional development platform. As of 2009, the Tapped In community grew to over 800 user groups. All members can communicate in synchronously via text chats (Farooq, Schank, Harris, Fusco, & Schlager, 2007). Both Second Life and Tapped In offer a virtual space to develop participation skills. Tapped In is especially well-suited to supervising and managing younger student populations. Teachers can monitor student activity in a virtual classroom and then opt to receive e-mailed transcripts of those conversations. Weidman and Bishop concluded that the four characteristics of cooperative learning structures remained in tact when the setting was online: students felt that they could rely on one another, students were self-accountable, students

helped each other to learn, and students honed their social skills (Weidman & Bishop, 2009, p. 52). In addition, the Warren, et al. (2008) study found that there was an increase in student engagement when an activity was moved to a virtual environment

PURPOSE

There are many outlets for students to sharpen their participatory skills. In today's student-centered classroom, cooperative learning structures are common. Students frequently work with one another in problem-solving activities. MUVEs also offer a forum for exercising one's participatory skill set. By conducting a case study of seventh grade students, the researchers determined if students can work cooperatively in a MUVE to solve a problem.

RESEARCH QUESTIONS

The following questions guided this study:
1. How will student personality type effect their participation in a cooperative learning activity?
2. To what extent do students "self-police" the content of their chats?
3. To what extent does student's involvement in participatory cultures translate to an increase in civically assessed participatory skills?

METHODOLOGY

Research Design

To complete this research, a case study was performed. This methodology was chosen because the researchers were studying a small and fairly homogonous population of students.

Procedures

The participants engaged in a problem-based learning (PBL) unit designed to simulate 1787's Constitutional Convention, wherein the new-

ly formed states agreed on a new central government. Students worked through an authentic problem and reflected on how the Framers of the U.S. Constitution used compromise to settle their sectional differences. Each student was presented with the task of drafting a Student Constitution and each acted as framers at a Virtual Constitutional Convention. Students collaborated on how they would create a Student Government Constitution, based on the principals in the U.S. Constitution.

Four sections of seventh grade classes took part of this study. Each class met in the Tapped In MUVE during their regularly allotted period. Students worked synchronously, in cooperative groups, and debated teacher-assigned topics. Tapped In enabled the teacher to set-up user-name private classrooms. In that setting, students engaged in real-time text chats. Tapped In automatically e-mailed chat transcripts to the teacher. The teacher checked the transcripts to ensure that the students stayed on-task, as well as to check if each student contributed their ideas. The culminating activity was the ratification of the Student Constitution wiki, to be collaboratively edited on PBWorks. The wiki was the asynchronous component of the study. PBWorks also e-mailed the teacher each time an edit was made. Students drafted the Student Constitution to their liking, as long as it aligned to the rubric's guidelines. The required vote to ratify the Student Constitution wiki was a two-thirds majority of all four combined class sections. The four classes used an online polling website, Edmodo, to approve the final wiki. This PBL unit combined both synchronous (Tapped In) and asynchronous (PBWorks' wiki, Edmodo) learning environments.

This study included quantitative data measures, such as pretest and posttest questionnaires, as well as interviews with the participants. One of the researchers, who was also the teacher and moderator of the virtual classrooms, performed direct observations of how the students interacted. One goal of this study was to assess the extent that students can self-monitor their online conversations to focus on the task at-hand. Students were each given copies of a teacher-created code of conduct document. The teacher used this document to ensure that the students were cognizant of this fact that the MUVE provided transcripts of the student conversations. The chats themselves were not graded, thus allowing for an unstructured forum for discourse and discussion. Posttest survey questions gave the participants the opportunity to self-reflect on the success of their ability to stay on-task, as well as their grade expectations.

Data Source

Pretest and posttest data were collected via the online survey website SurveyMonkey. A Likert Scale was used to discern student opinions. The scale ranged from one to five; one being the least and five being the most. SurveyMonkey compiled the raw data and exported the results to bar graphs. The open-ended questions were analyzed to gauge the success of the PBL unit.

Survey One asked students about their experiences working in cooperative groups in traditional face-to-face settings. Survey One included questions based on, and modified from, the NAEP's Civic Assessment of participatory skills (1996, p. 10). This survey was based on questions adapted from the Civics Questionnaire – Grade 8 ("NAEP 2010 Sample Questions," 2009). The questions evaluated the frequency of student civic participation. Survey One's questions were drawn from the Lenhardt, et al. study that researched civics in video games (2008). This section of the survey assessed student experiences utilizing MUVEs outside of the classroom, with an emphasis on civics in gaming, such as helping other players and organizing online user groups.

Survey Two was conducted after the PBL unit was completed. This was the posttest survey designed to determine the impact of working cooperatively in a MUVE. Cooperative roles and affiliation questions were modified from the Brewer and Klein study (2006). Cooperative learning structures questions were modified from the Weidman and Bishop study (2009). Civic participation questions were also included, as well as questions regarding student attitudes towards applying MUVE technology to their learning. These questions were adapted from the Lenhardt, et al. study (2008).

The PBL unit's activity was a Constitution simulation. Tapped In, a free web-based multi-user virtual environment, provided the synchronous teacher-moderated platform. In the Tapped In MUVE, students worked in pre-assigned cooperative groups and debated teacher-assigned topics. The four classes to be involved in this study utilized PBWorks' asynchronous wiki to create the culminating activity, the Student Constitution. Edmodo Polls, a free service offered via an educational micro-blogging website, was utilized for student voting. All of these websites were teacher-password assigned and did not require direct student registration. These resources also did not require software installation and could be accessed from any computer simply by logging on to the corresponding website. The researchers utilized SurveyMonkey to design the online version of the questionnaire, as well as to aggregate and analyze the quantitative data.

Participants

The school setting was in suburban New Jersey. Participants included four seventh grade Social Studies classes consisting of 82 students. Of those students, 44 were male and 38 were female.

The teacher's classroom was technology-rich and already included five desktop terminals and six laptops, as well as an interactive white board. The teacher borrowed additional laptop computers from neighboring classrooms to create a one-to-one computer-to-student ratio.

FINDINGS

Data was collected directly into SurveyMonkey's portal. The online survey was anonymous and private. The researchers utilized the school district's institutional account to access SurveyMonkey. The results of Survey One were used as a starting point to establish student experiences working cooperatively and participating civically. The responses of Survey Two were analyzed to evaluate the degree that cooperative learning can occur in a MUVE, as well as to assess the affect that the PBL unit may have had on student participation skills. If the majority of the participants answered with fours or fives to questions on Survey Two, then the researchers could infer that the infusion of technology positively affected the students' ability to work cooperatively to solve a problem.

The first set of questions in Survey One pertained to experiences playing video games. Table 1 presents the data collected pertaining to the variety of settings participants utilize when playing video games. The participants engage in video games either alone, or multi-player. Multi-player games can be played locally in the same location, or online. The mean was based on a five point scale.

Table 1
Frequency of Video Gaming in Different Settings

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Very Often	Mean
Play video games by themselves	10.8%	25.7%	35.1%	14.9%	13.5%	2.95
Play multi-player video games with other players who are in the same room	5.3%	25.3%	38.7%	20.0%	10.7%	3.05
Play multi-player video games with other players online	20.3%	23.0%	24.3%	12.2%	20.3%	2.89

Participants mentor other players at a lower rate than when playing to-gether online, rather than locally. Figure 1 shows that 32.9% of the partici-pants mentor new players in local settings. Figure 2 illustrates that 68% of the participants rarely or never mentor new players when games are played online.
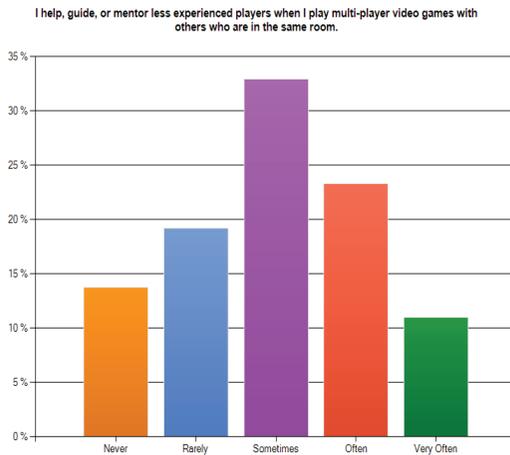

Figure 1. Mentoring less experienced players when playing locally.
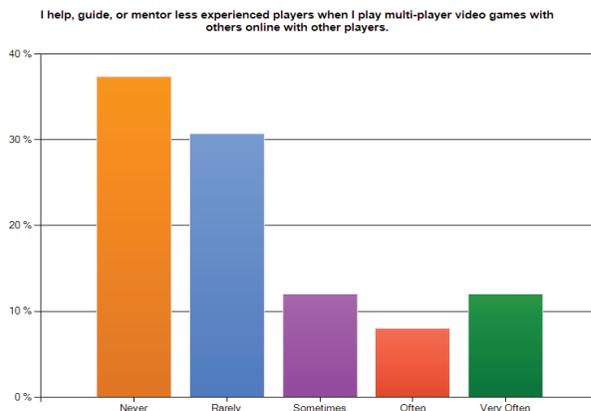
Figure 2. Mentoring less experienced players when playing online.

Participants were asked about the frequency they play video games that had specific objectives required to advance in the game world. Table 2 shows that the participants rarely play video games that they believe involve problem-solving, ethical decision making, social issues, or community building. The mean was on a five point scale.

Table 2
Frequency of playing different video games with different objectives

	1 Never	2 Rarely	3 Sometimes	4 Often	5 Very Often	Mean
Solve problems	12.3%	28.8%	32.9%	19.2%	6.8%	2.79
Make moral or ethical decisions	24.3%	27.0%	36.5%	6.8%	5.4%	2.42
Explore social issues	26.4%	36.1%	22.2%	8.3%	6.9%	2.33
Decision making about running a community, city, or nation	22.7%	29.3%	32.0%	13.3%	2.7%	2.44

Massively multi-player online games exist in virtual worlds and lend themselves to civic experiences, such as organizing guilds and mentoring. The researchers found that 81.1% of participants reported that they rarely, or never, research the video games they play. In addition, 88% of participants reported that they rarely, or never, contribute to writing online about the games they play. The findings also show that 87.2% have never, or rarely, organized a user group or guild outside of the game itself.
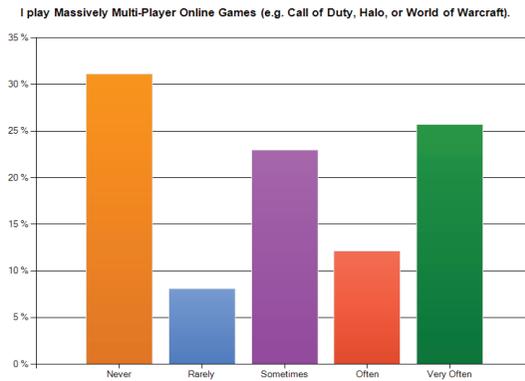

Figure 3. Engaging in massively multi-player online games.

The next section of survey questions pertained to civic participation. The researchers found that 10.9% of participants go online to get information about politics or current events either often, or very often. Additionally, 16% of participants reported that they try to stay informed about politics or current events often, or very often. The majority reported that they rarely spent time discussing current events or social studies with friends or family. Over half, or 52.1%, of participants have never written letters, or sent e-mails, to give their opinion to help solve community problems. A smaller percentage, 41.1%, of participants reported that they rarely seek out and read extra material not in the regular textbook.

The first set of questions in Survey Two asked the participants to reflect about working cooperatively in the PBL unit. The researchers found that 30.1% of participants agreed with the statement that working cooperatively in the Tapped In MUVE was as effective as working in a face-to-face setting; 38.7% strongly agreed.
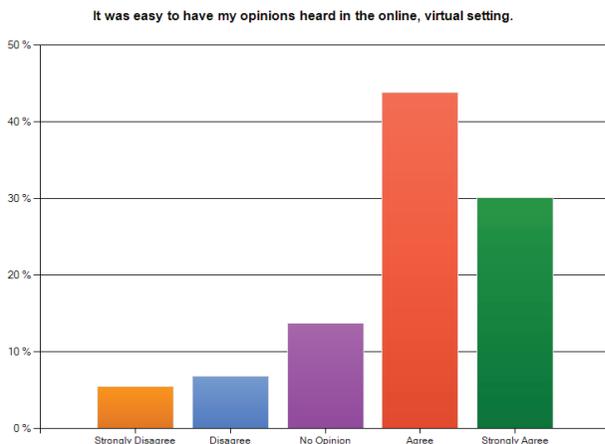
It was easy to have my opinions heard in the online, virtual setting.

Figure 4. Ease of having opinions heard in the online, virtual setting.

Figure 4 illustrates the responses regarding student ability to have their opinions heard in the MUVE. The researchers found that 43.8% agreed that it was easy, while 30.1% strongly agreed. In fact, many of the participants responded favorably to statements regarding working in the cooperative setting. Over two-thirds, or 69.3%, of participants agreed, or strongly agreed, that they benefited from working with others. Even more of the participants, 78.6%, replied that the ideas they generated as a group were more favorable than the ones they could have thought of when working individually. The findings show that 71.2% of participants reported that it was important to them that every team member earned a good grade. Table 3 shows how the participants self-assessed their ability to stay on-task during the PBL unit. The mean was based on a five point scale.

Table 3
Ability to stay on-task

	1 Strongly Disagree	2 Disagree	3 No Opinion	4 Agree	5 Strongly Agree	Mean
Signing the project's "Tapped In Code of Conduct" handout helped me to stay on-task	6.9%	5.6%	48.6%	27.8%	11.1%	3.31
Knowing that my teacher was going to receive an e-mailed copy of our Tapped In text chats	5.6%	7.0%	14.1%	45.1%	28.2%	3.83
Knowing that my teacher was going to receive e-mail updates every time our team edited the wiki	5.6%	4.2%	16.7%	50.0%	23.6%	3.82

The final set of questions in Survey Two asked the participants to self-assess the civic lessons they learned. Students reflected on their participation in writing the Student Constitution wiki, as well as voting in the poll to ratify it. The findings show that 70.8% of participants felt that their contributions to the Student Constitution wiki were necessary. Table 4, however, shows that at least a third of those surveyed had no opinion about whether their vote made a difference and if they planned to take part in future online polls. About half at least agreed that their vote counted and would be likely to vote again online. The mean was on a five point scale.

Table 4

Student self-assessment of civic participation

	1 Strongly Disagree	2 Disagree	3 No Opinion	4 Agree	5 Strongly Agree	Mean
My voting in Edmodo Polls made a difference	2.7%	8.2%	38.4%	31.5%	19.2%	3.56
Since completing this project, I am likely to take part in more online polls	6.9%	9.7%	34.7%	30.6%	18.1%	3.43

DISCUSSION

The Warren, et al. (2008) study found that there was an increase in student engagement when an activity was moved to a virtual environment. That report found that students, in the online setting, voluntarily answered more of the optional writing prompts. The researchers' findings support this conclusion. Similar to the Warren, et al. study, the researchers observed that seventh grade social studies students became more engaged when the assignments were delivered in a MUVE setting.

Three students were absent during various days of the PBL unit. Those students, without prompting from the teacher, voluntarily decided to log in from home during their class' time period, as well as during other class' time periods. Upon logging in, those absent students worked both with the class and with their cooperative group. Some even interacted with students in class periods other than their own. Several students remarked to the teacher that they would have also gone on Tapped In if they were home sick.

By the third day, participants began to set up synchronous appointment times to log on. Students regularly met in the virtual classroom from after school ended until the early evening. One message, posted on the MUVE's Whiteboard read, "EVERYONE GO ON TAPPEDIN AT 4PM TODAY! [*sic*]" About nine students logged into Tapped In throughout that particular afternoon. A couple of students also began to check in to the MUVE during odd hours, including late in the evening and before school began. By the weekend, and the second week, however, fewer students met in the MUVE after school hours.

The researchers found the same results with seventh grade social studies students as with Brewer and Klein's (2006) undergraduate business students. In Brewer and Klein's study, students were placed into a pre-selected group and each student was assigned a role. Their study found that the students needed a reward system to encourage group participation. Their participants attributed the improvement in the quality of the student work to the dynamic of working in a group, rather than individually. Upon completion of the researchers' PBL activity, just 9.5% of the participants agreed, or strongly agreed with the statement that they would have enjoyed this project more if they had worked by themselves.

Students that were typically quiet in regular face-to-face class interactions opened up during PBL unit. The findings show that 73.9% of the participants agreed, or strongly agreed, that it was easy to have their opinions heard in the online, virtual setting. Additionally, 68.5% of the participants said that they agreed, or strongly agreed, that working cooperatively in Tapped In was as effective as working cooperatively face-to-face. The mean for both survey questions, on a five point Likert Scale, was 3.86. One of the usually shy students freely expressed his views on the Whiteboard when he remarked that, "this is a super cool project i [*sic*] wish we could do this more often." Several participants wanted their Tapped In accounts to continue after the PBL unit concluded. Whiteboard comments ranged from, "OMG!!!! I don't want my account to close!!!" to, "last day!!! i dont [*sic*] want Tapped In to be done!"

Weidman and Bishop concluded that the four characteristics of cooperative learning structures remained in tact when the setting was online: students believed that they could rely on one another, students were self-accountable, students helped each other to learn, and students honed their social skills (Weidman & Bishop, 2009, p. 52). In this study, the researchers found that students regularly reminded each other that the teacher received automatic updates. Transcripts of text chats include many conversations that mention that the teacher "is always watching." Students reinforced their social skills, as well. This was evident from the high participation of the student's text chats in the MUVE.

The researchers also discovered that students were able to "self-police" their chats. Having students sign the "Tapped In Code of Conduct" handout was effective, but not as effective as reminding students about the automatic e-mail updates. The findings show that 38.9% of the participants agreed, or strongly agreed, that signing the project's "Tapped In Code of Conduct" handout helped them to stay on-task. An even larger majority of participants, 73.3%, agreed, or strongly agreed, that they stayed on-task because

they knew the teacher would receive e-mailed transcripts of the Tapped In chats. The mean, on a five point Likert Scale, was 3.83. The findings also show that 73.6% of the participants agreed, or strongly agreed, that they stayed on-task because knew that the teacher received e-mail updates of wiki edits. The mean, on the same five point Likert Scale, was 3.82.

Kahne et al. reported that the teens that play video games with others have an increased tendency to become active citizen participants. The Lenhart et al. study further reported that there was an increase in civic involvement when the participants played video games together in the same physical location (2008). The researchers' data supports the previous studies from Lenhart et al. and from Kahne et al.; students that helped one another in MUVEs, especially when engaged together in the same location, showed an increase in civic awareness.

Most of the participants, 70.8%, either agreed, or strongly agreed with the statement that their contributions to the Student Constitution wiki were necessary. Several students reported that they liked the power they felt over writing the wiki. When students saw that the wiki constantly changed, they became frustrated with the results. Some students stated that the later class periods had more influence simply because those classes met later in the day. The teacher explained that the wiki and Tapped In remained open after school and throughout the weekend. The students also became competitive about "stealing the lock" from each other on PBWiki. This was due to the fact that the site allowed only one editor at a time to make changes. The teacher allowed each class period to work out this problem on their own. This facilitation, seen as a teachable moment, was, ultimately, part of the simulation learning process.

Almost half of the participants, 48.7%, reported that, since completing this project, they would be likely to take part in more online polls. About half, or 50.7%, of the participants agreed, or strongly agreed, with the statement that their voting in Edmodo Polls made a difference to the final outcome. In fact, many students were angry wiki did not pass. Two-thirds, or 66.7%, vote from all of the students was required to ratify the Student Constitution wiki. The teacher explained that polls closed after the last class voted and absent students could not vote, just like the actual Election Day. Exactly 66% voted in favor of passing the Constitution. Regarding the close margin, several students remarked, "You mean if I wasn't absent, it would've passed?" Some students made the connection to a second question that failed to pass during last year's school district budget vote also failed by just a few votes. This authentic, felt-need experience led most students to conclude that every vote in a democracy counts.

CONCLUSIONS AND IMPLICATIONS

Students are accustomed to spending at least some of the school day engaged in face-to-face, cooperative learning structures. These activities involve working with others to solve problems or to complete tasks. When the school day ends, many of these students come home and spend time interacting in online, participatory cultures. This case study assessed how cooperative structures, traditionally associated with face-to-face classroom settings, would translate to an online environment. The researchers evaluated seventh grade social studies students to determine their ability to work out a problem-solving task in a MUVE. Student's attitude to civic participation was also measured.

The skill of working together with others in virtual environments is not commonly taught in today's middle schools. The aptitude to work with others online, however, is becoming increasingly prevalent in education and in the workforce. The data gathered in this study suggests that MUVEs, like their video game counterparts, allow users to engage in simulations of real-world activities. Similarly, mentoring one another to encourage learning, which is commonly found in cooperative learning structures, also thrives in virtual environments. The technology utilized was intuitive and the participants became further engaged as the project progressed. The researchers felt it was important to deliver instructions to the participants in the same constructivist fashion as found in video games. Specific directions were given when needed. The researchers found this approach to be successful. Students also discovered shortcuts, such as methods to create virtual gestures. Those students, in turn, shared their knowledge with their cooperative group and their class. The participants of the study were able to problem-solve and manage tasks in the virtual work space.

The researchers observed that traditional cooperative structures remained in-tact when transposed to a MUVE. In fact, the participants discovered that they could privately message one another when they needed to directly discuss their specific assignment. Absent students began to voluntarily log on from home and were able to work with their group in real time.

Student-centered learning in face-to-face settings typically involve a degree of socializing from the students. The researchers observed that the students that were shy in face-to-face class settings were, in fact, quite social in the virtual environment. Many of these students expressed disappointment when the study ended.

The researchers observed that peer influence was a factor in the participants' choice of virtual environment. Upon completing Survey One, many

participants openly discussed, and ridiculed, certain video game worlds. The most popular multi-player online video title of the moment was the first-person shooter (FPS) game Call of Duty: Modern Warfare 2. Medieval-themed games, such as the World of Warcraft and Runescape, were ridiculed by the participants. Choosing which socially acceptable virtual world to engage in can be as important a decision to a seventh grade student as choosing the right brand of sneakers to wear.

This purpose of this case study was to evaluate how face-to-face cooperative structures would translate to an online setting. This study also assessed whether working cooperatively in a MUVE would have an effect on student civic participation. The virtual environment did provide an authentic setting for students to practice the civic lessons they learned academically. Student involvement in a participatory culture translated to an increased tendency to be civic-minded.

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