

Student as Avatar: A Study of Informational Preferences in a Virtual World Class

Mark Mabrito

Associate Professor
Department of English and Philosophy
Purdue University Calumet
Hammond, IN 46323 USA
mmabrito@purdue.edu

Abstract

There is a growing interest among educators in exploring multi-user virtual environments (MUVes) such as Second Life as platforms for distance learning and other applications. Yet, the notion that virtual worlds also provide an opportunity for writing instructors to teach about multimodal texts and new media literacies is an area that has received less attention. This study examined the informational preferences of avatars (students) who were members of a class that met online in the virtual world of Second Life. Specifically, the purpose was to assess avatars' informational preferences from among three different media: print articles, machinima, and direct exploration within Second Life while enrolled in a course studying virtual worlds. It was found that avatars expressed a greater preference for information gathered from machinima and information gathered firsthand from Second Life than print-based information. However, over time, they expressed a greater preference for information drawn directly from Second Life. Their subsequent discussions about the information varied in specificity, depending on the medium they were referencing.

Keywords: virtual worlds, multi-user virtual environments (MUVes), avatars, Second Life, informational preferences, new media literacies

Introduction

In recent years, new media researchers and practitioners have challenged the definition of traditional literacies in the academy, while attempting to situate the act of "composing" in a much broader sense than alphabetic text alone. English and Communications departments have responded by offering courses and programs in digital media that invite students both to study and create these new media texts. Composition pedagogy has responded by fostering multimodal approaches to teaching first-year writing, challenging student writers to consider the affordances of images, sound, and video toward a broader understanding of text (see, for example, [Kress, 2003](#); [Selfe, 2007](#); [Wysocki, 2003](#)). Within this context, the explosion of Web 2.0 technologies (blogging, social networking sites, and peer-to-peer media sharing) has both enhanced and complicated instructors' understanding of the 21st-century classroom ([Lutkewitte, 2009](#); [Middlebrook, 2010](#)).

In the backdrop of this larger conversation has been a smaller – yet steadily growing – interest in virtual worlds, 3D immersive environments that users inhabit in the form of avatars. Some recent research has focused on game-based worlds as potential learning spaces. For example, [Abrams \(2009\)](#) found that high-school males were able to develop a schema for academic material through their videogame playing, while [Gee \(2007\)](#) argues that videogames can facilitate deep learning and promote literacy skills. However, less attention has been paid to non-gaming virtual worlds, spaces such as Active Worlds, Second Life, or OpenSim, user-generated worlds used by business, government, education, entertainment entities, and millions of avatar residents.

While there is some interest in the popular media about the psychosocial aspects of living and working as an avatar in a virtual world, the academy has focused less on these spaces as literacy events. Although some studies have addressed the specific issue of literacy in virtual environments ([deWinter & Vie, 2008](#); [Remley, 2010](#); [Ritke-Jones, 2010](#)), many pedagogical questions remain. For example, how do we define "literacy" in a 3D virtual environment? What sorts of skills will avatars need to communicate effectively within and about these virtual spaces? In what ways do avatars function as readers and writers in a virtual

world? The present study looked at one of these questions of virtual world literacy by examining the informational preferences of avatars (students) in a virtual world classroom.

Research on Virtual Worlds and Second Life

"Virtual world" is an umbrella term that can refer to a variety of different types of virtual space, ranging from a MMORPG (massively multiplayer role-playing game) such as World of Warcraft and Half Life 2 to a MUVE (multi-user virtual environment) such as Second Life. In both instances, users inhabit these spaces as avatars. However, the relevant distinction between these two types is that the former has a pre-established structure or narrative to it (e.g., completing a quest or mission) while the latter is totally user controlled and created.

The use of 3D virtual worlds in education has increased in recent years ([De Lucia, Francese, Passero, & Tortora, 2009](#); [Michels, 2008](#)). Individuals, businesses, academic institutions, non-profit organizations, and government agencies use the technology for a variety of purposes including but not limited to meeting, collaborating, conducting commerce, teaching classes, and socializing ([EDUCAUSE Learning Initiative, 2008](#)). Second Life still remains one of the most widely-used virtual worlds by universities and colleges ([Inman, Wright, & Hartman, 2010](#)), despite the fact that in the last few years, some educators have migrated to other virtual spaces like OpenSim for cost-saving reasons and to enable themselves to have greater control over content ([Young, 2010](#)). Virtual worlds present opportunities for distance learning, providing access to real-time communication and collaboration (Kemp & Haycock, 2008). They also provide sites for constructivist learning, which is based on the idea that knowledge is constructed by learners through negotiation and collaboration (Vygotsky, 1978). Dede (1995) argues that virtual worlds can serve as safe environments in which students are able to learn by doing. Additionally, Fogg (2003) demonstrates that there are affordances to using virtual reality as a mediating tool, while Dickey ([2003, 2005](#)) found that virtual worlds, despite some limitations, can support constructivist learning because avatars are able to interact and collaborate with one another within these spaces.

Perhaps the most striking difference between virtual worlds like Second Life and other Web 2.0 tools for teaching and learning is that the former are *immersive* virtual learning environments. Learners inhabit the environment as avatars – they become a "living" part of the world. [Dede \(2009\)](#) maintains that immersion can enhance the educational experience: "The more a virtual immersive experience is based on design strategies that combine actional, symbolic, and sensory factors, the greater the participant's suspension of disbelief that she or he is 'inside' a digitally enhanced setting" (p. 66). Similarly, [Savin-Baden \(2010\)](#) suggests that an immersive environment like Second Life "will lead to a sense of the user feeling 'in' or 'part of' a virtual environment as they interact with it and become absorbed or deeply involved" (p. 71).

This sense of presence makes the learning experience unique. According to [Dean, Cook, Keating, and Murphy \(2009\)](#), users of Second Life adjust their identity to match that of their avatars. An avatar is not only a computer-generated representation of a user, but also represents a type of psychological immersion as well ([Dalgarno & Lee, 2010](#)). Presence is explained by the avatar's ability to interact with the environment ([De Lucia et al., 2009](#); [Dickey, 2005](#)) and the ability to learn by doing that provides an enriched experience through watching, thinking, feeling, and acting (Kapp & O'Driscoll, 2010).

The concepts of immersion and presence raise some interesting questions in terms of how students are able to participate in a virtual world in ways not possible with other technologies. But does such participation have some type of effect on the learning environment? Some preliminary research in this area indicates that students find virtual worlds engaging and interesting ([Cooper, 2007](#)), and that scripted software in a virtual world does help students to learn ([Holmes, 2007](#)). [Peterson \(2006\)](#) found that non-native speakers in the virtual world of Active Worlds were able to effectively use features of that environment to successfully interact with one another. [Schiller \(2009\)](#) found that students were motivated in Second Life and found it helped in their learning, while [Good, Howland, and Thackray \(2008\)](#) observed that students tended to talk more and across a variety of topics while in-world.

While much research has been conducted to assess the effectiveness of Second Life as a vehicle for teaching simulations, role-plays, and other instructional activities, few studies have looked at the types of literacy events that take place within Second Life. For example, [Remley \(2010\)](#) describes the use of Second Life for students to create machinima in a business writing class. The venture was successful in that students "developed a video product within a realistic situation and articulated their understanding of the affordances and constraints of using Second Life" ([Remley, 2010, "Conclusion,"](#) para. 1). Similarly, [Vie \(2008\)](#) suggests that "Second Life can be used to address composition students' educational needs –

including the development of complex, dynamic literacies coupled with critical and adaptive subjectivities" ("[Building Bridges, Burning Bridges: Some Potentials and Pitfalls of Second Life](#)," para. 5). [Ritke-Jones \(2010\)](#) addresses applications of Second Life in business and industry, stressing the importance of Second Life literacy in the workplace. Lastly, [deWinter and Vie \(2008\)](#) recommend the use of Second Life as a platform for teaching skills in media literacy.

Second Life does provide the opportunity for writing instructors to expose students to multimodal composing and new media literacies, a direction that contemporary writing classrooms should consider, as studies in multimodal composition have suggested (see, for example, Selfe, 2004; Shipka, 2011; Wysocki, 2003). However, a virtual world like Second Life is still relatively unexplored in terms of being a text in of itself. In other words, little is known about how students, as avatars, function as readers and writers in this environment.

A Study of Avatars' Informational Preferences in Second Life

The purpose of this study was to examine the informational preferences of avatars (students) who were members of a class that met online in the virtual world of Second Life. Students in this course studied topics related to virtual worlds while simultaneously exploring, writing about, and communicating within Second Life. The topic areas covered included gender studies, business, education, and writing/creative arts, among others. All required learning materials were housed in an in-world classroom created specifically for the course (see Figure 1). The virtual classroom building was divided into cubicles, with each cubicle housing the materials for a particular unit within the course. In each unit, avatars were invited to research/learn about the various topics and produce writing assignments on those topics. In the assignments, they were required to develop informative, research-based reports on some topic related to the subject of the relevant unit.



Figure 1. *Snapshot of the in-world classroom*

As the avatars progressed through the individual units of the course, they could select from among three options for the course material: links to online print articles, machinima clips (videos created in-world – many of these were housed on YouTube and made accessible from within Second Life), and *Slurls* (Second Life Uniform Resource Locators – links to actual locations in Second Life to which the avatar could "teleport" to explore and learn firsthand more about the topic under discussion). The three options represented three distinct ways of receiving and interacting with information: (1) reading text-based information; (2) viewing machinima-based (video) information; and (3) direct exploration of the 3D virtual environment. In practice, avatars had the opportunity to select all, some, or perhaps even none of the informational sources available as they worked their way through the course. Topics for assignments

could have been successfully addressed by using/viewing information from any one medium or a combination of the three.

The following research questions were considered:

- 1) Would avatars (students) demonstrate a preference for receiving information in the form of text, in machinima form, or through direct in-world exploration?
- 2) Would these preferences change as avatars became more familiar and experienced with the virtual world environment?
- 3) Would the content of online class discussions reflect references to information presented in text, presented in machinima, or acquired through direct in-world exploration?
- 4) Would avatars express different attitudes toward the three different media?

Research Design

A quasi-experimental case-study approach was adopted for the purposes of this investigation. This case-study methodology is appropriate for smaller sample sizes and for research based on an analytic strategy that leads to the drawing of conclusions (Yin, 2009). The students participating in this study were 15 junior- and senior-level (third- and fourth-year) undergraduate students enrolled in the aforementioned course. These 6 men and 9 women reported having no prior experience with using Second Life or a similar MUVE, although 4 of them reported having previously played a MMORPG such as Call of Duty or Final Fantasy. The students' mean age was 25.2 years ($SD = 2.7$). The study was approved by the University's Institutional Research Board.

The duration of the study was 13 weeks. Data were gathered from the course throughout the semester following an initial two-week orientation unit that served to familiarize students with the basics of Second Life, including helping them become accustomed to the Second Life client software (viewer) and gain confidence moving (their avatars) around in the virtual environment. The data reported in this paper were drawn from three sources: (1) anonymous avatar journal entries; (2) logs of online discussions in which the avatars engaged in dialogue about course materials; and (3) responses to a short survey completed by the avatars at the conclusion of the course.

Data Collection and Analysis

In order to address the first research question, that is, to determine if avatars expressed a preference for receiving information via text, video, or direct in-world experience, participants were asked to keep an anonymous journal for each of the five units in the course, recording what they read, watched, or did in Second Life throughout the unit (how many times they accessed each of the three areas, and how much time they spent doing so). To address the second research question, the journal logs for the first unit and the last unit were compared to assess if a change in preferences occurred over the period of the course.

To determine if differences existed in terms of specific references made by avatars to the three different informational sources (the focus of the third research question), transcripts from the online course discussion board were downloaded for analysis by two independent raters. The raters classified the discussion comments in terms of their individual focus. The categories they used to do this were as follows: (1) *print-based* – the comment made specific reference to material from the articles presented in the unit; (2) *machinima-based* – the comment made specific reference to any of the videos presented in the unit; (3) *Second Life (SL)-based* – the comment made specific reference to information obtained from direct exploration within Second Life; and (4) *non-specific* – the comment made a reference that could not be assigned to any of the above three categories. Inter-rater reliability was 88%.

Finally, at the end of the course, the avatars completed a brief survey that sought to elicit their attitudes toward accessing and using information from each of the three sources (the fourth research question).

Results and Findings

Research Question 1: Would avatars (students) demonstrate a preference for receiving information in the form of text, in machinima form, or through direct in-world exploration?

Table 1 presents the avatars' self-reported (through anonymous journal logs) informational preferences regarding type of informational source. As evidenced in the table, initially avatars, during the first unit, demonstrated a stronger preference (as reflected in their recorded instances of access) for receiving

information by viewing machinima related to the topic ($M = 6$) over reading print material ($M = 4$) or through direct exploration in Second Life ($M = 3$). Not only did they access the machinima more frequently, they also spent more time viewing it ($M = 2.4$ hours) than they spent reading print material ($M = 1.5$ hours) or being in-world ($M = 1.9$ hours).

Table 1. *Avatars' informational preferences: Time spent reading, watching, and exploring in-world*

Source	Print-Based	Machinima-Based	SL-Based
Unit 1			
<i>Times accessed</i>			
Number	60	90	45
Mean	4	6	3
Standard deviation	2.1	1.4	0.8
<i>Hours spent using</i>			
Number	23	36	29
Mean	1.5	2.4	1.9
Standard deviation	0.6	0.5	0.5
Unit 2			
<i>Times accessed</i>			
Number	45	105	90
Mean	3	7	6
Standard deviation	0.6	1.1	1.2
<i>Hours spent using</i>			
Number	11	27	26
Mean	0.7	1.8	1.7
Standard deviation	0.2	0.3	0.3
Unit 3			
<i>Times accessed</i>			
Number	45	105	135
Mean	3	7	9
Standard deviation	0.3	1.3	1.8
<i>Hours spent using</i>			
Number	14	26	47
Mean	0.9	1.7	3.1
Standard deviation	0.2	0.3	1.3
Unit 4			
<i>Times accessed</i>			
Number	30	120	210
Mean	2	8	14
Standard deviation	0.5	1.3	2.8
<i>Hours spent using</i>			
Number	9	24	86
Mean	0.6	1.6	5.7
Standard deviation	0.2	0.4	2.2
Unit 5			
<i>Times accessed</i>			
Number	30	75	270
Mean	2	5	18
Standard deviation	0.4	1.2	3.3
<i>Hours spent using</i>			
Number	5	26	102
Mean	0.3	1.7	6.8
Standard deviation	0.2	0.4	2.3

In addition to supplying a quantitative record of avatar activity, the journal log entries from Unit 1 shed some light on the reasons avatars elected to read or watch information about Second Life more frequently, rather than experiencing it directly. Some representative comments from the log entries were:

"I felt like I wanted to know more about SL before exploring it." (Avatar A)

"Watching the videos gave me a better sense of what I should be doing." (Avatar B)

"I was nervous about meeting other people in the game." (Avatar C)

Research Question 2: Would these preferences change as avatars became more familiar and experienced with the virtual world environment?

As further illustrated by Table 1, not surprisingly, the avatars were initially uncertain about exploring locations in Second Life because they seemed unfamiliar with what the virtual world had to offer them. This pattern changed over time, however, with avatars spending, on average, either near or slightly above half their time in the latter portion of the course (Units 3 to 5) engaged in direct exploration of Second Life, both in number of times accessing and actual hours.

Unit 5 totals provide a striking example of this change. Here, the avatars reported accessing Second Life nine times more frequently than they did print materials ($M = 18$ vs. $M = 2$). Additionally, the avatars reported spending much more actual time in-world than they did reading print material ($M = 6.8$ hours vs. $M = 0.3$ hours). Machinima access and actual time spent viewing machinima remained fairly constant from Unit 1 ($M = 6$; $M = 2.4$ hours) to Unit 5 ($M = 5$; $M = 1.7$ hours).

Journal log comments from Unit 5 give some insight into why the avatars seemed to spend a consistent amount of time viewing machinima throughout the course:

"The videos were useful because they more accurately [sic] showed what SL is like, you could actually see it." (Avatar D)

"I liked the videos because they were actually filmed in SL." (Avatar E)

"It's one thing to read about it but when you actually see it you see what it looks like for real." (Avatar F)

These comments suggest that the avatars found the visual nature of the machinima more closely represented their in-world experiences; thus, they consistently looked to these sources for information. While machinima use remained constant, direct interaction within Second Life increased steadily throughout the course. Journal log comments here suggested that avatars began to see value in seeking out information directly from in-world experiences:

"I've met some interesting people who really are passionate and know a lot about SL." (Avatar B)

"This [SL] helped me open up to using a different medium for learning." (Avatar G)

"Believe it or not their [sic] is lots to learn by roaming about." (Avatar H)

As the avatars became more familiar with resources and information available in Second Life, their willingness and inclination to spend time seeking them out grew. As the course progressed, direct exploration as an avatar became, by far, the preferred method of obtaining information.

Research Question 3: Would the content of online class discussions reflect references to information presented in text, presented in machinima, or acquired through direct in-world exploration?

Table 2 presents the results of the analysis of the avatars' discussion comments, showing what percentage of comments in each unit was focused on each of the three informational sources available, as well as what percentage of comments was unable to be categorized.

Throughout the units, the avatars regularly made references to information gathered from machinima resources and from direct exploration in Second Life. They spent the least amount of time discussing information from print resources, even though in earlier units, they spent comparable amounts of time reading print information and actively exploring in-world (as seen earlier, in Table 1). While the avatars spent almost as much time reading print sources in the first unit as they did exploring Second Life, more of their discourse was devoted to discussion of the in-world experiences.

Table 2. Avatars' references to informational sources in class discussion

Source	Print-Based	Machinima-Based	SL-Based	Non-Specific
Unit 1				
% of comments	8%	32%	40%	20%
Unit 2				
% of comments	5%	20%	48%	27%
Unit 3				
% of comments	6%	25%	42%	17%
Unit 4				
% of comments	4%	27%	49%	20%
Unit 5				
% of comments	4%	21%	61%	14%

The avatars' comments relating to the print-based material, although fewer in number, typically focused on very specific references to points made by the author(s) of a given article. For example:

"She makes the point that more disabled people are using SL for networking." (Avatar I)

"I am surprised to learn that Harvard was one of the first schools [in SL]." (Avatar C)

"I don't agree with the authors [sic] description of female avatars in the third paragraph." (Avatar E)

As characterized by these representative comments, when talking about print articles, the avatars often made very textually specific references to the material in their online discussions. This stands in contrast to the way they referenced material gleaned from machinima clips – these comments were more general in nature, typically summarizing broad issues covered in the machinima. Representative examples were:

"It seems like this place [SL] can be a fun and interesting way to role play and be somebody you're not in the real world." (Avatar I)

"I'm not sure I agree with people swapping genders. I don't think I would." (Avatar J)

"There seem to be a lot of businesses that try to do something, but some left, maybe because it was too much trouble or too expensive." (Avatar A)

Unlike the comments relating to the print-based material, the comments concerning the machinima resources generally seemed to be more "take-away" impressions from the information, as opposed to references to specific ideas and concepts presented. So, while the avatars discussed information viewed in machinima throughout the course in a consistent fashion, the depth here tended toward broad commentary, in contrast to those comments coded as "print-based." Hence, even though the avatars relied upon machinima as an informational source throughout the course, when referencing this material in discussions, they provided few details as to what they really learned from these sources.

As further illustrated in Table 2, the avatars' discussion comments relating to information they gathered through direct exploration of Second Life increased throughout the course (from 40% in Unit 1 to 61% in Unit 5). The increased emphasis on Second Life-based information parallels the increased amount of time the avatars were spending in-world as the course progressed. In terms of their focus, however, these comments concentrated more explicitly on specific information derived from in-world experiences, as illustrated by these sample comments:

"This space for learning about other cultures and understanding them through education and discussion also exists in places like the Second Life Synagogue, which hosts Torah Talk every week." (Avatar C)

"GimpGirl offers women specific support and helps members deal with more gender specific issues within the disabled community such as Fetishization." (Avatar J)

"Attending a church in SL makes you more connected with people who are either homebound or prefer not to go to a physical church." (Avatar K)

When the avatars referenced information derived from direct interaction with Second Life, their comments were, for the most part, very specific and detail-driven, in stark contrast to the "machinima-based" comments. Interestingly, when references were made to Second Life-based information, the virtual world was treated much like the printed texts that the avatars referenced. In a way, the Second Life comments were as "world-specific" as the print-based comments were text-specific.

Research Question 4: Would avatars express different attitudes toward the three different media?

To understand how the avatars felt about their experiences using the three different informational sources, they were asked to complete a brief survey at the end of the course. Table 3 summarizes the survey results. As we can see, when asked in Question 1 of the survey how comfortable they felt using each source, the avatars generally agreed that they felt comfortable using Second Life (11 SA/A) and machinima (10 SA/A), more so than they did the print resources (6 SA/A). However, there was very little disagreement among avatars that they felt comfortable using any of the sources.

Table 3. Avatars' attitudes toward informational sources

	SD	D	N	A	SA
1. I felt comfortable using this source for information.					
<i>Print-based</i>	1	1	7	4	2
<i>Machinima-based</i>	0	0	5	4	6
<i>SL-based</i>	1	1	2	3	8
2. It was easy to find relevant and useful information using this source.					
<i>Print-based</i>	2	5	4	2	2
<i>Machinima-based</i>	0	0	3	4	6
<i>SL-based</i>	0	1	3	3	8
3. I experienced few, if any, difficulties using this source for information.					
<i>Print-based</i>	0	1	4	7	3
<i>Machinima-based</i>	0	0	2	4	9
<i>SL-based</i>	0	1	2	3	9
4. I felt this informational source helped me in completing class assignments.					
<i>Print-based</i>	3	5	4	3	0
<i>Machinima-based</i>	0	2	11	2	0
<i>SL-based</i>	0	1	1	5	8
5. I felt I learned the most about virtual worlds using this source for information.					
<i>Print-based</i>	4	5	3	2	1
<i>Machinima-based</i>	0	4	5	4	2
<i>SL-based</i>	0	1	1	5	8
6. In a similar class, I would use this source as one of my primary sources for information.					
<i>Print-based</i>	4	7	4	0	0
<i>Machinima-based</i>	0	2	6	5	2
<i>SL-based</i>	0	1	2	5	7

SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree.

Although the avatars generally felt comfortable using all three sources, in terms of which informational sources they found to be relevant and useful to them (Question 2), they tended to favor Second Life (11 SA/A) and machinima (10 SA/A) over print resources (4 SA/A). The one area that avatars agreed on the most was Question 3, which asked if they experienced any difficulties accessing or using a particular source. Here, avatars agreed that Second Life (12 SA/A), machinima (13 SA/A), and print resources (10 SA/A) all presented them with few or no difficulties.

One of the areas that showed a discrepancy in responses was Question 4, where the avatars indicated how helpful they felt each informational source was for completing class assignments. There was overwhelming agreement on Second Life being a helpful informational source to this end (13 SA/A), but considerably less agreement on the helpfulness of both machinima (2 SA/A) and print resources (3 SA/A). When asked which source they learned the most from about virtual worlds (Question 5), the most popular choice was Second Life, with a majority agreeing (13 SA/A) that it was the most valuable source. This response is consistent with the fact that the avatars spent more time accessing Second Life in the

second half of the course. Additionally, the results suggest the avatars found the machinima resources to be somewhat more useful as a source of information (6 SA/A) than the print-based material (3 SA/A).

The last survey question sought to determine which informational sources the avatars would be likely to adopt in the future, in the context of a similar course. Interestingly, there was no agreement among avatars that they would opt for print (0 SA/A). Slightly less than half the avatars surveyed expressed agreement that they would choose to use machinima in the future (7 SA/A), but by far, it was direct exploration of Second Life that attracted the greatest level of agreement (12 SA/A) in this regard.

For the avatars involved in this study, their preferences for obtaining course-related information tended toward viewing machinima clips and gathering information directly from Second Life. Their use of the latter medium, however, took some time to emerge over the semester, though it eventually (by the final unit) became their preferred informational source. Savin-Baden (2010) suggests that the immersive characteristic of a virtual world like Second Life can be a powerful tool for educators – that is, "Second Life provides a form of challenging infotainment that hooks students into learning at the outset" (p. 70). In fact, as avatars in this class became more familiar with Second Life, they spent more time immersed within it, and were more willing to explore and partake in the in-world resources offered.

Yet it is not just that the avatars were entertained by or interested in Second Life; they also treated the virtual world itself as a "text," one that provided deep reading/learning experiences, as reflected in their comments. The machinima, although essentially providing similar types of information about virtual worlds, seemingly did not promote the same type of experience. One explanation for the difference might be that, when using machinima, the avatars were passively watching (once removed as viewers of the video), rather than actively interacting with the world and the objects within it. Also, in their subsequent discussions of information, the avatars' references to machinima resources were very general, as compared to the references they made to information drawn directly from Second Life. The shift in the avatars' preference away from print-based materials and toward in-world exploration as a research source during the period of the course may also indicate that, over time, they began to gradually accept the virtual world as being valid and useful for scholarly or academic purposes.

All in all, the environment of Second Life provided opportunities for the sorts of "deep-learning" experiences previously observed in MMORPGs (Gee, 2007), as evidenced by increased specific references made by the avatars throughout the course. In their survey responses, the avatars reported seeing value in Second Life as an informational source that they would readily use in future courses. One would hope that as students (as avatars) might be required to spend more time in Second Life through other classes, their ability to find and manipulate information in-world would also improve. This would go some way toward assisting us in meeting the challenge posed by new media theorists to expose students to different types of multimodal literacies (Selfe, 2007; Wysocki, 2003).

Future Research Recommendations and Conclusion

While the avatars in the course described in this paper had generally positive experiences with Second Life and used it frequently as an informational source, questions remain when considering the virtual world as a "text" in the classroom. The avatars in the present study made specific references to in-world information in much the same way as they treated print resources. However, if they were presented with different writing tasks, would the pattern be the same? For example, if, instead of writing research-based informative pieces, the avatars had been asked to produce instructional documents or other types of assignments, might they have changed their focus to using machinima or print-based sources more than in-world resources? Similarly, another area for future research would be to consider the relationship of course content to informational preferences. That is, in this course, avatars were studying topics related to virtual worlds – both *with* and *about* them – but their pattern of interaction with informational sources might be different if the course were one dealing with another subject.

Furthermore, we need to consider the question of how we function as "readers" of information gathered from a virtual world. As educators, we have at our disposal many effective strategies for teaching critical reading of print sources. In more recent years, new media literacy scholars have advocated the teaching of strategies for "reading" multimodal texts, emphasizing the need for students to become competent in interpreting and analyzing these texts (Ball, 2006). Yet, what strategies do we use and teach for "reading" a virtual world? While we may understand what it means to be a reader and/or viewer of information in the traditional sense, how does this change, and what are the implications, when the reader can become a living part of the text – an avatar interacting in and with the virtual world? Accordingly, how do we

assess the credibility and authority of information gathered in a virtual world in the same ways we might other informational sources?

These questions notwithstanding, virtual worlds like Second Life do hold much promise for online and distance learning, as platforms to teach about new forms of information and different types of literacies, and they allow us to extend the classroom experience in engaging and interesting ways.

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