Growth and Decline of "Second Life" as an Educational Platform

Christine Libby Mark

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GROWTH AND DECLINE OF SECOND LIFE
AS AN EDUCATIONAL PLATFORM

by

Christine Libby Mark

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

May 2014
ABSTRACT

GROWTH AND DECLINE OF SECOND LIFE AS AN EDUCATIONAL PLATFORM

by Christine Libby Mark

May 2014

Second Life, a 3D online immersive virtual environment, emerged in 2003 and was predicted to become the predominant online course delivery platform by 2013. Educational institutions initially rushed to create a presence in the Second Life; however, after 2009 those same institutions were disappointed by their experiences and deserted the virtual world. This study sought to uncover the reasons for the rapid decline of such a highly lauded educational platform. Using a mixed methods research design, utilizing a qualitative phenomenology with in-depth personal interviews of higher education administrators followed by a detailed quantitative survey instrument, the researcher was able to explain the reasons the platform did not become a mainstream course delivery method. Students reported dissatisfaction with graphical quality and hardware issues, perceived lack of relevance, and usability issues. Instructors reported dissatisfaction with hardware issues, time issues, student acceptance, the lack of a clear reward system, especially with tenure and promotion and technical support issues. Instructional designers reported dissatisfaction with hardware issues, stakeholder engagement and interest, pedagogical value, time issues, and technical support issues. The findings provided insights for higher education administrators when considering the use of emerging technology for teaching and learning. For innovative educational solutions to be effective administrators should provide sufficient technological resources, improve
stakeholder engagement and interest by providing better training and more personal attention to users, allow innovative efforts by faculty to be rewarded through the tenure and promotion process, improve their own attitude and buy-in surrounding the use of emerging technology for educational and learning activity delivery, and become more patient with commercially available software to allow for improvements to occur organically.
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TABLE OF CONTENTS

ABSTRACT ........................................................................................................................................... ii

ACKNOWLEDGEMENTS ......................................................................................................................... iv

LIST OF TABLES ................................................................................................................................... viii

LIST OF ILLUSTRATIONS .................................................................................................................... ix

CHAPTER

I. INTRODUCTION .................................................................................................................................. 1

  Background
  Problem Statement
  Purpose of the Study
  Research Questions
  Justification
  Delimitations and Assumptions
  Definition of Terms
  Summary

II. LITERATURE REVIEW ...................................................................................................................... 36

  Theoretical Framework
  Organizational Failure
  Failure in Higher Education Institutions
  Failure of Higher Education Programs
  Failure of Online Solutions in Higher Education
  Failure of 3D Online Immersive Virtual Environments in Higher Education
  Failure of Second Life in Education
  Summary

III. METHODOLOGY .............................................................................................................................. 75

  Research Design
  Data Collection Instruments
  Participants
  Procedures for Conducting the Study
  Data Analysis Procedures
  Summary
IV. ANALYSIS OF DATA ............................................................................................... 96

    Phase One – Qualitative Findings
    Phase Two – Quantitative Findings
    The Intersection of the Study Findings
    Summary

V. DISCUSSION ........................................................................................................ 181

    Conclusions and Discussion
    Limitations of the Study
    Recommendations for Policy and Practice
    Recommendations for Future Research
    Looking Forward About 3D Online Immersive Virtual Environments
    Summary

APPENDIXES ........................................................................................................... 229

REFERENCES .......................................................................................................... 292
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rotated Factor Loadings for Student Group</td>
<td>150</td>
</tr>
<tr>
<td>2.</td>
<td>Rotated Factor Loadings for Instructor Group</td>
<td>154</td>
</tr>
<tr>
<td>3.</td>
<td>Rotated Factor Loadings for Instructional Designer Group</td>
<td>158</td>
</tr>
</tbody>
</table>
LIST OF ILLUSTRATIONS

Figure

1. An Early 1930s Educational Radio Program ............................................. 5
2. Official Second Life Homepage .................................................................. 8
3. Selected Examples of Avatars in Second Life ........................................ 10
4. Two Extremes For Human Avatar Construction in Second Life .......... 11
5. Creating a Realistic Avatar ....................................................................... 12
6. The Junkyard Blues Club ....................................................................... 13
7. Floating Classroom .............................................................................. 14
8. Traditional Pit Classroom ....................................................................... 14
9. Circular Learning Group ....................................................................... 16
10. Outdoor Classroom with Comfortable Seats ....................................... 16
11. Marshall School of Business ................................................................. 19
12. East Carolina University ........................................................................ 19
13. Dr. Lisa Berkman’s Outdoor Classroom ............................................. 20
14. BITE5503 Technology Class ................................................................. 21
15. The Literature Review Hierarchy ........................................................ 37
16. Methodology Paradigm ....................................................................... 77
17. Preliminary Themes Cluster .................................................................. 92
18. The Final Themes Cluster ................................................................... 93
19. The Generalized Hype Cycle Diagram ............................................... 136
20. Diagram of the Hype Cycle for Emerging Technologies 2013 .......... 137
21. A Diagram of Critical Mass by Rogers.......................................................... 141
22. Total Quantitative Survey Participants .......................................................... 147
23. The Intersection: Qualitative Sub-themes & Qualitative Factors ................. 178
24. Commonalities Between Students, Instructors, and Instructional Designers .... 205
CHAPTER I
INTRODUCTION

The early 21st century ushered in new forms of virtual learning, augmenting what had previously existed. As with most innovations, some became successful, and some missed the mark entirely. This period saw the emergence of 3D online immersive virtual environments, which placed participants in a virtual experience where they could react to and interact with each other in real time. *Second Life*, created by Linden Lab, became the most popular and most used of these virtual environments and was hyped to be the next great educational delivery platform, but the promise was never fulfilled. This study is a look at the reasons *Second Life* failed to fulfill the bright promise ascribed by scholars and practitioners alike. Chapter I presents an introduction to the study followed by the presentation of background information for the reader so as to provide a foundation for the discussion that will follow.

Higher education administrators and instructors have been wrestling with issues in distance education such as course delivery methods and student engagement ever since Sir Isaac Pitman offered shorthand training by mail in 1840 and Anna Ticknor offered home-based educational opportunities to women in 1873 (Nasseh, 2001). Distance education grew through radio-based audio courses from 1910 until 1950. Television-based video courses were introduced in the 1970s and 1980s with Internet-based courses beginning as early as the mid-1990s (Nasseh, 2001). With the continued advancement of the Internet and digital culture, educators began considering the use of three-dimensional *virtual* educational delivery systems (Pfiel, Ang, & Zaphiris, 2009). As a result of technology advancements in computer software and hardware, *Second Life* emerged in 02003 and became the most widely used three-dimensional multi-user environment and
appeared to foretell the coming metamorphosis of distance education from its traditional format to an avatar-intensive online immersive virtual environment (Salmon, 2009).

The history of distance education is also littered with as many failures as successes. Cornell University attempted to establish a Correspondence University in 1883 that did not succeed (Nasseh, 2001). The federal government issued over 202 radio broadcasting licenses to educational institutions between 1916 and 1946, but few higher education institutions adopted this method of distance education as academics found it suspect in its ability to offer a quality educational experience (Nasseh, 2001). These early forms of distance education struggled to find a place in the fabric of higher education with only limited victories. The use of radio as an educational platform was not successful for several reasons. One reason was due to attrition. While many learners subscribed to the program, few took final exams and completed the course mainly because of the temptation of the entertainment value of radio. Learners tuned more into entertainment broadcasts and less into educational programs. The second reason for the failure of radio-mediated education was the passive nature of the instruction. Finally, the biggest challenge was that radio did not offer opportunities for social interaction the way a traditional course in a brick and mortar institution offered (Matt & Fernandez, 2013).

Similarly, Second Life as well has failed to find a permanent foothold as an educational delivery system, despite being highly proclaimed and eagerly embraced by many higher education institutions. Research conducted during the peak of education usage for Second Life pointed out that Second Life allowed for a more interactive and engaging experience for learners (Cole & Kritzer; 2009; Gartner Report, 2007; Hemp, Woollen, & Humiston, 2009; Warburton, 2009). Indeed, this researcher’s personal observation of Second Life
between the years 2007 through 2012 illustrated an arc of participation with rapid development of higher education sites early in the period and a noticeable abandonment of many virtual campuses by the end of the period. Wang and Burton (2012) also found a decline in educational activities in Second Life by examining the number of publications and amount of research involving the virtual world. Research and publications steadily increased from 2003-2009 and peaked during 2009. By 2012 few research studies or publications could be identified. Why did such a seemingly fascinating and promising virtual world fail to achieve the prominence and success as an educational tool so many had believed not only possible, but, in fact, almost certain?

While the study of successes in any field provides interesting and useful data about why theories, designs, and activities work, the study of failures provides equally interesting data about why they did not work. Sometimes scholars, practitioners, and educators might argue that failures are actually more interesting and more important than successes due to their ability to provide a learning experience and to enhance continuous improvement. Organizations can and should learn from failures, but, in fact, most organizations do a poor job of learning from failures due to a combination of technical and social barriers (Cannon & Edmonson, 2005). Learning from failures allows an organization to innovate and to improve processes and systems. What are the reasons behind the failures of these theories, designs, and activities, and how can these reasons be used to transform failures into successes, and, of course, to prevent future failures? This study investigated the failed promise of Second Life, a 3D online immersive virtual environment, as a form of distance learning in higher education.
Background

Online education has become increasingly popular over the last 20 years with its beginnings in distance education, which involved delivering instruction to students who were not physically present in a traditional classroom setting (Allen & Seaman, 2011). Technology aided and spurred the growth of distance education beginning with a more reliable postal service. Students could receive instructional materials through the mail, complete assignments, and return them to their instructor. The instructor would then grade and return the assignment to the student along with the next set of assignments (Casey, 2008). As new inventions and ideas emerged, distance education evolved. Radio, beginning in the 1930s and 1940s and television in the 1960s and 1970s allowed students to hear and then to see their instructor, adding some personal emphasis to the otherwise cold and impersonal correspondence course delivered through the postal service. Figure 1 shows an early educational radio station. The communication was not interactive and only involved the instructor presenting the instructional materials (Casey, 2008). Computer technology and satellite communications continued the advance of distance education. Online education became viable due to the advent of the Internet. In 1989, the University of Phoenix emerged as a totally online degree-granting university. In 1991, the World Wide Web was made available to the public, and the demand for online education began to soar (Casey, 2008). Rapid technological advances have continued to provide the ability for academic institutions to offer online courses, using various learning management systems (LMS) that consist of a software application to plan, implement, and assess a specific learning process. Technology allows for the use of interactive tools and courses to be delivered synchronously using available
communication tools in an effort to allow communication between the instructor and students and among the students, providing for a more engaging learning experience (Cole & Kritzer, 2009).

Figure 1. An Early 1930s Educational Radio Program. Here students participate in an educational program that was deployed via radio (Saba, 2013).

Growth of Online Education

Many factors point to the rising popularity of online teaching, including reduced costs, increased tuition revenue, demand from students who are unable to travel to a traditional campus, improved technology and course delivery, and the prevalence of computer ownership and Internet access by faculty, students, and potential students (Allen & Seaman, 2011). Allen and Seaman (2011) indicated that chief academic officers reported online learning was critical to their institutions’ long-term strategy for
The number of students enrolled in online courses took an upturn during 2010 and 2011. The researchers also reported that for the prior eight years, online enrollments grew faster than overall higher education enrollments, increasing by 21% versus the less than 2% increase for combined on-ground and online higher education student populations. The researchers contacted all 4,523 active US degree-granting institutions of higher education and received responses from 2,512 institutions representing 80% of higher education enrollments. The results indicated that over 6.1 million students were taking at least one online class during the fall 2010 term, which amounted to an increase of 560,000 students over the number reported for the previous year. Nearly 31% of college students enrolled in at least one online course (Allen & Seaman, 2011). This trend appears to be continuing and should be expected to grow according to college presidents surveyed by the Pew Research Center, with one-half of the presidents surveyed believing that in ten years a majority of their undergraduate students will be taking online classes (Taylor, Parker, Lanhart, & Patten, 2011).

Many of the institutional advantages attributed to online education seem to be based on increasing student enrollment and being competitive with other higher education institutions. However, many disadvantages are inherent with online education including the students’ feeling of isolation and lack of contact with faculty, integrity issues as far as who is completing the coursework, connectivity issues, lack of technology skills, and a lack of access to technology, especially for economically disadvantaged students (Hurt, 2008; Singh & Pan, 2004). This apparent disconnect between institutional advantages and disadvantages to students begs the question of whether
higher education administrators were jumping into technology without thoroughly testing and considering all consequences, both positive and negative.

Due to the prevalence of online education and its anticipated continued growth, educators are seeking to find new and creative ways to maximize interpersonal interaction, minimize the disadvantages inherent in this environment, and increase engagement between instructors as well as between instructors and learners in online classes. Many options, in the form of free Web 2.0 tools allow users to interact and to collaborate with each other and create content that can be shared, became available in the past ten years to online instructors. These include Skype, MP3, Twitter, Facebook, Jing, Prezi, YouTube, concept maps, podcasts, and instructor-created audio and video as well as 3D online immersive virtual environments for course delivery (Wang, 2012). While these alternatives to traditional course delivery systems are available for instructors to explore, some have been accepted and others rejected based upon the instructor’s comfort level with the Web 2.0 tool and the perception of applicability to course material (Wang, 2012). This research will focus on higher education’s use of 3D online immersive virtual environments, in particular Second Life, and why they did not become a prevalent method for providing online education even though researchers and practitioners touted its qualities and potential for providing an engaging learning environment (Dass, Dabbaugh, & Clark, 2011; Hemp et al., 2009; Salmon, 2009; Salt, Atkins, & Blackall 2008; Warburton, 2009).

The prevailing term used to describe a persistent 3D graphical environment accessed over the Internet that allows groups of simultaneous users to interact synchronously is 3D online immersive virtual environment (3DOLIVE) (Salt et al.,
One such 3DOLIVE is *Second Life (SL)*. *SL* is a virtual world launched by Linden Lab in 2003 that provides a platform for users to virtually create and explore places and spaces and is available free via the Internet (Linden Lab, 2012). The Linden Lab home website for *Second Life* is illustrated in Figure 2. The users, called *residents*, create an *avatar* or a character that represents him or her in the virtual world.

**Avatars**

Avatars are not only a representation of the user, but also provides for physical and psychological *immersion* into the 3D environment (Dass et al., 2011). Through the use of one’s avatar, a tangible sense of presence develops between participants, resulting in an awareness and ability to collaborate and communicate with other avatars.

*Figure 2. Official Second Life Homepage. This was the website from which users can create accounts, download the Second Life viewer, and create an avatar (C. Mark).*
synchronously. Immersion and presence in 3D environments results in the creation of a social richness and perceptual realism that can make the learning activity feel more connected. Through their avatars, individuals create and participate in social interactions that allow for involvement and a connection to the environment as well as each other (Boellstorff, 2010).

Avatars can communicate verbally, both through written public and private chat text or through voice via the use of headsets, as well as non-verbally in a manner different than that provided by traditional learning management system (LMS) platforms. In fact, students can pass around PDF files and documents or use notecards to communicate in writing, albeit not in real-time, but arguably close enough. Instructors can obtain scripted devices that play presentation slides, You Tube or self-created videos, music, or other media-rich content thus, providing the same technological support as traditional brick-and-mortar classrooms and LMS-based online education.

In other words, the use of 3D online immersive virtual environments such as Second Life, creates a real-time virtual space where students and instructors can be together and in each other’s presence, nearly identical to a face-to-face environment. This is accomplished through the use of avatars as opposed to actually being in the same physical location. Seemingly, this innovative virtual technology is a strong answer to the isolation and loneliness of 2D online delivery platforms. A sample of representative avatars is shown in Figure 3. Please see Appendix A for more examples of SL avatars. Second Life has functioned in this fashioned since its inception, so these capabilities are not new; rather their merits simply never helped the virtual world gain a solid, long-term foothold in higher educational institutions.
Figure 3. Selected Examples of Avatars in *Second Life*. Avatars could be almost any imaginable representation, including human-like avatars, animals, and robots (C. Mark).

Avatar issues can become an issue within an educational setting, especially when they became distracting to both the instructor and the students. Figure 4 illustrates two extremes for avatar construction in *Second Life*. The first, very formal and sophisticated, would certainly be appropriate attire; however, the second is a prime example of many *Second Life* avatars and would not be appropriate. Thus, instructors and instructional
designers may have predetermined ideas of how student and faculty avatars were to be constructed. Some instructors may mandate that students create avatars that are as accurate a rendition to reality as possible, while others may be more liberal in their requirements. Figure 5 illustrates a scene from a popular MTV reality show *True Life*, where in the episode “I Live Another Life on the Web” one of the characters, Amy, was shown creating an avatar that clearly resembles her in real life. In fact, an interesting initial assignment for a class within *Second Life* is frequently the creation of a realistic personal avatar for use during the class.
Figure 5. Creating a Realistic Avatar. Amy, from MTV’s *True Life* series, created her *Second Life* avatar to look as realistic as possible (Green & Rosen, 2008).

While it is true that students are free to dress as they wish in face-to-face classes, arguably social mores prevent truly outrageous behavior. The fact that *Second Life* invites free thinking and free expression can create boundary issues that must be addressed as part of a structured educational activity.

*Second Life as a Learning Space*

In an educational context, *Second Life* provides a virtual space for constructivist learning, socialization, exploration, discovery, and creativity. The social nature of learning in *SL* allows students to demonstrate the skills and strategies acquired through the utilization of these social technology tools. Figure 6 provides an example of a social setting in *SL* where avatars from all over the world meet to dance, chat, and socialize.
This very socialization provides the foundation for what can become a global experience, and this effect is often duplicated in educational settings. In fact, *Second Life* provides a truly unique platform for international course offerings with diverse student groups. Please see Appendix B for some additional examples of social settings in Second Life.

![Figure 6. The Junkyard Blues Club. The Junkyard Blues Club remains one of the most popular dancing and socializing venues within Second Life. Avatars from around the world meet at the Junkyard to chat, dance, and socialize (C. Mark).](image)

Indeed, *Second Life* is often presented primarily as a social networking platform creating a bifurcated existence for users. Exploration, discovery, and creativity become possible through situated, real-life learning. The warping of weather and physics inside SL creates a fantastic array of learning spaces and activities in the environment. Two examples of learning spaces are provided in Figures 7 and 8. Several other examples of situated learning spaces are provided in Appendix C.
Figure 7. Floating Classroom. This is one of many examples of floating classrooms and amphitheaters made possible because SL has zero gravity. Students sit on individual seats surrounding a stage (C. Mark).

Figure 8. Traditional Pit Classroom. This classroom is modeled after the traditional pit classroom, except it is outside and on the water. Students can enjoy the fresh air, attend to a speaker and multimedia, and look out at the clear, blue water (C. Mark).
Since SL is synchronous, in real-time, and interactive, learners are able to actively participate and contribute to an authentic constructivist learning experience (Burgess, Slate, Rojas-LeBouf, & LaPrairie, 2010). In an effort to understand the potential benefits and barriers to using virtual worlds in education, Warburton (2009) identified three components of SL for consideration. The first component was the technical infrastructure including multimedia capabilities and the ability to create artifacts. Multimedia capabilities continue to increase and include the ability to stream video, sound, and Web content to specific in-world places, allowing for authenticity in communications. The second component of SL was immersion and co-presence. The visual and physical realism conveys a feeling of being there as well as a sense of co-presence when other avatars are present or nearby. Figure 9 shows a learning activity in which the closeness of the avatars is readily apparent thus, leading to their being in each other’s presence in real time simulating an actual real-time activity. Presence is an important aspect of 3DOLIVES—commonly defined as the subjective experience of being in one place or environment even when being physically situated in another. Immersion is also a significant occurrence in 3DOLIVES, defined as a psychological state characterized by perceiving oneself to be enveloped by, included in, and interacting with an environment that provides a continuous stream of stimuli and different experiences. Figure 10 presents another avatar-intense and immersive learning space. Fully immersed participants perceive they are interacting directly with the environment and feel a part of the environment (Witmer & Singer, 1998). 3D online immersive environments such as Second Life give participants the opportunity to perceive this connection and allow participants to feel immersed and connected through social richness and perceptual
Figure 9. Circular Learning Group. In this illustration, student-avatars sit in very close proximity in a circle formation common within Second Life. The close proximity enhances the sense of presence felt by the participants (C. Mark).

Figure 10. Outdoor Classroom with Comfortable Seats. This is an example of an educational conference held outdoors in a woods-like setting and overstuffed chairs. Note the use of a video or PowerPoint projector (C. Mark).
realism (Boellstorff, 2010). This is in contradiction to the isolation experienced by most students using a LMS for online learning (Warburton, 2009). The third component identified by Warburton (2009) was concerned with socialization and social objects. This includes multiple communication channels, viewable avatar profiles, and the surrounding architecture support socialization in SL. Indeed, 3D immersive environments such as SL are by their nature first and foremost social network environments upon which an educational component has been overlaid. While Warburton (2009) pointed out some advantages to higher education using Second Life as a course delivery system, one has to wonder why Second Life has failed to be the mechanism of choice for course delivery.

3D Online Immersive Learning Environments & Education

The use of 3DOLIVEs and Second Life, in particular, for use in online higher education courses became quite popular after 2003 due to higher education administrators and instructors perceiving the virtual world had advantages over traditional online course delivery methods. Many groups and reporting agencies predicted that the use of virtual worlds in education would become the standard delivery for education by 2011 or 2012. The Gartner Report (2007) claimed that 80% of active Internet users would have a Second Life account and be active in virtual worlds by the end of 2011. The report based this prediction on the many affordances of virtual worlds, especially the collaborative and community-related aspects that were inherent in Second Life. The Horizon Report, a collaboration between the New Media Consortium and the EDUCAUSE Learning Initiative, also speculated in 2007 that virtual worlds such as Second Life would be widely adopted in education in two to three years (NMC and EDUCAUSE Learning Initiative, 2007). The aforementioned reports noted that the usage of Second Life was
increasing due to its ability to offer a flexible space for learning and education, as well as its social aspects and opportunity for creative expression. These ideas do not coincide with the reality of *Second Life* five years later where finding activity on virtual campuses or evidence of *Second Life* being used for teaching and learning is almost non-existent.

With the increasing trend and demand for classes to be taught online and the need to find platforms that allowed for student engagement, over 300 universities bought virtual land in *Second Life* and began initiatives to build teaching venues and integrate the use of *Second Life* into their online teaching (Salmon, 2009). Figure 11 illustrates the Marshall University School of Business, while Figure 12 illustrates one view of the East Carolina University virtual campus in SL. East Carolina, encompassing five full regions, is arguably the largest remaining full university campus and probably the most actively used at this time. Please see Appendix D for some other examples of university installations in *Second Life*.

Historically, higher education installations in *Second Life* ran the gamut from small, intimate settings to complete recreations spread over several regions. For example, in 2006 Dr. Charles Nesson, founder and director of the Berkman Center for Internet & Society at Harvard University, created Berkman Island which recreated the Harvard Law School and where he taught virtual law courses (Nolan, 2006). Dr. Lisa Berkman, a professor of epidemiology at Harvard, who created an outdoor classroom with curved walls and padded seating areas, joined this build. In contrast, universities such as Ohio University and East Carolina University (Figure 12; Appendix D) recreated all or most their campuses with fairly realistic construction. Please see Figure 13 for an illustration of Lisa Berkman’s outdoor classroom in *Second Life*. 
Figure 11. Marshall School of Business. The teleport landing point for the Marshall School of Business at the University of Southern California. Classes are still held at the Marshall site, which includes classrooms and retail space (C. Mark).

Figure 12. East Carolina University. Aerial view of the East Carolina University virtual campus in Second Life. Spreading across five full regions, the ECU campus recreates most of the actual buildings on campus, although not in the exact placements (C. Mark).
Figure 13. Dr. Lisa Berkman’s Outdoor Classroom. This is a view of one of the original learning spaces in Second Life created by Dr. Lisa Berkman of Harvard University. Dr. Berkman actively held classes in this space (C. Mark)

In fact, for a period around 2007, universities appeared to operate on the model that bigger is better, almost as if Second Life would be the answer to their infrastructure costs. One such large build, Kennesaw State University not only duplicated most, if not all, campus buildings; the designer created several huge floating amphitheaters capable of seating over 100 students, an impossibility given the technology.

On the far other side of the spectrum were those faculty for whom Second Life was an individual adventure solely for their educational use. A fair number of faculty rented or purchased small plots of land with unique little builds and cottages and held virtual office hours or advising sessions. Other faculty held individual classes in Second Life apart from any institutional imprint. Figure 14 shows an example of a graduate technology course offered by East Carolina University but held at the instructor’s house
in Second Life. The class consisted of 10 students and was held at sunset on the dock, using a video player, a PowerPoint projector, and voice. Before and after class, students danced to music using a dance ball, drove jet skis and boats, and socialized in a manner not possible in real life.

Figure 14. BITE 5503 Technology Class. Students at East Carolina University attend a graduate technology class at the Second Life home of their instructor. Note the video player in the background. The space also had scripted dance balls and jet skis (C. Mark).

A region in Second Life carries a public rental fee of $3,600 per year as well as substantial initial set-up fees from Linden Lab. Until 2011, when it was discontinued, educational institutions paid half of that fee, or $1,800 per year, with reduced set-up fees. In 2011, Linden Lab eliminated the educational discount, resulting in a doubling of the carrying cost. In addition, many institutions paid staff or graduate students to create the buildings, furnishings, scripts, and décor that brought their builds to life. For a large
institutions with elaborate installations this could run into hundreds of man-hours and add substantial cost to the projects.

Research and Second Life

Many educational researchers began looking at the affordances of Second Life and began conducting empirical research into the effectiveness of this platform for teaching and learning (Burgess et al., 2010; O’Connor, 2009; Salmon, 2009; Thompson, 2009; Wang & Hsu, 2009; Warburton, 2009). The number of publications reached its peak in 2009; fewer than half that number were published in 2010 (Wang & Burton, 2012). A quick review of the literature reveals that 2007-2009 was the zenith for academic research and writing about education and SL. Wang and Burton identified 107 research studies between 2006 and 2011 with 83 being published during 2009 and prior. Such production has fallen off sharply in the years following 2009. This trend would seem contra-intuitive based upon the number of publications purportedly showing that Second Life was the answer to the problems identified with online education. Another anomaly in the literature would surround the predictions that Second Life would be the learning platform of choice by 2011. There appears to be a gap between the predictions made during the frenetic activity occurring in higher education in Second Life during 2003-2009 and the current state of education in Second Life.

By late 2011 and early 2012, Second Life educational activity seemed to have slowed down to the point where considerably fewer higher education institutions were using Second Life for teaching and learning, and many college campuses in SL could no longer be found, their buildings and artifacts having been removed from the virtual world. This timeline creates a paradox concerning the failed promise of Second Life and
the future of teaching and learning in any 3D immersive virtual environment, the paradox being the prediction that Second Life would become the dominant course delivery system by 2012 coupled with the positive research indicating Second Life is an effective delivery method. However, the prediction and promise never materialized thus, many educational institutions purposefully curtailed or eliminated activity in Second Life.

Problem Statement

There is a great deal of evidence to support the idea that the use of 3D virtual worlds for teaching and learning has great promise. The literature is abundant with reasons as to why 3D virtual worlds, by their nature, offer many advantages over a traditional learning management system course delivery platform and have the potential to impact student engagement. The growth of virtual worlds, especially Second Life, was significant from 2003-2009, and predictions for the future of virtual worlds for teaching and learning were positive and abundant. Indeed, by 2009 several college campuses were recreated in SL as can be evidenced by the existence of buildings and campus landmarks created by colleges to duplicate the brick and mortar structures physically present on those campuses. In addition, multiple educational projects had been started, and the promise of a bright 3D future was highly anticipated by college administrators and instructors who believed in SL as the premier online course delivery system (Burgess et al., 2010; O’Connor, 2009; Salmon, 2009; Thompson, 2009; Wang & Hsu, 2009; Warburton, 2009).

Currently there are no clear answers as to why Second Life, with all the positive research and literature promoting its many affordances for learning and engagement, and the positive constructivist environment it provides, now appears to be almost non-existent
when it comes to teaching and learning in higher education. There are no explanations as to why the predictions made from 2003-2009 have not materialized and why Second Life is not being used as the main course delivery system for online courses. Clearly, more research needs to be done to explain what factors contributed to the failed promise of Second Life and the current state of the virtual world in education.

This study investigated what factors led to higher education administrators investing in Second Life in the past. Administrators agreed to allocate substantial funds to allow designers and instructors to build virtual learning spaces. What factors led to this decision? What did they perceive they would gain from their investment? Considering that these higher education institutions no longer have a presence in Second Life or if they have a presence, it is significantly diminished, the study attempted to find the reasons for this and the decision processes involved. Were there internal factors associated with the institution itself leading to the decision, or were there external factors having to do with Second Life or virtual worlds? Perhaps it was a combination of internal and external factors. How do these administrators feel about the future of teaching and learning in virtual worlds? Would they consider investing in a virtual world other than Second Life?

The study focused on administrators who were the decision makers in institutions that had a large presence in Second Life and decided to decrease or discontinue a presence in the virtual world. These administrators were interviewed to determine their reasoning for decisions made regarding the use and/or discontinuance of Second Life as an educational platform. Once this data was collected, a questionnaire was developed and sent to instructors, instructional designers, and students to determine their opinions as
to why their institutions discontinued or decreased their presence in *Second Life*. This interaction allowed the researcher to compare the opinions of the administrators with the opinions of the users of the technology to further determine why the technology was not adopted.

**Purpose of the Study**

This study was originally intended to be experimental in nature with the researcher gathering data on whether virtual worlds such as *Second Life* increased student engagement and knowledge retention. The researcher had some experience with teaching and learning in online immersive virtual environments and was convinced that these venues were more effective in teaching online courses as opposed to traditional learning management system delivery. The researcher found via preliminary research that it was difficult to find and locate current evidence of teaching and learning in virtual worlds. Many of the universities and campuses that once existed in *Second Life* were no longer accessible. The universities that did have a presence were scaled down, and it appeared that little or no activity of any type was taking place. These observations caused the researcher to step back and wonder why this was the case when the literature from 2006-2009 predicted that virtual worlds would be a prominent method of course delivery by 2013 (Gartner Report, 2007). There appeared to be an obvious disconnect between the current nature of virtual worlds in education and the predictions. There is little literature available that looks at and explains this phenomenon. Thus, the focus and goal of this study was to explain what happened to virtual worlds in education.

The purpose of this study was to explore the reasons why *Second Life* failed to become the dominant delivery system for online learning despite all the positive research
and initial support surrounding it. A great deal of financial and time-based resources were expended by hundreds of higher education institutions in securing locations in Second Life and building places and spaces where students could meet and learning activities could take place. Although determining how much higher education budgeted and expended to create a Second Life presence was difficult, the literature reveals that over 300 universities built campuses on Second Life (Salmon, 2009). According to Livingstone (2011), the hype surrounding Second Life was long gone with little evidence of future growth. What happened to cause such a rapid decline in higher education Second Life presence in light of such high promise provides important insights for future online delivery systems.

The purpose of this study was also to investigate the intersection of three main theories: the Innovation Diffusion Theory, the Technology Acceptance Model, and the Task-Technology Fit Theory. These theories were used to examine college and university administrators’ decisions to abandon their stakeholds and installations in Second Life. In addition, insights into these decisions may provide important guidelines and suggestions for more successful implementations of 3D immersive online virtual environments in the future as the ease of technology use improves and technology resource intensity is addressed and improved.

Research Questions

This study used a mixed methods design, first using qualitative methods to determine the reasons, decision-making process, and opinions of higher education administrators concerning their entry and exit into and out of Second Life. The data from the administrators’ responses were analyzed, and research questions were developed as
well as a questionnaire for the quantitative phase of the study. The questionnaire was sent to students, instructors, and instructional designers who had experience in teaching and/or learning in *Second Life* to gather information about their beliefs and attitudes concerning the decision to use or discontinue *Second Life*. The input from students provided an important and different perspective as they provided information concerning the ease of use of the technology as well as other issues from the user’s viewpoint.

The research questions were based on the Innovation Diffusion Theory (IDT), the Technology Acceptance Model (TAM), and the Task-Technology Fit Theory (TTFT). IDT addressed the adoption of innovations and was used to explore why *Second Life* was not adopted as the dominant online course delivery method for higher education. According to Rogers (2003), IDT theory explained how innovations follow an S curve timeline from inception to the end of a technology and thus, was able to explain the rapid adoption of *Second Life* in the beginning to the sudden lack of interest and presence of *Second Life* in higher education today. TAM considered the significant effect of perceived usefulness and perceived ease of use of the technology on user acceptance was used to determine how these attributes affected the decisions made to enter and then exit *Second Life*. TTFT addressed the degree to which a technology helps or assists technology users in completing their tasks and objectives and was concerned with the relationship and fit among the task requirements and the abilities of those individuals charged with carrying out specific tasks. This theory was used to analyze if there was a relationship between these factors and the situation involving higher education and *Second Life*. 
The study began by using the following *qualitative* research questions:

- **Qualitative Research Question 1:** What are college/university administrators’ current opinions about the use of 3D immersive virtual worlds such as *Second Life* for teaching and learning in higher education?
- **Qualitative Research Question 2:** What criteria did higher education administrators use when deciding to have a presence in *Second Life* and/ or continue a presence in *Second Life*?
- **Qualitative Research Question 3:** What criteria did higher education administrators use when deciding to decrease presence in *Second Life* or discontinue the use of *Second Life* for teaching and learning?
- **Qualitative Research Question 4:** What factors contributed to the failure of *Second Life* as a course delivery system in higher education institutions?

The second phase of the study used the following *quantitative* research questions that were developed based upon the findings from the qualitative analysis:

- **Quantitative Research Question 1:** What factors for students were associated with *Second Life* not becoming a mainstream course delivery platform in higher education?
- **Quantitative Research Question 2:** What factors for instructors were associated with *Second Life* not becoming a mainstream course delivery platform in higher education?
- **Quantitative Research Question 3:** What factors for instructional designers were associated with *Second Life* not becoming a mainstream course delivery platform in higher education?
• Quantitative Research Question 4: What factors were common for students, instructors, and instructional designers as to why *Second Life* did not become a mainstream course delivery platform in higher education?

**Justification**

There are many virtual worlds in existence including open source projects and proprietary vendors, but *Second Life* is the most widely used among educational institutions (Warburton, 2009). *Second Life*, in particular, appears to have the ability to increase engagement and knowledge gains in a manner superior to traditional learning management system platforms because of the *sense of presence* that develops between avatars (Warburton, 2009). Researchers predicted that this way of teaching and learning would become the online educational environment of choice at the time of this study and this has not materialized (Gartner Report, 2007; NMC and EDUCAUSE Learning Initiative, 2007). As such, this study is beneficial to a variety of constituents including the study participants, future students, instructors, instructional designers, and administrators in regard to adopting future technologies.

Research has shown that students learn better in learning environments that reduce isolation and increase engagement (Burgess et al., 2010; Dass et al., 2011; Mayrath, Traphagan, Jarmon, Trivedi, & Resta, 2010; Salmon, 2009; Warburton, 2009). This was the promise of *Second Life*. Finding and exploring the reasons why *Second Life* never fully diffused as expected will bring insight into why it did not become the platform of choice for course delivery and how future technologies deemed to be beneficial may be deployed so as to increase the chances of acceptance and adoption. Students will benefit from having access to technology that increases their learning
potential, and instructors will benefit from having technology tools that increase student engagement.

The results of this study will also provide information to administrators who actively embraced this new technology and then suddenly backed away even though significant investments were made to establish a presence in Second Life. Higher education institutions spent funds to buy virtual property and pay programmers to build virtual campuses and then abandoned or pared back their Second Life presence. This study will be beneficial to administrators when deciding how to allocate funds and invest in new technology in the most effective and efficient manner. Decision makers and organizations learn from their mistakes, and realizing what went wrong, will help higher education administrators make future decisions in terms of new technologies including 3D learning technologies.

Finally, instructional designers working on course delivery solutions for online learning will be afforded more evidence and insight into why this technology failed. Instructional designers will also benefit from realizing the problems with the transitioning of instructional materials from a traditional learning management system to 3D virtual worlds or other similar technologies. Discovering whether traditional design models can be employed or whether new models need to be developed that take into consideration the features of virtual worlds and the learning process would help instructional designers develop and deliver effective learning solutions to online learning.

This study will also add to the field of research on virtual worlds. There are many studies from 2005-2009. They dropped off significantly from 2010 through the present date. There are still a few studies praising Second Life and the affordances provided for
effective teaching and learning, but these studies dwindle in comparison to the body of research prior to 2009. There are no studies exploring why this drop off occurred and why the interest in Second Life dropped off significantly. There is some anecdotal evidence about particular higher education institutions’ programs and applications of Second Life being discontinued, but there is no study probing the reasons and the actual decision making processes involved.

Delimitations and Assumptions

There are many virtual worlds being used for many different purposes such as business use, socialization, and entertainment. This study examined the use of virtual worlds being used for educational purposes, and in particular, use in higher education institutions. The study was delimited to one particular virtual world, Second Life. Many other virtual worlds exist which are made available to all users via the Internet as well as virtual worlds developed by private companies which are proprietary in nature including the worlds of OpenSim, Croquet Consortium, ActiveWorlds, Project Wonderland, There, Oliver, and Twinity (Warburton, 2009). Second Life had characteristics including creating a sense of presence for learners which makes it attractive for teaching and learning online. Thus Second Life was the focus of this study. Second Life was the most widely used virtual world for teaching and learning in higher education and was predicted to be the prominent course delivery method by 2011-2012.

Seven higher education institutions located in the United States that have or used to have a large presence in Second Life were studied. Participants for the qualitative part of the study were limited to administrators in these higher education institutions who were responsible for allocating budget and allocated funds to develop a presence in
Second Life. This small sample of administrators may not be representative of all higher education administrators, but the qualitative data collected from these administrators provided insight into the opinions and decision making process concerning decisions about Second Life. The quantitative part of the study included instructors, students, and others who had some exposure to the use of Second Life in higher education. The quantitative part consisted of a sample of Second Life users and may not be representative of the actual population of Second Life users.

The researcher assumed that the participants were honest and forthcoming in providing information. The administrators interviewed were assured that their names and the names of their institutions would be kept anonymous unless express written permission was given. The quantitative surveys were deployed using a virtual survey instrument assuring that the participants cannot be identified. The researcher assumed the participants completing the surveys have had exposure to Second Life, and the participants were involved in some aspect of teaching and/or learning in this environment. Participants understood the questions and responded fully as indicated by the survey instrument.

Definition of Terms

A list of definitions particular to this study as defined by the researcher is given. Although each term has different meanings to various individuals, the researcher has defined the following as

Avatar – a computer user’s graphical representation of himself or herself.

Constructivist Learning – a theory of learning whereby learners construct their own meaning and become active participants in the learning process and build upon their
prior knowledge achieved through social interactions and learning through the use of authentic, real-world tasks.

*Distance Learning* – a formalized teaching and learning system specifically designed to be carried out remotely by using electronic communication.

*Island* – a region in *Second Life* surrounded by water, detached from the main continent, and reached only by teleporting. Islands are purchased or rented by residents who build structures.

*Learning Management System (LMS)* – a software application or Web-based technology used to plan, implement, and assess a specific learning process providing an instructor with a way to create and deliver content, monitor student participation, and assess student performance.

*Second Life* – a free online 3D virtual world developed by Linden Lab in 2003 where users interact with each other and create content through the use of their avatars.

*3D Online Immersive Virtual Environment (3DOLIVE)* – an online computerized environment where users feel immersed or engrossed in the environment and experience a sense of presence or actually being in the environment.

*Virtual Learning Environment (VLE)* – a computerized environment designed to support teaching and learning in an educational setting which involves distance learning.

*Virtual World* – a computer-based simulated environment where interaction takes place in real-time with digital representations of users (avatars).

**Summary**

From its inception in 2003, *Second Life* has been touted as a revolutionary software application for distance education with its inherent ability to transform static and
cold online learning environments into personal, warm, and engaging three-dimensional learning environments. The fact that learners in the 3D form of their avatars could interact with other learners, faculty, and passers-byers in real-time, and thus develop a tangible sense of presence has made this technology seem like a viable option for online learning. Classrooms and learning spaces were developed, intriguing learning activities were designed and deployed, and indeed, entire college campuses were recreated all within a 3D online immersive virtual environment accessible via a computer and the Internet. Growth abounded, and from 2003 through 2009 the academic and educational world was abuzz over this new and amazing technology (Burgess et al., 2010; Dass et al., 2011; Salmon, 2009; Salt et al., 2008). By 2011 the buzz had been silenced as the educational prospects of Second Life dimmed and educational uses of the technology dwindled.

Second Life has certainly faded from the educational stage. The questions of importance in this study relate to why this has happened. Why did Second Life fail to achieve the promise of only a few short years ago? Why did administrators make the decisions they made concerning the adoption of Second Life for institutions? Why have faculty made the decisions they made concerning Second Life as used as an online teaching platform? The importance of this study was to find these answers to help administrators and educators make better decisions concerning the adoption and implementation of new, innovative technology.

The next chapter contains a review of the research and literature concerning the failure of programs and technology in higher education. The review will concentrate on the failure of virtual worlds—in particular Second Life—in higher education. Readers
will follow the literature history from the general to the specific. The researcher will begin with the *big picture*, looking at research on organizational failure and ending with the focus of this research study namely Second Life in higher education. In between are sections for failure in both higher education organizations and higher education programs, leading to a discussion of failures related to online education and 3D online immersive virtual environments.
CHAPTER II

LITERATURE REVIEW

This study explored the virtual world of *Second Life* in higher education to determine why it did not become the course delivery method of choice as was predicted. The literature review considered various types of failures including institutional failure, programmatic failure, and failure of technological applications in education in an effort to draw comparisons between these failures and what happened with *Second Life*. The importance of studying failures will be discussed, as learning from failures is tantamount to enacting effective change resulting in institutional improvement and innovation. The theoretical framework for the study will be laid out, and failures of organizations in a general sense will be discussed followed by failures in higher educational institutions, thus setting the groundwork to introduce more specific details about failure of technology in higher education. This literature review considers the failure of various technology programs and in particular virtual worlds. Lastly, the existing literature concerning the current state of *Second Life* in higher education will be discussed.

In order to facilitate an overall understanding of the literature review, a macro-micro approach was used in this chapter. This approach focuses the reader first on the outside level of organizational failure in general and sharpens the focus to smaller and smaller segments until failure in *Second Life* is the primary element of study. The macro-to-micro approach has the advantage of placing the discussion of the most important segment, that being failure in *Second Life*, in closest proximity to the remainder of the study discussion. Please see Figure 15 for a visual representation of the macro-to-micro literature review hierarchy used in this chapter.
Many higher education administrators and instructors proposed the use of *Second Life* as a new way to deliver online courses, and researchers predicted that it would become the preferred method of course delivery. These predictions and expectations never materialized. The three theories that were employed in this study to explore and explain this phenomenon included: the Innovation Diffusion Theory (IDT), the Technology Acceptance Model (TAM), and the Task-Technology Fit Theory (TTFT).

New ideas or innovations are difficult to adopt even when proponents believe or demonstrate that the innovation may have obvious advantages (Davis, 1989). IDT is based upon the concept that any new idea or innovation contains a great deal of
uncertainty and must be diffused or communicated through particular communication channels in an effort to adopt and enact social change (Rogers, 2003). The success or failure of the diffusion process can be linked back to several key characteristics including relative advantage, compatibility, complexity, trialability, and observability as perceived by members of a social system who are the potential adopters of the new idea or innovation (Rogers, 2003).

Relative advantage is the degree to which the innovation is perceived to be better than the idea it will replace. If an individual perceives the innovation as advantageous, the innovation will have a greater and faster rate of adoption. On its face, Second Life appeared to offer many advantages to online education over more traditional course management systems. Virtual worlds such as Second Life operate in three dimensions and allow for learning by immersion thus, increasing student engagement. Immersion creates the situation whereby the learner feels he/she is part of the environment and feels connected to other learners thus reducing isolation and creating a sense of belonging (Salmon, 2009). However, there are also barriers to the technology for learners that may be perceived as disadvantageous, including technical issues, avatar identity, and difficulty adapting to the unique culture. Instructors may be affected by these issues in addition to problems experienced with the time involved to prepare for and teach in Second Life as well as economic concerns (Warburton, 2009).

Compatibility considers how the new idea or innovation fits into a person’s values and past experiences. If the new idea or innovation is compatible with a person’s existing values and norms, the rate of adoption will be faster. Compatibility relates to how
comfortable instructors and students are with technology in general and their eagerness to learn a new and different way of learning.

Complexity is concerned with the perception of how difficult the new idea or innovation is and how difficult it will be to learn how to use the innovation. Obviously, ideas and innovations perceived as easy to understand and use are more likely to be adopted more widely and more timely. Second Life had a steep learning curve, and a primary student challenge was learning how to use the Second Life interface with most students reporting that using the interface was difficult (Mayrath et al., 2010).

Trialability is the degree to which the idea can be tried out or experimented with prior to adoption. The more opportunities are given to try the innovation and become comfortable with it, the more readily the innovation will be adopted.

Observability is the degree to which the results of the innovation are visible to others. The easier the innovation is to be seen and observed, the easier the process will be to adopt the idea or innovation. As far as trialability and observability, most instructors and students have not experienced virtual worlds such as Second Life.

According to the Pew Internet & American Life Project in 2010, 8% of teens said they visited online virtual worlds like Second Life. This number was down from 2008 when 10% of teens reported using the technology. The report also found virtual world usage among adults was 4% in 2009. These statistics indicated that only a small percentage of teens and adults did use virtual world technology (Lenhart, Purcell, Smith, & Zickuhr, 2010). Other factors to be considered in the diffusion process include communication channels or the means used to diffuse the information to potential adopters and the time involved in the diffusion process. Communication channels may
include mass media channels such as radio, television, and newspapers, and interpersonal channels involve two individuals engaging in face-to-face discourse. The time factor or the rate of adoption or acceptance of the new idea is dependent upon how quickly and in what manner potential users of the innovation proceed through the diffusion process.

As part of IDT, Rogers (2003) identified five stages that describe whether and how the innovation is adopted or rejected. These stages are knowledge, persuasion, decision, implementation, and confirmation. Potential adopters need to first gain knowledge about the features and functions that are inherent in the new idea or innovation, followed by persuasion where an individual forms a favorable or unfavorable attitude based upon the knowledge gained. The decision is then made to either adopt or reject the idea or innovation, followed by implementation where the individual begins using the idea or innovation if the decision was made to adopt. Lastly, the confirmation stage occurs when the individual becomes persuaded that the decision to adopt was the right decision.

The second theory applicable to this research is the Technology Acceptance Model (TAM), which is similar to IDT as it considers the significant effect of perceived usefulness and perceived ease of use of the technology on user acceptance of the technology. TAM provides insight into a technology user’s decision to either adopt or reject a technology by determining that users are driven to adopt a technology because of the functions it performs for them and how difficult it is to get the technology to perform those functions (Davis, 1989). For example, in the case of Second Life, ease of use could be subdivided into the ease of accessing and using the software and the ease of navigating and interacting within the software. Regarding the former, access to a
personal computer with at least a 512 MB memory card (preferred 3GB or higher), an enhanced graphics card, above average processing speed, and a cable or DSL Internet connection are mandatory for success (Second Life Resource Website, 2013). Many institutions are resistant to imposing requirements for student technology purchases resulting in limited ability for many students to use advanced computer applications such as Second Life due to a lack of minimum technology resources. Affordability may also become an issue. Although Second Life is free to the end-user, the end-user may not have a well-equipped computer and high speed Internet connection, which could be problematic for students who are economically disadvantaged.

Another theory that explains why technologies are accepted or rejected is the Task-Technology Fit Theory (TTFT). The TTFT is the degree to which a technology helps or assists a technology user in completing his/her tasks and objectives and is concerned with the relationship and fit among the task requirements and the abilities of those individuals charged with carrying out specific tasks (Goodhue, 1997). This perspective considers how well the technology fits the abilities of technology users. According to Goodhue (1997), task-technology fit is determined by the characteristics of the task, individual user characteristics, and technology characteristics that, in turn, determine the utilization of the technology. This theory provides insight into the Second Life situation as it is based on acceptance as an intersection of these three constructs.

These three theories, the Innovation Diffusion Theory, the Technology Acceptance Model, and the Task-Technology Fit Theory were used in this study to explain and support reasons why Second Life as an online course delivery system did not fulfill the predictions and expectations of researchers and practitioners. All three theories
illustrate the importance of institutional and/or individual impressions concerning complexity and usability of new technologies. Consequently, highly complex and demanding technologies may hinder acceptance and integration even though the projected benefits are compelling. *Second Life*, while appearing to be an excellent solution to the student/faculty interaction problems inherent with current online education was never fully adopted and widely implemented despite the overall promise of the technology. Higher education initially bought into the *Second Life* technology and the potential for an effective online solution but soon gave up and decided to decrease or end their presence in *Second Life*. The three theories served as a foundation for this study and helped to explain why *Second Life*, once deemed to be the dominant course delivery system by 2012, did not live up to this prediction.

**Organizational Failure**

One did not have to look far to find many failures throughout history. The sinking of the Titanic in 1912, the Space Shuttle Challenger disaster in 1986, and the demise of ENRON provide vivid examples of program failures in organizations. Most failures are not this serious in terms of loss of life, and many are as simple as coworkers miscommunicating about some matter but these can also result in major failure (Cannon & Edmonson, 2001). For example, the loss of the Mars probe in 1999 was determined to be caused when a Lockheed Martin engineering team used English units of measurement, while the NASA agency team used the more conventional metric system for a key spacecraft operation (Hotz, 1999). With each failure, organizations, businesses, and educational institutions acquire information that is crucial for determining what worked and what has not. As a result, future failures can be avoided, especially if they are costly.
Learning from Failure

Organizational failure can be defined as deviation from expected and desired results, including both avoidable errors and negative outcomes of experiments or risk taking (Cannon & Edmondson, 2001). Organizations can and should learn from experiences, and this learning is accomplished mainly by encountering problems rather than by experiencing successes. Even organizations experiencing prolonged success will eventually start to experience failure if critical adjustments and changes are not made. Failure often becomes a reality due to complacency and an unwillingness to try different techniques or strategies. Organizations learn from failures as failures may force the organization to analyze the situation and change goals or direction, thus stimulating innovation (Baumard & Starbuck, 2005).

While it would seem intuitive and beneficial for organizations to take advantage of failures and learn from them, most organizations do a poor job of learning from failures both large and small (Cannon & Edmondson, 2005). Technical barriers and the presence of complex systems or technologies contribute to an organization’s inability to learn from failure. If leaders do not understand the technical process involved or do not have the technical skills required to analyze problems and determine the root cause and possible corrective action, no learning will occur as a result of the failure. In addition to technical barriers, barriers are also embedded in social systems. These barriers have their roots in the strong psychological reaction people have to realizing and admitting failure. In organizations, managers tend to disassociate themselves from failure due to organizations typically rewarding successes and punishing failures (Cannon & Edmondson, 2005). According to Rogers (2003), it is difficult for an innovation to gain
acceptability if it is incompatible with an individual’s values and beliefs. If the cultural value system does not allow for acceptance of failures, failures will not be recognized and analyzed for the knowledge and improvements that could potentially be gained. Baumard and Starbuck (2005) conducted extensive research involving a large communications organization and found that little was learned from failures because managers explained them away as general social trends or outside uncontrollable causes. Cannon and Edmondson (2005) identified three processes that organizations can follow to learn from failure. First, failure needs to be identified, especially in the case where small failures precede large failures. Next, failures need to be analyzed to determine what happened and the root causes for the failure. Lastly, and most importantly, organizations need to carry out deliberate experimentation in order to promote learning, thus increasing the chances of producing innovative solutions and new ideas.

Organizational Failures and Second Life

Understanding why failures occur in organizations can help explain what occurred with Second Life not becoming the dominant course system as predicted. More importantly, as the literature indicates, it is not the failure that is important but rather what can be learned from the failure. The causes of failure need to be analyzed, as often the root cause is not obvious by only looking at the surface. Barriers to the process need to be recognized and compensated for in order to get to the root cause of the failure and take corrective action or plan for the next time a similar situation occurs.

Failure in Higher Education Institutions

In recent years, the government bailed out and saved several companies in the insurance, banking, and automotive industries that were considered too-big-to-fail
(Vedder, 2012). While this action was not widely done before 2008 for businesses, the government (state and federal) has been ensuring for decades that higher education institutions that are too-big-to-fail have been provided with significant government subsidies to assure they do not fail in the sense that they cease to operate (Vedder, 2012). The federal government provides higher education funding through operating and federal research grants, through financial aid, and through allowing donors to receive favorable tax status (Vedder, 2012).

Closure of Institutions Due to Failure to Change

In a study conducted by Bates and Santerre (2000), the researchers compared the closure and merger rates of private colleges with businesses. Their results showed that private colleges were less likely to close than businesses over the period 1960-1994. Closing and mergers were more likely to become a reality when the real value of tuition dropped, faculty salaries increased, and student enrollment dropped. Jaschik (2008) noted that predictions of closings have not materialized with the number of private colleges remaining at about 1,600 since 1980. In the case where small private colleges have closed or merged, administrators were likely to postpone making major decisions and to continue to operate with the belief that what worked in the past would work in the future. This state of denial led to resistance to change, or when change was made, it was often too slow or incremental and not likely to have an impact (Brown, 2012). The major factors involved in failing to make the necessary changes concerning the leadership of the college president, the leadership of the trustees, the general culture across the campus, and the financial resources available. For small colleges to survive, administrators and faculty must avoid becoming rigid and incurring a loss of
innovativeness and a resistance to change (Jaschik, 2008). Brown (2012) provided several examples of colleges that failed to heed the signs that change was critical to survival and ended up closing after being in existence for over one hundred years. However, a few examples were also provided of colleges that radically changed their focus and philosophy and continued their existence and even sustained growth. One institution in particular, Lindenwood University, embraced change and implemented what some administrators believed were radical changes. These include the elimination of tenure, an increase in teaching and advising loads, major recruitment of students some of whom were ill prepared for college, and elimination of debt (Brown, 2012). The administrators at Lindenwood serve as effective change agents for their institution by influencing members of the university community and clarifying the need for change. The presence of an influential change agent allows for new ideas and innovations to be diffused more quickly where the change agent can develop a clear need for change, establish communication with those involved, diagnose problems, create intent for people to change, translate the intent into action, stabilize adoption, prevent discontinuance, and achieve lasting results (Rogers, 2003).

Change and the Nature of Higher Educational Institutions

Creating and sustaining change in higher education is difficult. The nature of higher education institutions, defined as having loosely coupled systems (individual system elements having high autonomy relative to the whole system, with change in one section having no or little effect on other parts of the system), with diffused decision making and goal ambiguity lends itself to making small adjustments easily; however, there is a great deal of difficulty diffusing major change throughout the institution. Even
when the need for change is recognized and faculty and administrators are committed to change, many do not understand the change process and become immobilized or make errors in the process (Boyce, 2003). Successful change and restructuring requires a shared purpose between faculty and administrators where the focus of the change is in response to the needs of the student population and society in general (Guskin, 1996).

Restructuring and change is a complex process and becomes even more complicated, considering the general resistance to change held by many people. This resistance to change is especially true in the context of higher education because faculty are generally fiercely independent and believe that by accepting change they are having the will of others forced upon them (Guskin, 1996). Change is also difficult for higher education institutions because institutional resources are decreasing and many colleges and universities are facing economic challenges. Due to constraints inherent in the nature of higher education, strategic change only occurs when coordination exists among the top leadership team, between the leadership team and the internal organizational constituents, and between the leadership team and the external constituents (Boyce, 2003). Indeed, strong leadership is a critical component of any change effort as leaders are needed to keep the focus of the change going, convincing others that change is inevitable and needed, and trying to get as many people involved and committed as possible (Guskin, 1996).

*Higher Education Failure and Second Life*

As the literature indicated, higher education institutions must change in order to survive in the competitive, budget-conscious environment today. *Second Life* and technology meant to increase student engagement and retention can help institutions meet
their goals but only if change is embraced and welcomed. Change is difficult on an institutional level for higher education due to the barriers and constraints inherent in the system. These constraints and barriers need to be recognized and overcome in order to leverage technology for the good of the institution. Change is not only difficult on an institutional level, but also on an individual level. Resistance to change and innovation is common in society and in higher education. By analyzing the reasons Second Life failed to become the preferred technology for course delivery, strategies can be developed for overcoming resistance to change.

Failure of Higher Education Programs

Higher education programs have a long history of successes, but there is also a long history of failures. Tracing back to the ancient Greeks, even Plato and Socrates feared what would have been perceived as innovations in the educational systems of their time. Technology in higher education also has a checkered past, including attempts at radio broadcasted education, filmstrips, and television, all of which never lived up to their potential. Understanding the general issues in higher education programs that did not succeed provides part of the foundation for understanding why more cutting-edge programs like Second Life met the same fate. This section will introduce the reader to selected failure issues in higher education.

History of Educational Technology Failure

While most colleges and universities do not face closure or merging with another institution, all higher education institutions have strategic plans that involve the rolling out and maintenance of various programs some of which are not successful. History has illustrated that prognosticators often claim that a certain program or technological
innovation will radically change the environment of education, but generally they are wrong. The educational timeline for the adoption of technology is rich with examples of unexpected failures (Gumport & Chun, 1999). Failure may be attributed to the general opinions of stakeholders in the educational process with examples dating back as far as Plato’s time. Plato was of the opinion that oral methods of education would be replaced with the prolific use of written materials in education, and Socrates argued that this innovation would be detrimental to the field of learning. Socrates feared written materials would undermine scholars and lead to impersonal learning environments and discourage creativity.

Further examples of failures caused by general opinions of stakeholders can also be found in more recent times. In the 1960s instructional television proved to be ineffective due to the fear on the part of academics that classrooms would be staffed by teaching assistants whose sole purpose was to keep students quiet and listening to the broadcast. Radio and filmstrips never materialized as educational media. Today, many computer systems that were once cutting-edge are now obsolete. When technology is predicted to radically alter basic structures of the educational process, it is likely to be met with opposition (Cohen, 1987; Ely & Plomp, 1986; Green & Gilbert, 1995; Gumport & Chun, 1999; Spotts, 1999). According to the Task Technology Fit Theory (TTFT), rational individuals utilize technology for tasks believed to have a good fit with abilities and needs. Utilization is a behavior and beliefs about costs and benefits and attitudes, with social norms having an impact on the decision to use a new technology or adopt an innovation (Goodhue, 1997).
Fit Between Educational Technology and Solving a Problem

Educational technology as defined by the Association for Educational Communications and Technology is a complex, integrated process involving people, procedures, ideas, and devices for analyzing problems and devising, implementing, evaluating, and managing solutions involved in learning. One basic premise of educational technology is that it should be used in response to a problem (Ely & Plomp, 1986). According to the Technology Acceptance Model (TAM), individuals need to perceive some usefulness in an innovation to fully adopt the innovation. If the innovation does not fully address a need or solve a specific problem, users will not be prone to adopt and sustain the innovation (Davis, 1989). In the past, some of the less than successful uses of educational technology occurred when it was offered as a solution to a problem that was not clearly defined. For example, media and early computers were viewed as solutions looking for problems instead of the other way around. There is a certain mystique associated with new technological innovations that can cause enthusiasts to apply them in a setting without asking questions about how an existing problem will be solved. Defining and describing problems and then considering alternative solutions, one of which may be technologically based, should be carried out prior to the adoption of any solution. Unless this process becomes the norm, most technological innovations are doomed to fail (Ely & Plomp, 1986).

Reasons for Failure of Educational Technology Programs

Ely and Plomp (1986) identified several common elements found in innovation projects that failed. Confusing goals contributes to project failure because the people involved do not know why an innovation is being used and do not understand what is
expected or to be accomplished as supported by the technology acceptance model (TAM) and task technology fit theory (TTFT). These theories emphasize the importance of innovations having personal relevance for users in the form of solving a specific problem or making a process easier (Davis, 1989; Goodhue, 1997). Unsuccessful innovations tend to place emphasis on the medium rather than the design of the program resulting in a new medium being implemented for its own sake rather than for instructional value. This occurs when the technology is the focus of attention with the structure and organization of the educational process never being considered. Resistance to change is also a factor that causes the failure of an innovation. Some people do not embrace change and are especially resistant to new technology. Lack of support can be a problem and can take the form of a lack of a social support system and a lack of a technical support system. Lack of a social support system can leave people feeling alone and isolated when dealing with a new innovation.

According to Rogers (2003), diffusion of an innovation is more likely to occur if a strong social system exists and change leaders and opinion leaders are an integral part of the social system and can decrease feelings of isolation and lack of support. If the innovation involves the use of sophisticated equipment or software packages, lack of a technical support system can cause frustration and confusion. Insufficient skills and knowledge can also cause a project to fail. Proper training and support are needed for the innovation to be successful; otherwise, the result is a lack of enthusiasm and cooperation. Lastly, Ely and Plomp (1986) identified that a major failure of educational innovation was the lack of system focus. If the project is only concerned with a limited number of the aspects of the problem rather than the totality of problems, failure can occur. There is
a tendency to focus on one important objective and ignore the rest. Where vision is limited, systems requiring substantial change cannot be successfully implemented.

Flexibility of an innovation may also determine whether the innovation is being adopted, as adoption generally occurs when the innovation is perceived as more flexible than the current innovation. For example, in the 1970s when instructional television, radio, and filmstrips were an innovation, they were deemed to be inflexible by educators. There was a lack of appropriate equipment, and when the available equipment was used, either everyone in the class watched or listened to the lesson or no one did. These rigidities meant that television, radio, and filmstrips could not be easily adapted to account for variations in the students’ work and abilities. In addition, the programming of these media was rarely adapted to the curriculum or to the teachers’ goals for student learning. Teachers developed a preference for books over television, radio, and filmstrips because books allowed students to adapt to differences in ability and interest. Each student can read at his or her own pace and go back and reread sections for additional understanding. Books proved to be a cost effective, reliable method for teaching as opposed to the new innovations introduced (Cohen, 1987). Teachers perceived the new technology as not having a relative advantage over the prior technology and thus did not support adoption of television, radio, and filmstrips (Rogers, 2003).

Social, Political, Economic, Cultural, and Historical Context

Selwyn (2010) argued that how technology in higher education was evaluated needs to change as the academic study of educational technology tends to concentrate on the process of how students can learn with digital technology, while greater attention needs to be paid to how the digital technology is actually being used. Consideration of
the social, political, economic, cultural, and historical contexts need to be examined to
determine why technological programs were not successful. Educational technology
innovations are political in nature with educational planning emerging as different
stakeholder groups negotiate interests. Sometimes objectives are not necessarily
educational, but rather made to fulfill financial, personal, or political objectives
(Whitworth, 2012). There is a long history of technological efforts that educators were
excited about and hopeful that these programs would contribute to the education of their
students, but their hopes were largely unrealized. Educators tended to look at the
potential of these programs and not the individual and institutional barriers that may have
been restricting the potential from occurring. To evaluate the efficacy of educational
technology educators need to move away from analyzing the student’s individual use of
the technology and move towards developing a greater understanding of how the
technology fits into the wider context of education and society (Selwyn, 2010).

Whitworth (2012) researched why a grand technological innovation involving the
use of a space for effective teaching and learning failed at a large university. The term
grand innovation refers to specific large-scale projects as defined by institutions of higher
education. The particular project studied involved the establishment of a learning center
called the Atrium. The Atrium was a technology-rich teaching space containing multiple
data projectors, writable surfaces, movable furniture, movable walls, embedded
computers, and laptops. The idea was to produce a technology-driven flexible space that
could be configured for a variety of learning experiences, collaborations, and
presentations. The failure of the project was determined to be due to the differing
opinions and perceptions of key stakeholder groups. Information collected from users
and stakeholders revealed that individuals were perceived as the driving force behind the project versus the goals, values, and structure of the institution. Even the bid process for the project revealed that the interactions and negotiations of individuals were driven by an effort to meet their own objectives. The designers needed to communicate with external stakeholders leading to further tension as those needing to approve the project both internally (managers) and externally (funders) needed the proposal stated in terms they could understand. Designer-stakeholder conflict is the kind of tension that could work against and defeat any innovative project. Even though the project was pedagogically sound and followed the principles of social constructivism and students attested to its popularity, it was difficult to sell to senior academics, had no internal or external sponsor, and was unable to bring about cultural change (Whitworth, 2012).

Change leaders and opinion leaders are a critical part of the process when instituting an innovation such as the Atrium, and the lack of their presence contributed to the project never reaching critical mass (Rogers, 2003).

Macfadyen and Dawson (2012) analyzed data generated from a large university’s learning management system (LMS) in preparation for a decision to be made to implement a new LMS. The researchers determined that the current use of the LMS was not being used in an effective or strategic capacity. They discovered that the tools being utilized by instructors and students included ones that took less time to learn and use such as organizing course content, assessing learning activities, posting of quick course announcements, posting grades, and uploading assignments. The tools that strategically increase student engagement and collaboration such as wikis, voice, and video tools were poorly utilized. The failure to fully utilize this system was found to be the university’s
inability to develop a clear vision for the use of the system and to lead the cultural change necessary for adoption in accordance with the strategic plan. The lack of attention to the institutional culture inherent in higher education and a lack of understanding of the degree to which individuals resist change contributed to the failure to adopt the system (Macfadyen & Dawson, 2012). Rogers’ (2003) theory of the diffusion of innovations helps to explain resistance to change. When change is proposed, individuals assess the value of the change according to the relative advantage or how the change will be beneficial for them. The faculty found the LMS to be a time consuming imposition that would detract from their other duties of teaching and research. Faculty perceived that the increased workload would not have favorable outcomes, and their teaching evaluations would be negatively impacted. The theory of diffusion of innovations also addresses whether the new technology is compatible and consistent with the existing values and needs of potential adopters, which in the case of the LMS was not congruent with the culture of the institution as the reward system centered on research and publication records of faculty. Complexity, another factor in the adoption of innovation, was also a factor in the failure of faculty to fully integrate the LMS into their teaching. Faculty perceived the features of the LMS to be complex and time consuming to learn in addition to having low relative advantage (Macfayden & Dawson, 2012).

Nature of Higher Education

The nature of higher education contributes to some technologies being adopted at slow rates and some technologies not being adopted at all. These outcomes are often due to the institution being unwilling to change and the nature of the individuals involved, of the resources, and of professional interests. Higher education institutions throughout
history have been slow to adopt changes and continue to exhibit resistance to change as a result of this long-standing, well-established system (Gumport & Chun, 1999). The successful integration of innovative technological solutions in higher education is almost always associated with major structural change, the kind that higher education institutions resist. Structural change occurs slowly and at best incrementally over a long period of time, often decades. The decision-making process in higher education works far better at preserving institutional culture and knowledge than responding to innovative technological change (Green & Gilbert, 1995). The same can be said for academics.

Despite the public attention to technology, the majority of academics have not dramatically changed teaching methods. Many academics are unprepared to take on such projects, and changing teaching methods is time consuming. Most importantly, such activities are not rewarded in promotion and tenure review the way scholarly publications are; thus, academics are better served to devote time and energy to research and publications (Gumport & Chun, 1999). Promotion and tenure review boards often do not recognize instructional excellence or course development and the implementation of innovative course materials as important. Due to time limitations, faculty do not see value in pursuing innovations that will not help with the tenure and promotion process (Spotts, 1999).

Failure of Higher Education Programs and Second Life

The literature involving the adoption of educational technology by higher education institutions can be used to explore the situation involving Second Life. It is critical for new innovations and technology to fit into the goals and culture of the institution. Stakeholders need to understand the attributes of the innovation and see value
in the innovation being implemented with the addition of value overcoming any resistance to the change. Second Life, as an innovative method of course delivery, was not widely adopted unlike many other innovations in educational technology. Similarities and inferences can be made in order to understand why this occurred.

Failure of Online Solutions in Higher Education

Online learning and online classes are prevalent at most colleges and universities as these institutions compete for students in a global marketplace. Many higher education institutions are quick to jump on the online bandwagon without consideration as to what makes this learning method successful. Many online programs fail to live up to the expectations of the students and the institution. This section will explore why these programs failed to meet their goals.

Current State of Online Education

Demand for global higher education is predicted to double between the years 2000 and 2020, with distance education accounting for the bulk of the demand (Rovai & Downey, 2010). An increasing number of higher educational institutions are transforming themselves as global providers of online education in order to take advantage of this trend. This global learning environment fuels the competition in higher education and programs become based on economics and consumerism as opposed to traditional academic rationales. While many programs are successful, other programs fail due to the pressures of increased competition in conjunction with other critical factors. For example, NYU online, a commercial venture of New York University closed as a result of economic conditions as did U.S. Open University, an entity created by the
University of Maryland. Temple University’s Virtual Temple also succumbed to failure (Rovai & Downey, 2010).

Higher education institutions have always competed for students, but today due to the proliferation of technology, this competition has reached a critical level with students becoming astute consumers making educational choices from a large, global, and diverse educational marketplace. In order to be successful, institutions need to evolve and adapt to the changing environment and analyze opportunities and threats as well as strengths and weaknesses. Sure failure results from the lack of a strategic plan with a vision and mission. No planning or poor planning can lead to programs that waste time and money and prove to be ineffective, thus leading to program failure (Rovai & Downey, 2010). A case in point is the demise of the virtual university, UK eUniversities Worldwide, established in 2001 as a primarily government-funded organization to develop and deliver online courses to diverse students from many different countries. The British government spent about $62.8 million on the project with the rest of the funds to be raised through corporate donations. The program failed to gain corporate sponsorship due to the perception that it was flawed from the beginning. The organization worked mostly with traditional professors who had little experience with online education and were unable to design learning-centered engaging programs for such a diverse group of students. UK eUniversities Worldwide also spent far too much money on infrastructure and developing their own platforms when more cost effective options were available in the marketplace. In essence the project failed due to bad management, bad implementation, a flawed business plan, and the failure to listen to experts in the online learning field (Carnevale, 2004).
Financial Implications of Online Education

Students are the key to success for any online program. Higher education institutions must recruit and retain qualified and highly motivated students; otherwise, the program will not be financially viable. An institution must align the strategic plan with the recruitment strategy. The old adage *build it and they will come* does not apply in online education programs (Rovai & Downey, 2010). Online education became part of many institutions’ strategic plans after 2008 due to a decline in the economy and weakening of institutional endowment funds. However, in order to be successful, institutions need to understand the financial implications of entering the online learning market. The primary institutional barrier to establishing an online program is the lack of available funding as costs increase substantially due to the technology required and the cost of maintaining the necessary technology. There is also a difference in funds available between institutions, with smaller institutions not having as much access to funds as larger institutions (Chen, 2009). Higher education institutions offering online programs need to spend a substantial amount of money on marketing and recruiting in order to compete for the existing potential student base. For example, the Apollo Group (which includes the University of Phoenix) spent over $805 million in 2008, which was over 26% of net revenue, in marketing and recruiting students (Rovai & Downey, 2010). Successful programs should consider financial factors when making decisions such as relying heavily on adjuncts to carry out most of the teaching. Grand Canyon University in 2008 reported having a total online faculty of 1,760 of which only 49 were not part-time adjuncts (Rovai & Downey, 2010).
While financial concerns are critical to successful online programs, quality assurance and accreditation must also be part of the program to ensure the quality of instruction in order to attract students, be able to offer financial aid, and be able to market graduates to employers. Policies and procedures are essential to selecting qualified faculty, to providing professional development for faculty, and to supporting services for students (Rovai & Downey, 2010).

Student Retention

Student retention is lower in online programs than in face-to-face programs due to the isolation and alienation from the institution, the instructor, and other students. Students need academic and social support in order to establish a sense of community and belonging (Rovai & Downey, 2010). Academic integration factors include the student’s academic preparedness, attitudes and values toward learning, identification with academic norms, and overall role as a student. While academic factors are important contributors to the retention of students, the non-academic factors including social integration are critical to success and retention. New students, especially, need more time on campus to interact with peers and faculty in order to feel included and integrated into the academic environment. When students are distanced from the on-campus experience, a sense of distance from relationship building and learning is established, resulting in lower retention rates (Allen, 2006). As a result, higher education institutions with online programs must provide faculty with the pedagogy and skills needed to establish courses that promote involvement, learning and retention (Rovai & Downey, 2010). A large British university attempted to design learning spaces in an effort to decrease isolation among students only to find that it was not a successful endeavor. A portal was
developed that provided access for students to explore three areas, the *Work Zone*, the *Social Circle*, and the *History Channel*. The Work Zone area allowed students to access practical and administrative information and details related to academics. The Social Circle included a chat room, social calendar, social contacts, and personal portraits where students could personalize a home page. The History Channel included frequently asked questions as well as a place for students to ask questions and leave advice for future classes. This idea is well supported in the literature, and students initially had a positive attitude about the possible uses, but in reality the resource was of little use to the students. The designers thought this space would be popular, dynamic and changing, but due to the nature of the cohort of students, visits to the sites were very rare. It was clear that the project failed because the needs and characteristics of the students were not analyzed. The students were mature, full-time professional, part-time students that did not have the time or inclination to exert effort on discovering and socializing with their peers because they perceived this to be a non-essential, unrewarded activity (McPherson & Nunez, 2004).

**Online Compared with Traditional Learning**

The online learning environment is significantly different from the traditional face-to-face class environment, and lack of faculty participation is a barrier to the widespread adoption of quality online programs. As long as distance education contributions are not considered in tenure and promotion decisions, and as long as professors have their own traditional methods of course teaching, many faculty members will be reluctant to engage in online teaching (Howell, Williams, & Lindsay, 2003). Research has shown that faculty members are often impeded from adapting to new
educational opportunities due to technical expertise, faculty compensation, time, and attitudes about technology (Chen, 2009). Consequently, online courses need to be designed and conducted differently with a clear understanding of the differences. Online courses that are successful need to consider that course design takes an extensive amount of time with more planning upfront. The expectations are also quite different with the instructor having to be available to respond to emails continuously and tutor students on an individual basis. Special skills are needed by the instructor in order to teach effectively using online tools and technology to engage students. Issues arise concerning assessment and how to measure learning as well as the complexity of academic integrity issue because the instructor is unable to see the students. Online faculty should spend less time teaching and more time developing learning experiences. Courses and programs fail when instructors try to take traditional face-to-face courses and present them online with few, if any changes. Successful courses offer an active learning environment in which students are actively engaged in the learning process (Rovai & Downey, 2010).

Failure of Online Programs and Second Life

Online programs are becoming increasingly popular in higher education. There are problems and concerns with online education including lack of planning, lack of integration, student engagement, student retention, faculty buy-in, and lack of funding for needed training and resources. The literature highlights these outcomes as an explanation of why many online programs are not successful. Second Life, as an alternate course delivery mechanism, was never fully integrated or diffused into higher education, and perhaps the failure of other online programs may help to explain this phenomenon.
Failure of 3D Online Immersive Virtual Environments in Higher Education

As the literature review will illustrate, 3D online immersive virtual environments, beginning with the advent of *Second Life* in 2003, were heralded as the next major technology innovation in higher education, with numerous predicted and realized implementations between 2005 and 2011. Even so, during 2011-2013 a mass exodus occurred, with large numbers of *Second Life* installations reducing their scope or exiting the virtual world altogether. What were the causes and issues? This section will attempt to cast some light on those causes and issues in order to begin to frame the purpose for this research study.

*Virtual World Barriers for Educators*

Online education is expected to grow and in an effort to maximize student engagement and facilitate a learner-centered experience, 3D online immersive virtual environments (3DOLIVES) emerged as a course delivery system. Evidence suggests that despite recognizing the potential benefits of 3DOLIVES for teaching and learning, many faculty and administrators have chosen not to adopt them. There are controversial views on the benefits of teaching and learning in virtual worlds. Virtual worlds appear promising as they offer a new, different, and exciting way of online learning; however, there are skeptics among faculty and administrators who question the pedagogical benefit and justification of teaching in virtual worlds (Pfeil et al., 2009). Warburton (2009) identified several broad issues that create barriers for educators when trying to leverage the promise of pedagogical value of this technology for teaching and learning. These issues include:

- Technical issues such as bandwidth, hardware, firewall, and lag time.
• Identity issues as users experience fluidity and playfulness inherent in establishing a virtual world identity.
• Cultural issues such as developing a sense of belonging and becoming part of the virtual world and being comfortable with the norms and etiquette.
• Collaboration issues that have to do with challenges in cooperation due to the minimal social networking tools and function available.
• Time issues on the part of educators in mastering the technology and designing and implementing learning activities.
• Economic issues including purchasing land, buying in-world objects, and paying skilled people to perform building and scripting tasks.
• Standards issues, specifically the lack of open standards and interoperability between virtual world platforms, which limit the ability to transfer resources between virtual worlds and platforms.
• Scaffolding, persistence, and social discovery issues. (pp. 422-423)

The New Media Consortium and EDUCAUSE Learning Initiative (2007) produced a report that documented the results of surveys to determine what users of virtual world technology in education thought about the potential of virtual worlds for teaching and learning as well as the inherent issues and barriers. While respondents reported that they had positive experiences in virtual worlds, such as meeting new people and expanding social and professional networks, they also experienced problems. The most predominant problem related to issues with technology including the steep learning curve required to master the software. Complexity is a major factor that determines whether an innovation is adopted according to Innovation Diffusion Theory (IDT).
When an innovation is perceived as relatively difficult to understand and use, the adoption rate of the innovation is usually low (Rogers, 2003). Kelton (2007) conducted surveys of various educators concerning the use of virtual worlds and concluded that there are many uses for virtual worlds, but there are also issues and limitations. Higher education runs a real risk when entering into a close alliance and dependence on a for-profit company (those that operate and own virtual worlds). Companies owning virtual worlds may raise fees, create conditions unsuitable for educational purposes, or go out of business altogether leaving educators in an untenable position. There are also issues concerning technical problems and complexity of the software. Survey respondents also indicated that those involved in virtual worlds appear to be having fun, and some educators have questioned virtual worlds as to whether they are serious teaching, learning, and research tools. Kelton (2007) summarizes the challenges and barriers inherent in virtual worlds into four categories:

- Perceptual issues, which include challenges caused by the misconception that virtual worlds are games.

- Technical issues relate to bandwidth, processing and memory capabilities, lack of tools for collaborative interactions between users in real time, and lack of interoperability between different virtual world platforms.

- Operational issues including learning how to use virtual worlds, server downtime, and possible age restrictions.

- Pedagogical issues concerning the educational value and assessment of learning as well as intellectual property and ownership issues. (pp. 9-10)
Virtual World Barriers for Learners

A study involving educators and their experiences in implementing virtual worlds for teaching and learning conducted by Dalgarno, Lee, and Carlson (2011) identified the main problems and stumbling blocks that caused their efforts to be ineffective or fail. As with the previous studies (New Media Consortium and EDUCAUSE Learning Initiative, 2007; Warburton, 2009), this study also identified technological problems as a major issue. Bandwidth issues from users’ home locations caused problems with the software being slow; thus, the 3D virtual environment had a difficult time appearing on computers. Lag time also occurred with images, including the users’ own avatars not appearing or being difficult to navigate, causing frustration. Insufficient computer hardware also caused viewing and lag issues if users did not have fairly powerful graphics cards installed; this also led to confusion and frustration. The task technology fit theory (TTFT) suggests that this situation will not result in a good fit between the user, the task, and the technology (Goodhue, 1997).

Issues related to faculty and/or student ability to use the 3DOLIVE software pose major limitations. Students may not have the required technological skills necessary to navigate a virtual world. There is also a steep learning curve when trying to master the software and learn the mechanics of the 3D world. The interface used to access the virtual world is not user-friendly and is not very intuitive, causing faculty and students to be confused and frustrated. Many faculty members are new to 3DOLIVES and find their peers and colleagues are afraid of the concept and will not learn how to use the software (Dalgarno et al., 2011). Accessibility can also be an issue as learners with disabilities may not be able to navigate the software and would be disenfranchised. For example,
blind students will have difficulty participating in virtual world activities as the interface is primarily visual (Pfiel et al., 2009).

Inherent limitations of virtual worlds determine how effective teaching and learning are in this environment. Communication problems can occur as all communication is carried out through an anonymous avatar. It is difficult for faculty to know who the students are as students can use different names and their avatar identity can take on many different forms including animal or non-human (Pfiel et al., 2009). Non-verbal communication is not present in a virtual world environment, and communication is primarily carried out through text chat, thus losing audio communication cues as well. Some students treat online chatting as spontaneous verbal chatting, while others see it as formal writing that requires careful composition and reflection, leading to conversation that can be scattered and confusing. Differences in style and pattern of communication can cause frustration among learners. Students need to get used to the culture and social context to understand communication patterns, which may take a considerable amount of time (Pfiel et al., 2009). Students may also have a hard time accepting the virtual world as a serious educational tool as they consider it be rather game-like. Students may also become distracted by irrelevant objects in the environment or other avatars (Dalgarno et al., 2011). Compared to other online course delivery methods, the issue of time is different in 3DOLIVES. Most learning in traditional online LMS is conducted using asynchronous methods. However, the use of virtual worlds requires synchronous participation with students having to be present in the virtual world at the same time. Synchronous learning can be a disadvantage to online
learners who demand flexibility and the ability to learn where and when they want (Pfiel et al., 2009).

There are also equity and ethical considerations when using 3DOLIVES. Inappropriate behavior by students and other users can occur in the form of *griefing*. Griefing occurs when a user threatens or harasses another user. Students may also stumble upon inappropriate content in the form of sexually explicit material or violent venues and actions. It may be difficult for faculty to get clearance from their institution to use virtual worlds due to these concerns for the students (Dalgarno et al., 2011).

*Management Support Issues*

The researchers also identified support, funding, and time-related problems as challenges and causes of ineffectiveness in 3DOLIVES. The successful implementation of virtual worlds requires management and information technology (IT) support. Management must support the idea of virtual worlds and be willing do whatever is necessary to help faculty implement and maintain this platform for success. IT support is critical especially for infrastructure issues. 3DOLIVES require significant bandwidth resources and hardware requirements to run smoothly. Related to management support, adequate funding is needed to assure that the learning goals associated with the use of virtual worlds can be met. Funding to rent or purchase virtual property as well as costs associated with building and scripting the environment have to be considered. Costs associated with Internet services and hardware is another area of consideration (Dalgarno et al., 2011).
Failure of Virtual Worlds and Second Life

The literature is rich with analysis as to the pros and cons of teaching and learning in virtual worlds. Education in virtual worlds is dramatically different than education in either a brick and mortar building or in an online class using an LMS. Second Life was the most used virtual world in higher education and falls in line with the generic pros and cons of virtual worlds and may help explain some of the reasons why Second Life is not the course delivery system of choice in higher education.

Failure of Second Life in Higher Education

Second Life, the most widely used 3DOLIVE for teaching and learning, was predicted to be the predominant online learning platform by 2013. This prediction did not materialize, and the purpose of this study is to find and explore the reasons for this occurrence. The scholarly literature concerning the use of Second Life in higher education peaked in 2009 and has been steadily declining since. Wang and Burton (2012) analyzed publications from referred journals and discovered that while fewer and fewer studies were being conducted using Second Life, there were no publications attempting to explain why this drop off in research has been occurring since 2009. Little (2011) discovered that the vast majority of literature concerning academic libraries in Second Life was published between 2007 and 2008 with subsequent articles being few and far between.

Leadership and Administrative Support

Stewart and Davis (2012) conducted research into a discontinued program that utilized Second Life to determine the sustainability of using Second Life as a platform for teaching and learning. The research was a case study describing and analyzing the
creation and use of a virtual birth center in *Second Life* used to teach midwives as part of the *Second Life* Education in New Zealand initiative. *Second Life* was chosen as the platform for training midwife students at two universities starting in 2009. *Second Life* was used for its ability to conduct simulations and role-playing exercises and to give students an opportunity to develop confidence in exercising clinical skills in a risk-free environment. Despite favorable reviews, it was discontinued two years later, leading to questions concerning the sustainability of 3DOLIVES for teaching and learning. The researchers determined the project did not survive in part due to a lack of integration with the overall learning strategies of the two institutions. The focus of the institutional strategy was more on mainstream learning including the use of a traditional LMS, and institutional administrators viewed *Second Life* as being a novelty and were suspicious of its validity.

Leadership for the project was also an issue. A project team comprised of outsiders external to the universities led the project. Senior leaders at the institutions were supportive as far as IT software, hardware, and infrastructure needed to accommodate *Second Life* but did not embrace or promote it beyond technical requirements and the bare minimum required to facilitate the project. For sustainability of an innovation, leadership needs to be flexible and open and allow innovation without becoming entwined in the bureaucratic process (Stewart & Davis, 2012). Initial funding was allocated to the project to get it established, but after it was operational, no further funding was provided to maintain or further develop the virtual birthing center. The project also experienced the loss of several key supporters, thus affecting sustainability. The project relied heavily on these supporters and was not otherwise integrated or
supported at the institutional level, causing the innovation and expertise to become lost when these supporters left (Stewart & Davis, 2012). This case illustrates the need for credible change agents and opinion leaders who can champion the project and reinforce the project’s relative advantage with users (Rogers, 2003).

**Second Life Academic Libraries**

According to Little (2011), debate is occurring among academic librarians as to whether or not *Second Life* is a viable environment for providing library services. Several librarians attest to the positive attributes of *Second Life*, which include providing a format for active learning and a way to reach students and researchers. Librarians identified ways to use *Second Life* to provide library services for *Second Life* residents, networking with other librarians and collaborating with museums and other universities, to name a few. While recognizing the positive qualities of *Second Life*, other librarians describe being disillusioned with *Second Life* citing issues such as a steep learning curve, lack of privacy, and extensive hardware requirements. There are only a few examples of academic libraries that have planned, implemented, and assessed projects in *Second Life*. McMaster and McGill Universities in Canada launched a *Second Life* chat reference pilot project in 2006 and 2008. The pilot was discontinued due to the low number of reference inquiries fielded and difficulty in finding adequate time to train librarians and provide staffing within *Second Life*. From this the promised benefits of academic libraries’ participation in *Second Life* have not materialized (Little, 2011).

**Linden Lab Support of Education**

Due to the lack of academic research on the current state of *Second Life* in higher education, other sources of information were considered such as articles, blogs, and
commentaries in the *Chronicle of Higher Education*. Earlier articles abound which speak to the value of using *Second Life* in teaching and learning (Aujla, 2009; Foster, 2007; Parry, 2009; Read, 2007; Young, 2008). Recent articles (post-2009) are concerned with why academic activity in *Second Life* has slowed down and in some cases is non-existent. One such explanation surrounds the situation whereby Linden Lab (creator and owner of *Second Life*) discontinued the generous discount for educational institutions. Linden Lab made the announcement that effective January 1, 2011, the 50% discount would no longer be provided. In addition, Linden Lab terminated John Lester, the Director of Educational Initiatives for the virtual world. Many educators saw the elimination of this position as the company’s loss of interest in maintaining educational-based customers and more about profit (Young, 2011). Some educational groups such as the International Society for Technology in Education (ISTE) discontinued maintaining a presence in *Second Life* after having a significant presence for six years. ISTE was already making generous payments to Linden Lab to maintain four regions in *Second Life* and could not justify the increase in fees (Merrick, 2012).

*Design Issues and Problems*

Other articles in the *Chronicle of Higher Education* point to a design flaw on the part of higher education institutions when considering designing and building in *Second Life*. When educators started building in *Second Life*, they tried to replicate their campuses in the virtual world. Classrooms are replicated with chairs, desks, and walls, looking like traditional facilities. Virtual campuses lacked imagination rather than promoting originality and creativity. Designers began to realize that *Second Life* allows for different kinds of movement and communication as compared to the real world.
(Foster, 2007). According to Foster (2007), John Lester, former Director of Educational Initiatives for Second Life, stated,

> When I was at Linden Lab somebody wanted to teach plant biology, and they were showing me in Second Life how they had built a classroom with desks and chairs, and they had a board where they were going to show slides of models of flowers and the pistol and the stamen. And I said that’s interesting, kind of, but just because the virtual world looks like a real world doesn’t mean you have to do what you do in the physical world. I said; don’t think of your classroom as a classroom in the physical world. Build a giant flower, and have that model of a flower be your classroom. Then it’s no longer a classroom, and then you’re talking about an immersive learning experience that really could happen in an immersive space. (p. 2)

Educators claim this describes some of the shortcomings, which caused educators to not use Second Life, specifically, the unimaginative design of learning spaces and not utilizing the affordances for learning associated with Second Life (Young, 2011). Educators and designers spent a great deal of funds and time building these spaces only to realize they were not using them for their potential in creating an immersive experience for learners.

**Summary**

In reviewing the literature, a common theme emerged involving failures of organizations, systems, programs, and technology. Planning, communication, training, resource availability, institutional culture, and attitudes and beliefs all
mesh into a complex system whereby success or failure of an innovation is determined. *Second Life* did not evolve into the dominant course delivery mechanism in higher education as was predicted, and the reasons appear to be complex and embedded in the various aspects of higher education and the technology itself. The next chapter will present information on the research study’s design, a description of the participants involved, the procedures implemented, and various data collection methods.
CHAPTER III

METHODOLOGY

This chapter describes how this research was conducted and how the research questions were answered. The research was carried out using a mixed methods research design. Because the mixed methods design consisted of two types of research, qualitative and quantitative, the study was conducted in two phases. Phase One consisted of the qualitative part of the study and Phase Two involved the use of quantitative methods. The qualitative phase was conducted first and served as the basis for the quantitative phase with survey questions being developed from the findings of the qualitative phase.

Research Design

This study investigated the factors that caused Second Life to fail as to becoming the dominant online course delivery system by 2012 as was predicted. The study was conducted using a mixed methods approach consisting of both qualitative and quantitative research measures. The qualitative phase (Phase One) was conducted as a phenomenology. Phenomenology methods were appropriate for this research as phenomenological research identified a shared experience among people and attempted to locate and explain the universal nature of the experience. This method aimed to offer insight into how a given person, in a given context, made sense of a given phenomenon. The phenomenon with Second Life not diffusing as expected led to many questions such as why something that was heralded as being the answer to many of the current problems in distance education did not materialize. While the answer to this question may
appear straightforward to some in academia, the issue is actually a complex, multi-faceted one. Phenomenological methods were appropriate as they called for the researcher to move beyond the obvious common sense answers and to delve deeper into the underlying causes and nuances of the situation. This strategy was employed to discover the issues and root causes of this apparent deviation from predictions. A methodology using mixed methods was carried out for this research in order to combat some of the known weaknesses of using qualitative methods alone. These weaknesses included the knowledge produced not being generalizable to other people or other settings, few people were generally included in the research study, difficulty to make quantitative predictions, testing hypotheses and theories was more difficult, and it may have lower credibility among the research community (Johnson & Onwuegbuzie, 2004). Phase Two of the study consisted of quantitative methods carried out to strengthen the findings of the qualitative phase of the study. By including a quantitative phase in the study the researcher hoped to provide stronger evidence for a conclusion through convergence and corroboration of findings, as well as being able to generalize the results and produce the knowledge necessary to inform theory and practice (Johnson & Onwuegbuzie, 2004).

A mixed methods research design was used for the study employing both qualitative and quantitative methods to collect and analyze data in order to understand the research problem and answer the research questions. The mixed method design was well suited to this study because it allowed for both qualitative and quantitative data to be collected and analyzed, thus reinforcing and making the inferences stronger. Using both
methods allowed for triangulation as broadly defined by Denzin (1978) as the combination of methodologies in the study of the same phenomenon. Triangulation had the ability to improve the accuracy of judgments by collecting different kinds of data about the same phenomenon. By using mixed methods methodology the researcher was able to focus on the reasons and nuances as to why *Second Life* did not become the predominant course delivery method as was predicted while varying the data collection method. According to Jick (1979) if these multiple and independent measures reach the same conclusions, they would provide a more certain portrayal of the phenomenon by enhancing the accuracy of the study with corroborating evidence from different types of data.

The mixed method design used in this study was an exploratory sequential design. The purpose of the exploratory sequential design involved first gathering qualitative data to explore a phenomenon and then collecting quantitative data to explain the relationships discovered in the qualitative data (Creswell, 2012). The exploratory sequential design model allowed the findings from the qualitative portion of the study to be generalized through the findings of the quantitative phase. Figure 16 illustrates the methodology paradigm.

*Figure 16. Methodology Paradigm. The transformation from mixed methods design to qualitative and quantitative phases to the exploratory sequential design (C. Mark).*
Data Collection Instruments

Because this study was a mixed methods design, two separate data collection instruments were designed. First, a set of guiding questions was designed to be used with in-depth personal interviews of higher education administrators. Second, results from the interviews were used to create a traditional, quantitative survey instrument.

Phase One—Qualitative Instrumentation

The qualitative portion, Phase One of the study, was conducted by interviewing seven administrators who were involved in the decision whether or not to invest in Second Life. Questions for the qualitative phase were developed as a means to answer the research questions. Open-ended interview questions were developed based upon the literature review and the researchers’ own experience with education in Second Life. Questions were developed using a common sense approach combined with issues from the literature to gain insight into the decisions made by the administrator regarding (a) establishing a presence in Second Life, (b) how Second Life was used, (c) experience with Second Life, and (d) current use of Second Life. More questions were developed, primarily surrounding technology and learning spaces, from the researcher’s direct experience with faculty who actually taught courses in Second Life and their teaching methods. Additional questions were developed to gather demographic information about the administrator and the institution. Questions were open ended and participants were encouraged to give as many details as possible. A total of nine qualitative questions were asked, eight with several subparts covering experience with Second Life, the use of Second Life, and the future of 3DOLIVES. The ninth and final question was a general opportunity for the interviewee to free-respond and provide any additional information.
that would be useful to the study. There was essentially one qualitative question for each research question, although often the responses spanned two or more research questions, which was expected given the interrelatedness of them. A list of the qualitative interview questions is presented in Appendix E.

Phase Two—Quantitative Instrumentation

After completing the interviews with the administrators, the qualitative data was analyzed and a survey form created for the quantitative portion of the study (Phase Two). The quantitative survey depended upon and was structured from the information collected and analyzed from the seven administrators. The actual survey instrument was completed and finalized after the qualitative data was analyzed for trends and variables identified for testing using quantitative methods. The questions were structured based upon the research questions and sought to answer and explore the factors that were reported to cause institutions to pare down or discontinue the use of Second Life for teaching and learning.

A single survey instrument was developed using Survey Monkey, a commercial Web-based site. The instrument consisted of an opening section with the basic research purpose statement and USM authorization form that required an affirmative response in order for participants to continue the survey; otherwise, participants were automatically directed to the “thank you” page. The next question served as an error-trap for people who had not used Second Life, taking them to the end with a negative response. This was done through a statement concerning the $10 iTunes gift card program and instructions on how to leave email addresses at the end.
Demographics. Twenty-eight questions collected demographic and general Second Life experiential responses, including questions about home institutions, social media use, Second Life use, and technology comfort. From here, three sections of questions were created for students, instructors, and instructional designers, and each section was linked together.

Content Questions. After the demographic section, respondents were asked if they had ever attended class in Second Life, whereupon a “yes” response took them to the student-based questions, and a “no” response took them to the instructor section. Respondents were then asked if they had ever taught a class in Second Life, whereupon a “yes” response took them to the instructor-based questions, and a “no” response took them to the instructional designer section. Finally, respondents were asked if they had ever designed a course or learning activity for use in Second Life, whereupon a “yes” response took them to the instructional designer-based questions, and a “no” response took them to the last question on the survey, the free-response question. This allowed participants who had more than one experience with Second Life to complete one survey instrument rather than three separate instruments, a technique the researcher believed helped increase the number of usable responses. There were 19 student questions (#31-49), 16 instructor questions (#50-85), and 41 instructional designer questions (#86-126), the latter group being larger due to duplicate questions concerning students as well as the instructors. Most of the questions were parallel, meaning that each group had a majority of similar questions differing in the respondent’s perspective. A large number of the questions for each group provided the opportunity for written information to be added, which was surprisingly often used.
Finishing Up. The last data collection question was open-ended soliciting any additional or anecdotal information the respondent was interested in leaving. The final question provided an opportunity for the participant to leave her/his email address for the gift card drawing. A complete copy of the quantitative survey is included in Appendix F.

Participants

Phase One of the study used structured interview qualitative methods with the initial participants consisting of seven higher education administrators who had or have a major presence in Second Life. Major presence included institutions that paid for and maintained one or more islands in Second Life for the purpose of teaching and learning. These administrators were selected using purposeful sampling using the snowball technique, being intentionally selected for their ability to provide rich information and being directly involved in the decision-making process and the allocation of financial and other resources for their institutions regarding the start-up and continuance of activities in Second Life. Institutions were chosen based upon personal knowledge of the researcher having explored educational sites in Second Life, as well as by asking educators involved in Second Life to suggest some participating institutions. The researcher also contacted and interviewed John Lester, the former Director of Educational Services for Linden Lab, the owner and creator of Second Life. Mr. Lester helped educational institutions establish a presence in Second Life and was an excellent source for providing potentially appropriate participants. The identities of the seven administrators interviewed and the identities of their institutions were kept anonymous and given a code name (Institution A-G) in an effort to have them speak freely about their institutions and their personal experiences. These institutions were well-known users of Second Life and had a large
presence in the virtual world and invested heavily in purchasing land and allocating resources for building and maintaining learning spaces. Administrators at these institutions were contacted by the researcher to determine suitability for the study and if deemed suitable were interviewed upon agreement. These participants were administrators with titles of vice president, dean, director, or manager and each had the authority to authorize expenditures for the use of Second Life and make decisions concerning the use of and continuance or discontinuance of the virtual world. The higher education institutions consisted of a combination of public and private, small and large, and were located in different geographical regions. Some were nationally known institutions while others were regional in nature.

Phase Two of the study used quantitative methods with the participants being instructors, students, and instructional designers having direct experience in Second Life with teaching and/or learning. These participants had a different perspective from the higher education administrators and were able to support or refute the conclusions derived from the qualitative analysis, adding strength to the overall study. The participants were located using the snowball sampling technique with the higher education administrators being asked to provide the names of the people involved in Second Life at their institutions. The Second Life Educators’ List (SLED) and the Second Life Researchers’ List (SLRL) were also utilized to gather participants by sending emails to these LISTSERVES. The SLED and SLRL are LISTSERVES maintained by Linden Lab to allow educators and researchers to communicate and exchange information and ideas concerning teaching and learning in virtual worlds. Posts were made to virtual world groups on LinkedIn, Facebook, and Twitter asking for participants. The researcher
also did a search for articles about *Second Life* at universities and contacted the persons associated with the articles via email and asked for their participation as well as contacting educators who are or have been involved in *Second Life* and had them provide the names of potential participants using snowball sampling techniques.

Participants consisted of a diverse group having exposure to teaching and learning in *Second Life*. Participants included instructors who taught and/or designed courses in *Second Life* as they were directly involved with all aspects of the teaching and learning process. Instructors interacted with designers, students, and oftentimes administrators at their institutions concerning the viability of *Second Life* as a course delivery method and were intimately aware of the issues and concerns. Undergraduate and graduate level students were included as participants due to their unique perspective of *Second Life*. Many of the issues brought up by the administrators in Phase One of the research were student-related, and by including students as participants, the researcher was able to confirm or deny the administrators’ impressions and add additional data. Instructional designers with experience in designing learning activities in *Second Life* were also included in the study. Historically speaking, 3D environments were fairly new and the researcher believed obtaining the designers’ view as to why *Second Life* did not become diffused was important. The administrators in Phase One indicated that oftentimes thoughtful and effective pedagogy was missing from *Second Life* teaching and learning, thus creating a need for instructional designers to be included in Phase Two of the study. Phase Two consisted of 658 participants who completed surveys, including students, instructors, and instructional designers.
Procedures for Conducting the Study

Phase One of the study, the qualitative phase, was a phenomenology, and involved interviewing seven administrators in higher education. The interviews were conducted using open-ended questions and involved the following procedures:

1. Institutional Review Board (IRB) procedures were followed with the researcher obtaining approval from the IRB before beginning Phase One of the research. The IRB approval letter for the qualitative portion of this study is provided in Appendix G.

2. The interviewees were selected. This was done using purposeful sampling with the researcher approaching administrators who met the criteria of being the decision maker for their institution in regard to having or not having a presence in Second Life. The researcher continued contacting potential participants meeting the criteria until seven administrators agreed to be participants in the study.

3. The type of interview was determined. Interviews were conducted in-person (two interviews), via Skype (three interviews), and in Second Life (two interviews). The type of interview was determined in conjunction with the interviewees and took into account their convenience and preference.

4. The information was recorded. The in-person interviews were recorded using a digital recording device. The phone interviews were recorded using Skype Recorder. The Second Life interviews were recorded using Audio Hijack. A digital audio file of each interview was created and stored on the researcher’s personal computer. The digital audio files were uploaded to NVivo (a
qualitative analysis tool). The researcher transcribed the uploaded audio in
{	extit{NVivo}} by listening to the audio recording and saying the words into \textit{Dragon Naturally Speaking}. This allowed the transcript to be created. The researcher then went through the audio recording again, checked it against the transcript, and made all necessary changes to the transcript for accuracy. The transcript was sent to the participants for verification, changes, and additions.

5. Consent to participate in the study was obtained from the interviewees.

Before starting the interview, the researcher explained the purpose of the study, the time the interview would take to complete, and the plans for using the results from the interview. Consent forms were obtained from all participants and are stored by the researcher.

6. Probes were used to obtain additional information. The researcher used probes and sub-questions to elicit more information. Participants were given the opportunity to add additional information or comments.

7. The researcher asked the participants to provide data concerning the use of \textit{Second Life} at their institution. This data included budget information, meeting minutes, enrollment tracking data, and any other documentation deemed appropriate by the administrator and the researcher.

8. The researcher was courteous and professional after the interview was over.

The researcher thanked the participant and assured him or her of the confidentiality of the responses.

9. The transcribed results of the interviews were sent to the participants who reviewed them and confirmed their accuracy.
Phase Two of the study involved constructing a survey from the trends discovered in Phase One, the qualitative phase, and was deployed to instructors, students, and instructional designers identified as having practical experience with the educational aspects of Second Life. The questionnaire was developed to ensure validity by utilizing the following procedures:

1. After the qualitative analysis, an initial questionnaire was developed incorporating the results and trends from the analysis. The questions were developed based upon the themes and sub-themes that emerged from the qualitative analysis.

2. The initial questionnaire was sent to the Institutional Review Board (IRB) for approval as part of Phase Two of the study. The IRB approval letter for the quantitative portion of this study is provided in Appendix H.

3. A focus group was convened consisting of five educators with experience in teaching in Second Life. A moderator, an experienced academic and researcher, was used to allow the researcher to focus on the discussion and record the content. The focus group was given a copy of the initial questionnaire and was asked to rate each question according to the following:
   a. Relevance – not relevant, relevant but item needs some revision, relevant but item needs minor revision, or very relevant.
   b. Clarity – not clear, clear but needs some revision, clear but needs minor revision, or very clear.
   c. Simplicity – not simple, simple but item needs some revision, simple but needs minor revision, or very simple.
d. Ambiguity – ambiguous, not ambiguous but needs some revision, not ambiguous but needs minor revision, or not ambiguous.

4. The focus group participants were asked to draw from their experiences and provide comments on each question as well the ratings. In addition they were asked to review the questionnaire for items missing or unnecessary items. This process allowed for the survey to be checked for content validity and to ensure there were no issues with criterion contamination or criterion deficiency. The researcher updated the survey using the feedback and findings of the focus group to include changing the following:

a. Members of the focus group believed the survey could be perceived as too long by participants and they may not wish to participate. The suggestion was made that a chance to win a prize be offered in exchange for participation. The researcher decided to offer thirty $10 iTunes gift cards as prizes in a random drawing at the end of the study. Participants were asked to supply their email addresses if they wished to be eligible to win one of the prizes. The researcher would delete this field from the survey results and keep the email addresses in a separate database so as to not be able to identify individual responses.

b. Two questions were restated and presented as two separate questions rather than one for clarity and simplicity.

c. Some wording deemed to be too technical and acronyms or jargon was restated for better clarity.
d. The focus group suggested that some additional questions be added to assure the desired information would be collected.

5. To ensure the survey instrument had face validity, the researcher sent the updated questionnaire (with changes suggested by the focus group) to twelve people chosen at random. The group consisted of seven instructors and five students. These reviewers were asked to comment on questions they did not understand and to point out any confusing items. The researcher used this feedback to further refine the survey.

6. A pilot study was conducted to determine the construct validity of the survey. A random sampling of participants was selected consisting of instructors, students, and instructional designers who have experience with teaching and learning in Second Life. Internal consistency was determined using the Cronbach’s alpha statistical procedure. The satisfaction with Second Life subscale for students consisted of six items ($\alpha=.969$). The satisfaction with Second Life subscale for instructors consisted of eight items ($\alpha=.981$) and the satisfaction subscale for designers consisted of ten items ($\alpha=.985$). The satisfaction with intuitional support subscale was also measured for the instructors consisting of five items ($\alpha=.945$) and for designers consisting of four items ($\alpha=.916$).

After the survey was tested for content validity, face validity, and construct validity, the survey was deployed according to the following procedures:
1. The participants were identified. The participants were students, instructors, and designers who had or have experience with teaching and learning in Second Life.

2. The participants were notified. The participants were located using snowball sampling techniques with the higher education administrators being asked to provide the names of the people involved in Second Life at their institutions. The Second Life Educators’ List (SLED) and the Second Life Researchers’ List (SLRL) were also utilized to gather participants by sending emails to these LISTSERVES. Posts were made to virtual world groups on LinkedIn, Facebook, and Twitter asking for participants. The researcher also did a search for articles about Second Life at universities and contacted the persons associated with the articles via email and asked for their participation as well as contacting educators who were or had been involved in Second Life and have them provide the names of potential participants using snowball sampling techniques.

3. Permission was obtained from the participants. The researcher informed the participants and secured their permission to participate in the study. Participants were informed as to the scope and purpose of the study as well as their privacy being protected and respected.

4. The data were collected. The data were collected using a survey instrument and Survey Monkey, an online survey management site. The link to the survey URL was disseminated to potential respondents using several educational LISTSERVES pertaining to education in Second Life, educators who were
known to use or had used Second Life and students who were known to use or have used Second Life. In addition, survey link recipients were encouraged to pass on the link to other qualified respondents. Six hundred and fifty-eight (658) participants responded to the survey. However, there was no possible way to determine a total sample size because this number was ultimately unknown to the researcher, and thus, no response rate could be determined for this study.

5. The data were analyzed. The data were analyzed to determine trends and to confirm and support the findings of the qualitative phase of the research.

Data Analysis Procedures

The qualitative data generated in Phase One from the seven interviews with higher education administrators was analyzed to determine trends and to draw initial conclusions. The interviews were recorded and then transcribed into text data stored in electronic files using the qualitative research analysis tool NVivo. Phenomenological research called for an iterative process. The researcher carried out this process in four stages as follows:

1. The initial stage consisted of reading the interview transcripts in their entirety in order to conduct a preliminary exploratory analysis and to obtain a general sense of the data. Observations and reflections were recorded as memos and stored in NVivo.

2. The second stage consisted of coding the transcript data using a coding process to make sense out of the data.
3. The third stage consisted of examining the coding and transforming the initial codes into themes. Please see Figure 17 for an illustration of the preliminary themes cluster.

4. The fourth stage consisted of examining the emerging themes and clustering them together according to conceptual similarities. Patterns in the emerging themes were examined for overlap and redundancy and collapsed into broad themes (Creswell, 2012). Please see Figure 18 for an illustration of the final themes cluster.

The survey in Phase Two was evaluated using quantitative methods in an effort to further explain the qualitative data and allow for triangulation, whereby data from both methods were collected and integrated (Creswell, 2012). A quantitative factor analysis was conducted in which themes identified in the phenomenological account of why Second Life did not fully diffuse were developed into a format enabling quantitative collection of data via a survey instrument.

Exploratory Factor Analysis (EFA) was used to analyze the survey data. According to Field (2009) EFA is a multivariate analysis procedure that attempts to identify the underlying factors that are responsible for co-variation among a group of independent variables. The goal of EFA is to reduce the number of variables used to explain a relationship or to determine which variables show a relationship. The analysis was carried out as follows:

1. The themes and sub-themes developed from Phase One of the study were used to create survey questions.
Figure 17. Preliminary Themes Cluster (C. Mark).
Figure 18. The Final Themes Cluster (C. Mark).
2. The survey was uploaded to Survey Monkey, an online survey platform. Refer to Appendix F for the complete survey.

3. Survey results were downloaded into Excel, and the data was prepared for uploading into SPSS in order to perform the factor analysis.

4. The data was grouped according to student, instructor, or instructional designer and an EFA was completed for each group.

5. The EFA output for each group was examined and variables were removed that did not have a value over .5 on the Anti-Imaging Matrices for the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO). The KMO statistic indicates the level of correlation or partial correlation between variables. The EFA for the three groups was completed again and all KMO values for all variables were above .5.

6. The output for the three groups was examined for negative loading factors, and these variables were removed and the analysis was finalized.

The next chapter provides discussion of the results from the Phase One and Phase Two of the study. The combined analysis and inferences between the qualitative findings and the quantitative findings are also discussed.

Summary

This study was developed with the intention of collecting data surrounding the growth and decline of Second Life as an educational platform and was conducted during the latter part of 2013. The design was a mixed methods approach, with a qualitative phase followed by a quantitative phase. The qualitative phase entailed extensive personal interviews with seven higher education administrators who developed and maintained academic sites within Second Life, as well as the former Director of Educational Services.
at Linden Lab, the creator of *Second Life*. The interviews were taped or video recorded, transcribed, and analyzed using *NVivo* software, resulting in a set of themes and sub-themes. These themes and sub-themes were then used to create a 100-question online survey instrument used to collect data during the quantitative phase. The survey link was sent to potential participants through a series of LISTSERVES, known students, instructors, and instructional designers who were encouraged to resend the link to more potential participants. Data from 658 usable surveys were collected and analyzed using Exploratory Factor Analysis with Principle Component Analysis using orthogonal rotation and varimax.

Chapter IV presents the findings from Phase One, including a detailed look at the qualitative interview data, and Phase Two, including detailed tabular presentations of the results of the Exploratory Factor Analysis. At the end, the chapter provides a reconciliation of the intersection of the qualitative and quantitative data analyses with the intent of highlighting similarities of the findings and reinforcement for the answers to the research questions posed in this study.
CHAPTER IV

ANALYSIS OF DATA

This study employed mixed methods research methodology with the research being conducted in two phases. Phase One involved qualitative methods and consisted of interviewing seven higher education administrators. Phase Two consisted of deploying a survey developed from the initial qualitative data to students, instructors, and instructional designers who used Second Life for teaching and learning. This chapter contains the findings of the qualitative phase followed by the findings of the quantitative phase. Finally, the findings and analysis from both phases were considered and discussed.

The administrators interviewed for the qualitative section provided rich and detailed responses to the guided questions, and thus, the researcher believes they must be interwoven in the Analysis of Data and Discussion chapters to provide contextual texture to the research. Because of this, some direct quotes will be longer than normal. The researcher further believes that editing these quotes or otherwise shortening them will be detrimental to the reader’s full understanding of the results and findings.

Phase One – Qualitative Findings

The qualitative phase of the research consisted of interviewing seven higher education administrators having decision-making authority for their university concerning the funding and support of Second Life for teaching and learning. Because of the difficulty in finding administrators familiar with Second Life, or willing to participate on the record, seven administrators were interviewed to allow a variety of institutional representation with some still using Second Life, some not using Second Life at all, and others using Second Life in a reduced capacity. As the researcher approached closer to
the seven interviews, little new information was being provided by the later administrators indicating a level of saturation, and interviews were capped at seven. In addition to interviewing these seven administrators, Mr. John Lester the former Director of Educational Services for Linden Lab was interviewed to gain his unique perspective on Linden Lab’s involvement in higher education. Mr. Lester gave permission to use his name in the research while the seven higher education administrators requested that their names and institutions remain anonymous. These administrators and their institutions were coded as follows:

A. Small private women’s college
B. Regional comprehensive university
C. Large national research university
D. Regional research university
E. Regional research university
F. State technical college
G. Urban regional research university

The qualitative data was coded and analyzed with four major themes emerging from the data along with eighteen sub-themes. The four major themes were: internal organizational issues, issues with stakeholders, pedagogy, and the innovation cycle. The eighteen sub-themes were: institutional resources, institutional budgets, institutional interest and support, institutional legal concerns, institutional control, faculty tenure and promotion concerns, faculty time constraints, faculty technology issues, student perception of lack of purpose, student steep learning curve, student technology issues, Linden Lab perceived lack of interest in education, Linden Lab change in leadership,
perception of *Second Life* as a novel environment, pedagogical lack of a teaching strategy, lack of learning management system integration, failure to further innovate *Second Life* technology, and technology replacement for *Second Life*. Please refer to Figures 19 and 20 for a visual presentation of the preliminary and final themes clusters. These themes are discussed in the following sections.

*Internal Organizational Issues*

Internal organizational issues had to do with institutional and administrative concerns apart from academic issues faced by instructors and students. These issues were centered on resources, overall budget reductions in higher education, general interest and support, legal concerns, and control over the virtual world environment.

*Resources.* Every organization needs resources to survive and remain sustainable. These include people, capital, equipment, buildings, supplies, and any other necessary item relative to the organization’s survival (Pfeffer & Salancik, 1978). Resources are not endless but are limited by nature, especially in higher education where funding from states and the federal government is relied upon to keep the institution running. Higher education administrators must decide how these resources may be best deployed to support the mission of the institution and to ensure its continued success in the future (Weisbrod, Ballou, & Asch, 2010).

The use of virtual worlds for teaching and learning requires substantial resources. Because resources are scarce in most higher education institutions, adequate resources in the form of people and money must be allocated for this venue to be effective (Hoover, 2013). *Second Life* proved to be resource intensive with success being tied to the commitment of resources. According to the administrator from Institution D,
I think it’s disappointing that we couldn’t realize the potential that it has. I think again there were a number of factors that contributed to that with the most critical being the lack of a single person devoted to advocating for and encouraging the use of it. I was for a while that person, but I had other responsibilities that were primary, and this was really a side project and an interesting thing to do.

Another argument for having a dedicated person supporting Second Life was articulated by the administrator from Institution D. When asked how Second Life could have been successful at Institution D, the response centered on getting the university community involved and onboard and obtaining the resources needed for such a goal. According to the administrator from Institution D,

I guess what I would say is that the way things seem to work from my experience is that you have to show the university community that something works before you can get investment. This technology seems to me to be one that you need to invest in first and have built so that you can get folks in. We did do the investment part in terms of building the sim, but what we didn't invest in were people whose time was devoted to working with and promoting Second Life as an educational environment and as a tool to enhance what they were doing online.

Of the seven administrators interviewed, one was still actively engaged in using Second Life for teaching and learning. The administrator from Institution E explained they are able to maintain their presence in Second Life due to having a staff dedicated only to Second Life support involved in helping faculty and students as well as building and maintaining artifacts in the environment. Institution E has been active in Second Life
since 2005 and continues to have a major presence with 30 instructors actively teaching all or part of their courses in Second Life. The Technology Acceptance Model (TAM) explains why an individual or institution adopts a certain technology. Technology will be adopted if users perceive the technology as useful and the technology helps solve a problem in addition to there being a perceived ease of use (Davis, 1989). In the case of Institution E, the perceived usefulness is in the form of providing a viable alternative to traditional forms of online education as well as providing a platform for the institution's special program for high school students, many of whom live in rural areas. The administration at Institution E supports the Second Life platform based on this perceived usefulness and solving the problem of how to effectively reach and engage these high school students. The perceived ease of use is achieved by having a dedicated staff available to provide tutorials, meetings, help with building artifacts and structures in the virtual environment, assistance with teaching methods, and troubleshooting technology issues. The other administrators did not have the dedicated support that Institution E has due to not having a sustained clear image of the usefulness of the technology, as well as not allocating adequate resources to assure that users experience ease of use.

Institution C was actively involved in Second Life although there was not a dedicated position supporting the program. Their presence in Second Life came to an end as the result of virtual cyber vandalism when the buildings and artifacts on their island were destroyed without their knowledge. Cyber vandalism is vandalism carried out by means of computer technology, for example the defacement of a website by a hacker intending to destroy content. In the case of Institution C, cyber vandals gained access to the codes for buildings, structures, and other objects and deleted or altered their structure
as to render them unusable. The entire island or installation could no longer be used by
the university due to the cyber destruction. The island was not rebuilt after the disaster
due to a lack of resources to properly ensure that this situation would not happen again.
The administrator from Institution C explained this event and the repercussions,

   We really needed to have a full time virtual space manager, someone who could
be there daily to make sure everything was in its place and to make sure
everything was locked down and to be the master, so that what happened would
not have happened. I think that that’s really critical even more so than in a Web
environment. Our region is long gone, and we did actually consider using another
virtual world for a while especially when the cost of Second Life was something
we really didn't want to pay for. We just didn't have enough staff for the critical
mass to make it work and to actually do anything. So nothing's really happened
with that. (Administrator from Institution C)

With human resources being stretched more and more in higher education, few
institutions had the ability to have a dedicated staff for Second Life and virtual world
learning. Other technology tools and issues required the constant attention of staff that
became less and less able to support any Second Life initiative, especially considering the
actual number of faculty utilizing it in their courses. According to the administrator from
Institution B,

   I told my boss several months before they made the decision to discontinue
supporting it, I said, "I really think we should not be supporting this as there are
so few people using it, and there are so many people asking for help with basic
stuff like Microsoft Word and Excel, and there's such a small number using it."
was also responsible for Blackboard and I just felt like there was almost this elite group of a few people who were really into it and then it became almost exclusive. I had a real problem with that because my whole thing was to support everybody. In the long run I felt like there was an inordinate amount of resources put into it that could have been spread out to help a whole lot more faculty with much more basic issues. That's always a toss up because in a university setting we want to be exploring new things, but at the same time you need to support everyone.

_Budgets._ Higher education institutions have a complex and lengthy budget process. Public institution budgets must be approved by the state where the institution is located only after going through a rigorous and time-consuming internal process. The economic crisis in 2008-2009 affected university budgets as states had to cutback funding to institutions due to a decrease in state revenue. This budget crisis caused all budget line items to be examined and scrutinized (Schatz, 2013). Many institutions with a presence in Second Life began analyzing their return on investment, and decisions were made whether to continue using Second Life for teaching and learning. According to the administrator from Institution D,

They didn't want to continue it because no one was in it using it, and there was a lack of interest and just no funding for that. There were other places that they needed to divert the money to as we were having all these cutbacks, and Second Life was not something they needed. The budgets really got hammered as they did everywhere, and it really dried up. Money was the reason more so than anything else. With the budget crisis that we underwent and are still
experiencing, ITS didn't want to pay for it anymore. They never realized any
benefit from it and never took charge of it.

*Second Life* was providing a 50% discount to educational institutions for renting
virtual space. Linden Lab announced that as of January 1, 2011 the discount for
educators would be discontinued. This action was disconcerting to the education
community as it sent the message that Linden Lab was not interested in supporting
educators (Young, 2011). The timing of the end of the discount was also problematic as
budgets in higher education run from July 1 to June 30, and making a change mid-budget
cycle is difficult and complicated (Schick, 1985). The action by Linden Lab proved to be
a deciding factor for universities already struggling with budget cuts.

When that bill doubled and you all saw the reaction in the press where folks were
saying, "Are you serious?" It was like a bait and switch had occurred. They gave
us this education rate and then jacked it up...how are people not going to leave? I
think I knew when the rates went up like that that it was only a matter of time and
I really expected Linden Lab to back off that and since they have reinstated the
educational discount but not in time. It's ridiculous. Especially given how little
we were using it. I could not manage this because I needed more resources. Of
course the response was we have no resources as they were being diverted to
other places. One of the other factors, which I think was just as important and
maybe even more important than the lack of use given the budget situation we
were in, was the fact that the price raised dramatically, and they are just not going
to support that. (Administrator from University D)
Interest and Support. Gaining administrative support for Second Life was difficult for most of the institutions included in this study. The major issue was a general lack of understanding as far as what virtual world technology was and how it could be used for education. Some administrators found it was difficult to grasp the concept that the buildings, items, and artifacts in Second Life do not exist in a physical sense. The challenge was getting administrators to understand the technology and the value for education. According to John Lester, former Director of Educational Services for Linden Lab, getting administrators to understand the technology and secure their buy-in required some creative reasoning. In his role, Mr. Lester approached many administrators and discovered that getting the administrator to see where this technology solved some problem for their institution was critical to gaining support. According to John Lester,

You can get into a whole philosophical thing. Did you ever buy music on iTunes? That doesn't really exist; it's a bunch of data, not a physical disk or anything. It's digital. How about the money in your bank? Do you think your money is sitting in a box in your bank? No, it's just a bunch of data. It's power. In my experience it was always incredibly difficult, if not impossible to try to bring people to understand the technology when they had no clue about how any of this stuff works or never experienced it. What I would find personally, in my experience, a very effective way is to change the way you're looking at the problem. So the problem is I need to figure out how to get this dean or other administrator to understand what the potential of these virtual environments are. Asking the dean or administrator what their major problems are starts the conversation because once you get somebody talking about something that is a challenge to them you've
got their full attention because people love to talk about what's important to them and if you ask me about something that's a challenge to me I'll be engaged. Then you have the opportunity to start slipping in, “well there are other tools and techniques and here's something that you may not have heard about.” and so then you've got their attention.

The tactics Mr. Lester described are consistent with the Technology Acceptance Model (TAM). Finding out what problems administrators were dealing with and then suggesting a technology solution provided perceived usefulness (Davis, 1989). Most administrators needed to perceive that Second Life solved a problem in order to provide support, but some administrators overlooked this need because they wanted the perception that their university was on the cutting edge of this new technology. The administrators and higher-level officials at these institutions may have not understood virtual world technology fully but wanted to remain competitive in light of peer institutions already engaged in virtual learning.

The administrators were driving this and had more control over what was happening than anybody else but would never take the lead on moving the University in that direction so it became briefly a showpiece, sort of something that the University could say that "yes, we have a presence in Second Life; it's a really great campus." The administration could say this without knowing what was going on or not even necessarily seeing it. (Administrator from Institution D)

After many universities initially established a presence in Second Life, it proved difficult for some to maintain the interest and support of administrators. Institution A had the support of administrators to develop four islands (pieces of undeveloped virtual land)
for faculty space in *Second Life* with two of them remaining empty as faculty did not come and did not use the space for any type of activity. Administrators became frustrated that no one was using the space and discontinued support. University F took a similar stance when it was discovered that their faculty had abandoned the *Second Life* platform and moved back to more traditional platforms such as a learning management system or a hybrid instruction format. According to the administrator from Institution F,

> I followed back up to see what we could do to help them get back in and they had pretty much fallen back to just using an LMS. They didn't come back in and fell back into the habit of just using it as a lecture platform instead of using it to spend time doing some investigations and making some connections in-world, and there wasn't an interest there, and they would prefer to use the LMS and teach in an asynchronous form. It's just kind of faded out, and most of the delivery has gone back to hybrid models in which they teach their classes, part of their class in a face-to-face classroom and then part of it using the LMS system and the Moodle platform which is what we use here. The administration felt it was not justifiable and did not want to continue supporting the effort.

Change in higher education is a slow and difficult process due to the complex nature of higher education institutions, as well as the intricate decision-making structure (Boyce, 2003). The administrator from Institution F observed this time-consuming process and commented on how difficult and slow it is to enact change in the use and adoption of new technology such as *Second Life*,

> Several different aspects we're going to have to overcome with the technology first off. We've got to understand we're in the field of education, and education is
like a huge ship and getting it to turn and getting it to do things takes an incredible amount of time. I think we're still in that churning process for education. If we were a little speedboat we could make turns and changes quickly and adapt but we're not so we have to understand that going in. I think in the future we're going to have to understand people aren't going to jump on and grab a hold and really understand this. It's just like when the Internet was first introduced; we dealt with years of people saying it would never be part of their educational process, and now we can't live without it.

*Legal Concerns.* Virtual world technology is fairly new and does not have relevant legal precedent related to intellectual property. As such, administrators were concerned with legal issues between virtual world instruction and the institution. One of these issues concerned the use of university colors, logos, and building names. It was unclear what buildings could be recreated in *Second Life* and whether they could resemble actual building on the physical campus. Six of the seven administrators interviewed expressed concern for these issues and would not allow their *Second Life* campus to contain replicas of their logos or mascots. Two of the universities were expressly told they could not have names of any type on the virtual buildings without having the permission of donors or others involved. University D tried to replicate their president’s office and was told they could not do so due to security concerns.

Some administrators expressed concern about students being exposed to inappropriate material and images. *Second Life* is first and foremost considered a social network and is unregulated for the most part with education being a small part of the virtual world activities (Boellstorff, 2010). Some administrators were concerned about
other avatars that are not associated with the university interacting with or harassing students or what may happen if students wander away from the university area and venture into areas with sexual or deviant themes. Some administrators thought this posed a legal risk to their university that needed to be addressed by university counsel. University D required students to sign a disclaimer statement because they were worried about what students might do in the virtual world and did not want to be sued for sexual harassment, intimidation, or other problems. University E was especially concerned with students accidentally encountering adult material as they have a program for high school students who are under the age of eighteen. Controls were established to block access to anyone not authorized to be on their university’s island, and extensive training took place for students and parents as to the perceived risks and how to respond if something did happen. The Administrator from University D was concerned about the adult nature of Second Life and compared it to the early days of the Internet.

It is funny that at a conference we had someone compare Second Life to the early Internet. You had all this great research going on, all these universities doing great research, posting it and publishing it, and doing that sort of stuff, and you had porn. That was it. That's all that was on the Internet for a long while until the commercial folks said, hey, we can sell stuff, and then that completely transformed it. So now all we have is stores and porn. The interesting thing was the questions that came up largely because you are turning 18- to 21-year-olds loose in Second Life knowing that they can just as easily land in in a rather unscrupulous zone, as they might in an academic area. So that became one of the questions. (Administrator from Institution D)
Control Concerns. Administrators expressed a desire to have control over what happens in the virtual environment, including who can access their virtual campus, as well as control and ownership of virtual world artifacts. Virtual campuses in Second Life are generally open to allow students and faculty from around the world to interact. There was a concern that this openness could allow some people to access the campus that were not necessarily there for academic pursuits. In Second Life, the term griefing came about to describe people who would enter an area in Second Life for destructive purposes such as harassing others or carrying out some violent action (Boellsdorf, 2010). According to the administrator from Institution D,

People did say regularly, "What happens when someone comes in and does griefing?" I said we have the ability to kick them off if that happens. So what they would do is bring an argument someone brought from a conference where someone showed up with a gun and started firing and how this is very destructive. My response was there is no gate on the real campus, and anybody can come in, and we have to deal those situations as well. We had some areas on our Second Life campus where folks could teleport into a classroom and other folks could come in if they stumbled upon it, and we tried to put contingency plans in place for the folks that were there holding meetings.

A major control issue for administrators was the fact that the items built on their campus in Second Life could not be copied and moved to another virtual environment. Universities spent thousands of dollars to build their campuses in Second Life considering that Linden Lab only rents or sells empty land and that everything in Second Life has to be built by the residents. Universities had to rent or purchase the land and then pay for a
skilled person to build the artifacts and buildings using 3D modeling or purchase the needed artifacts. Some artifacts such as interactive PowerPoint projectors had to be programmed and scripted requiring substantial amounts of expertise and time. The concern with the administrators was after expending these resources to develop a presence in Second Life, the objects and scripts created could not be saved to their own server or exported out of Second Life and imported into a different virtual environment.

The content transfer issue coupled with how difficult it was to explain the concept of virtual worlds where nothing exists in a physical form to high-level administrators was problematic when convincing those very administrators they should spend budget dollars on Second Life. Innovation Diffusion Theory (IDT) is based on overcoming the uncertainty of innovations in an effort to enact change (Rogers, 2003). The success or failure of technology diffusion can be linked back to several key characteristics including compatibility and complexity. The reluctance on the part of administrators to accept the virtual nature of the Second Life platform can be explained by the concept of not being compatible with their personal beliefs and standards.

Difficulty accepting the intellectual property issues, as well as the inability to have a copy or transfer artifacts was at the core of their belief system and critically important for many of the administrators interviewed. The complexity of the Second Life platform was also a factor for administrators as it was hard to grasp the idea that these virtual worlds were not real. John Lester was faced with these questions from many higher education institutions,

Administrators were saying, “We put a lot of effort into building this environment. Can you back it up and save it in case the company goes belly up?”
I had to tell them that Linden Lab does not have the ability to back up your content and save it and export it to be portable. Of course things like that get on the radar of the administrators as big red flags and are a guaranteed way to get the administrator at your academic institution kind of mad. We could not address the needs of these administrators as far as being able to back up content, being able to export content, being able to have more control over who is in the environment, and being able to create a private environment in Second Life. I wish I could have done more to make things happen, like for example the whole idea of having the data portability is just so important and other things like having a client that works on a web browser having a web-based interface and all of this. The big showstopper is being able to have ownership of what you have in here. I think Linden Lab will never change that because what they want is for this environment to be a space where you come in here and you don't actually own anything. You just are paying for a limited use license of your content. We know all this stuff we bought in the virtual world we don't own. It's a limited use license and on the Second Life server. The stuff we build we can't save anywhere but on Second Life servers. Administrators hear that, and they're like okay, now I'm scared.

Administrators articulated issues from an institutional perspective, which impacted the decision making process as to whether or not to have a presence in Second Life. The issues were varied, and some were environmental and outside the control of the institution such as state budget cuts. Others were based on the understanding and perception of Second Life by administrators. The next general theme moves from the
institutional issues to the issues involving the stakeholders affected by the decision whether or not to utilize Second Life as a learning platform.

Stakeholders

Stakeholders are critical to the success of any organization including higher education (Weisbrod, Ballou, & Asch, 2010). This section discusses the stakeholders playing a role or having an interest in Second Life at higher education institutions. Stakeholders include faculty, students, and Linden Lab.

Faculty. Administrators interviewed stated that faculty were the driving force for pursuing Second Life for teaching and learning at their institutions and were influential as to whether a presence in Second Life would be established and maintained. Faculty were, for the most part, the first to learn about Second Life through journal articles and by attending conferences as reported by the administrators interviewed. It was up to faculty to sustain teaching and learning in Second Life by coming up with creative ways of using the platform and then integrating the virtual world into their classes. Some faculty had a difficult time sustaining teaching and learning in Second Life due to strenuous tenure and promotion requirements that interfered with virtual world instruction (Administrator from Institution D). However, the administrator from Institution E, where Second Life is still being used, described positive aspects of Second Life that could be leveraged for publications counting toward tenure and promotion,

It also gives faculty a different way to help with their publications and tenure because they can do some studies. It's still really is, based on some of the applications I mentioned, a fairly new technology, even though it is going mainstream in a lot of places. It also gives faculty a chance to do publications,
new publications, and you can collaborate with other universities very easily in
*Second Life*. There are still a lot that are doing projects in the platform so we also
try to look for collaborative partners that the faculty can work with.

(Administrator from Institution E)

Some administrators pointed out that publishing about *Second Life* is not that
simple. Some faculty experienced problems trying to research and publish in *Second Life*
due to the learning curve associated with the technology, the overall time commitment,
and the specific academic discipline not lending itself to the environment. This lack of
fit between the *Second Life* platform, the faculty members’ level of knowledge and skill,
and the research process proved to be a poor fit for many faculty. The Task-Technology
Fit Theory (TTFT) offers an explanation of this research and publishing dilemma. TTFT
is the degree to which a technology helps or assists the technology users in completing
their tasks as measured by the fit among the task requirements and the ability of the
individual carrying out the task (Goodhue, 1997). The Administrator at Institution D
described a situation that he thought was typical in higher education today.

I think the problem is, was, and may always be faculty that have had significant
workloads and a lot of responsibility that doesn't necessarily leave them with time
to work on something like *Second Life*. The other little piece I haven't mentioned
before that I think bears mentioning, that is relevant to this, is that we're also at a
place in this institution's history as well as others where we're increasing
expectations on our faculty. Whereas we used to be a teaching institution, where
all you had to do to get tenure and be promoted was be a good teacher. Now,
that's not at all sufficient. It's still important, at least there's a lot of lip service
given to it, but all of the excellent teachers are expected to do significant research and to produce scholarship and also to do service and be excellent in all these areas. The bar's being raised. The University is increasing expectations, which reduce even further the amount of time we have to do new stuff and be innovative because we're scrambling to do what it is necessary to survive.

Student evaluations are an integral part of the evaluation process at many higher education institutions (Marsh, 2007). Administrators from Institutions A, C, and F described situations where faculty tried *Second Life* and other technologies to be innovative and students disliked the format and gave faculty poor evaluations. Some faculty are reluctant to try new platforms and risk loss of promotion due to the technology. As a result, faculty were reluctant to engage in virtual world instruction as subsequent poor teaching evaluations might possibly compromise their tenure/promotion.

Technology issues with *Second Life* software and interface caused some faculty to become frustrated and move away from using *Second Life* for teaching and learning. The administrators who were interviewed offered several examples of faculty frustration with the *Second Life* technology. The administrator from Institution A offered the following example,

> We basically developed everything for them, but yes, they did have issues with the technology, and the voice over IP was not good. So, when they are trying to give a lecture or when students are trying to come in there, it was sometimes a little bit difficult, but yes, if you wanted to do something, if you wanted to build something, there is a learning curve with that. But, basically we were just having them go in and give a presentation where all the students click on a board and
exchange slides and that sort of thing. But even with that, they were a little bit 
challenged with the technology.

The administrator from Institution G stated,

Faculty, when they were trying to walk or fly, sometimes couldn't really master 
that too well. They'd fall off a building. Things like that make it a little difficult 
to keep your credibility when you're giving a presentation.

The administrator from Institution B had the following comment concerning the 
technology of *Second Life*,

There was a lot of effort that went into that learning environment. When faculty 
teach, they want to go in and start talking and start interacting with no barriers. 
The technology, I think, was a barrier. It was cumbersome even just to login 
sometimes.

*Students.* Students are the most important stakeholders in the higher education 
arena. Administrators are continually concerned about student retention and attracting 
ewn students to their institution (Rovai & Downey, 2010). One way to increase student 
retention is by providing an engaging learning experience (Wang, 2012). Virtual worlds 
and *Second Life*, in particular, seemed to have the potential to accomplish these goals by 
providing a sense of belonging for students, as well as a platform to provide engaging, 
hands-on learning activities (Warburton, 2009). However, interviews with higher 
education administrators indicated that many students did not like *Second Life* and did 
not take it as a serious learning platform. Some students, especially the ones involved in 
gaming found *Second Life* to be cartoonish and have sub-standard graphics as the avatars 
and images are not as life-like as in gaming environments. The administrator from
Institution B received frequent feedback from students concerning their negative impressions of *Second Life*.

I don't think they liked it because they were into gaming. It was so interesting because the faculty would be like, "wow this is so cool." In our students’ age range, we would have students who would come into the symposium sessions and they'd be like, "oh my gosh, this is so lame; this is like graphics from 1998; what's up with that; you can go play World of Warcraft with much better graphics; and besides what's the point of this, there is no goal here; it is not a game." The reaction from students was kind of mixed and it would be like, "do I really have to do this."

Other administrators offered similar information indicating that students did not understand the purpose of *Second Life*. They thought it looked rather cartoonish, but it was not a game. There was anxiety surrounding this issue, and students had a difficult time seeing the relativity of what they were doing in *Second Life* as far as it related to the course content or learning the material. In gaming there is always a goal or purpose, *Second Life* is not a game, so there is not a goal or other purposeful activity in the sense of going on a quest, finding the missing pieces to a puzzle, or solving a mystery. For some students *Second Life* did not offer a relative advantage, which according to Rogers (2003) is the degree to which an innovation is better than the idea it is replacing. Rogers (2003) also describes compatibility as being a characteristic that affects the diffusion process. In the case of students, prior attitudes and beliefs, especially for those students who were avid gamers, affected their ability to accept *Second Life* as a serious venue for learning. These students were used to high quality visual graphics and participating in
activities that had a purpose. *Second Life* was not compatible with their ideas about virtual worlds. The administrator from Institution F described how his university was the first university to offer a degree earned completely in *Second Life*. About ten students entered the program; they were committed and excited about the platform. The administrator indicated that the results and opinions of this group were much different than other students who took a class in *Second Life*, but not in this program. This was attributed to the fact that the *Second Life* degree students were avid users of *Second Life* before they started the class and had favorable opinions and perceived *Second Life* as having a relative advantage, and there was a high degree of compatibility. They also did not experience as many technical difficulties or as steep of a learning curve compared to the other students (Administrator from Institution F).

There was a steep learning curve for students new to the *Second Life* environment as far as learning the interface, communicating, and maneuvering an avatar. Institution E, the institution still using *Second Life*, developed an orientation island that all students were required to go to and complete orientation activities. There are still learning curve issues, such as getting one’s avatar to walk, run, and fly, but they have lessened with the mandatory training. Having a dedicated staff for *Second Life* allowed for the creation of the orientation program, as well as tutorials to offer students explanations and demonstrations of the tasks in *Second Life*. Other administrators were concerned that the learning curve was too steep. According to the administrator from Institution D,

> When all the students are taking their classes in Desire to Learn or in *Blackboard* that's what they're used to, and there is not a steep learning curve. I don't want a steep learning curve with the students because I want it to be transparent. I want
them to be able to focus on the content and not on how to get to the content. This is the issue with Second Life. Do we want to spend the first week or two just figuring out how to do things, get clothes on the avatar, moving the avatar? We would rather be into the second or third chapter by then.

There were also technology concerns as far as students having a powerful enough computer with enough random access memory (RAM) and an enhanced graphic card to run Second Life as well as a high speed Internet connection. The concern was especially troublesome for distance students who could not come to the university to use university computers. Most universities had or installed computers with enough memory and enhanced graphics cards in designated computer labs, but distance students were not always able to travel to campus. These students had to rely upon their available technology, change the Second Life graphic settings, and often had a hard time communicating during courses. According to the Technology Acceptance Model (TAM) a technology must have a perceived usefulness and ease of use for the user to be adopted (Davis, 1989). Students who were trying to participate at a distance without the essential technology could not effectively use the Second Life platform and feel immersed. This led to frustration and poor experiences. The administrator from Institution A discovered that several students did not have computers that would run Second Life effectively. Students who had difficulties operating Second Life were hesitant to engage in learning. Some students with better computers were able to participate while others could not, causing an automatic divide in the class between those that could participate and have an engaging learning experience and those that could not participate and who became isolated and confused. John Lester worked with higher education institutions on student
issues and recognized there was a problem and tried to think of ways to make the experience easier for students.

To be honest, it also comes down to students. If you're trying to get students in these environments it's a lot easier to get them to just use a simple social media platform versus a complex client that you have to log into. It's ease of use. Ease of getting into it. I always thought that one of the technical things that was important is why can't someone just jump into this environment without having to create an account; why can't you just jump in as a temporary guest, maybe just pick a nickname. That's all you need. The only thing it's asking you for is a nickname, no password, nothing just a nickname and boom and you are in. (John Lester, former Director of Educational Services for Linden Lab)

_Linden Lab._ Linden Lab began in 2001 as a company interested in developing haptic virtual reality technologies, those involving touch. By late 2001, Linden Lab engineers had created a virtual world with the idea that it would eventually work with haptic hardware. As engineers engaged in further development, executives reached the conclusion that the virtual world component was more important than the haptic virtual reality component. Because of this, Linden Lab further developed the virtual world without the haptic component, thus creating _Second Life_ and making the platform available to the public in 2003 (Boellsdorff, 2010). A few educators began exploring this new platform and finding ways to incorporate the new technology in courses. By 2005, the word had spread through publications and conference presentations, and educators became excited about the potential this new environment had for teaching and learning (Warburton, 2009). John Lester was one such educator. Mr. Lester was creating online
learning environments for Harvard Medical School and Massachusetts General Hospital and became interested in the potential of *Second Life* to be used for a wide range of educational purposes in academic healthcare. He was constantly looking for immersive technologies with a specific interest in tools that would immerse students in any kind of content or communication environment and thought that having these environments with multiusers was very powerful. In 2005, as part of his growing interest in *Second Life*, Mr. Lester contacted Linden Lab and began a series of conversations concerning the potential of the education market (John Lester, former Director of Educational Services for Linden Lab). According to Mr. Lester,

> So I was talking to the folks at Linden Lab and talking to Corey Ondrejka who was the CEO at the time. Cory said, "Yes, this is going to change education." I said, "Have you ever thought of having people at Linden Lab who are focused on that segment (because education is a very particular segment) and if you want to really support and get a certain segment you need to have people in your organization who understand that market segment. There is no way you're going to build a product that educators are going to use if you don't have anyone in your organization who knows anything about education. Ideally you want people who worked in the field." So I basically was making this case for Linden Lab to support education, and as I was talking to them I realized that, wait a second, this could actually be a role I would be interested in. I could go work for them and switch gears in my career a little bit, so in 2005 they hired me, and my primary focus was to help support the education market.
At that time there was a strong belief within Linden Lab that *Second Life* was a platform with broad applications across a wide range of areas and use and was not just for entertainment. The idea was that *Second Life* could also effectively support business and learning and could be transformative along the lines of what the web did to transform multiple industries. With this vision in mind, Mr. Lester began building the education community by creating groups consisting of educators, researchers, and others interested in leveraging *Second Life* technology for teaching and learning. Mailing lists and forums were developed for educators to communicate and collaborate with each other. In addition, an initiative was carried out giving educators a 50% discount to buy and rent land in *Second Life* to further promote the support of the education segment (John Lester, former Director of Educational Services for Linden Lab).

Mr. Lester, in working with educators, realized that educators have certain constraints and concerns and that Linden Lab was slow to recognize and address these concerns and react to them in a suitable manner. Issues, such as the ability to back up content, the ability to export content, the ability to have more control over who is in the environment, and the ability to create a private environment in *Second Life*, became critical.

In 2008, Mark Kingdon, former CEO of Omnicom Digital Agency Organic was appointed CEO of Linden Lab. Mr. Kingdon was brought in to keep the excitement about *Second Life* going and to look for new and additional profit streams (John Lester, former Director of Educational Services for Linden Lab). According to Mr. Lester,

There was a bit of a shift and this was around 2008 – 2009 when Linden Lab was getting enamored with the idea that businesses could be a big revenue stream, so
education kind of got pushed aside a little bit. They were like "we're going to market this and design this behind the firewall solution to business." So there you have the drifting priorities and this was when Mark Kingdon was CEO. He really brought this business-focused thing, unfortunately in my opinion, so the “run your own grid” thing was priced way out of the price range of educators, and it was just not something that was a product that they would find useful. It was something that Linden Lab felt would appeal to businesses.

In 2010, Mark Kingdon was replaced by Rod Humble as CEO of Linden Lab. Rod Humble was the former Executive Vice President for Electronic Arts, a gaming company where he was responsible for the Sims gaming line, a strategic life simulation game. With the appointment of Mr. Humble as CEO, Linden Lab developed and adopted a new vision and mission as Second Life was struggling to hold onto users. The new vision and mission no longer included the education segment as a vital part of the business strategy (John Lester, former Director of Educational Services for Linden Lab). According to Mr. Lester,

What happened was it totally changed to “we are going to focus on sort of a casual entertainment market; we are going to focus on not this Second Life platform as something that is a transformative platform or will cross a wide range of things.” Really to be honest the focus was on making this something that's fun to do that will appeal to a broad range of casual users and one-size-fits-all. They were looking for broader and faster revenues. The whole thing of Second Life not being a game I think changed. To be honest, it may not be a game now in the classic sense of the word, but people running the show now in terms of executive
When Humble came, he cleaned house and everyone else left. There are no original executives, and he brought in his own team, and that's typical when a new CEO comes in, but he really brought in a whole team of people who wanted to focus on Second Life as a general sort of entertainment platform.

In 2010, Linden Lab eliminated all employees on their community development team due to the change in leadership and revamping of the company mission and vision. With the focus on general entertainment, specialized groups for education and business were no longer part of the strategic focus. Mr. Lester was part of this team. The strategy and focus shifted toward the platform supporting general audiences and entertainment and less about other interests including education. In 2010, Linden Lab announced that effective January 1, 2011 they would be discontinuing the discount for educational institutions. The end of the educational discount placed many universities in a bad position concerning their budgets. This offered another example of Linden Lab’s failure to fully understand the needs and structure of the educational sector. In higher education budgets are decided upon and put into place for the academic year and usually run from July through June. Making such a widespread change to the amount of money institutions had to spend to keep their presence in Second Life and the timing mid-budget cycle was disastrous. Removing the educational discount also sent a message to the education community that Linden Lab did not care about the education sector and the particular needs of higher education institutions (John Lester, former Director of Educational Services for Linden Lab). All of the administrators interviewed indicated the removal of the discount did alter their plans for and opinion of Linden Lab and the use of
Second Life for teaching and learning. In addition to the removal of the education
discount, educators were also upset that Linden Lab had terminated John Lester. Mr.
Lester was well thought of in the education community and had established relationships
with many educators because he had provided support and assistance and had become an
important and respected ally. According to the administrator from Institution A,

The educational discount actually did impact us as far as the perception of it,
definitely by the decision makers. It really impacted their perception of Linden
Lab's willingness to continue with education in Second Life. It was a message and
it impacted my perception of Second Life too because all of a sudden I was like
they don't care about education and maybe we really need to start looking at other
places. This was the impetus for me to start looking for other platforms.

Other administrators were also concerned about Linden Lab discontinuing support
and the general lack of interest towards the education market. According to the
administrator from Institution B,

I felt like this (Second Life) is not real and it started to really bother me. That's
not to say that I think it's all bad. It's just to say that I didn't want us do it
anymore. That's not why we stopped it. It was because I could see there was not
going to be any broad widespread support on the part of Linden Lab. They were
already reducing their support for it and by doing so they said higher education is
not a priority and at the same time they made it clear that porn and other stuff like
that were a priority. To me that was the final straw. When they did away with the
educational discount I gave up all hope that Linden Lab was ever going to
collaborate with educators.
Faculty, students, and Linden Lab all played a critical role in the events that led to *Second Life* not realizing the prediction made in 2007 that the platform would become mainstream and be the platform of choice for the delivery of distance education by 2013. The next theme concerns the pedagogy or the design and use of the *Second Life* environment in teaching and learning.

**Pedagogy**

The unique immersive nature of *Second Life* affords many opportunities for interactive and meaningful learning experiences; however, this unique nature also causes problems for educators and administrators. These issues include getting past the novelty of the environment, using appropriate teaching strategies for an immersive environment, and integration into the learning management system.

**Novel Environment.** Many educators were attracted to *Second Life* due to the uniqueness of the environment. The ability to create an avatar in any form that did not have to look like the user was intriguing. Avatars have the ability to teleport or fly, change appearance including skin, hair, and clothing, as well as to become an animal, robot or anything else imaginable. The problem with becoming enamored with the fun nature of this platform is that the *fun* detracts from *Second Life* being a serious venue for teaching and learning. According to the administrator from Institution D,

> There were some neat, fun features, which from a gamer kid's perspective makes it really attractive. The fact that you can fly and do these other things you can't do in real life is attractive, at least to some folks. Harnessing that into sky platforms for classrooms and harnessing that into something that has clear pedagogical value that can attract students there and keep them there and focus on what you
want to teach not all the cool things you can do is a challenge. Just like in their online classes the first thing faculty asked was, "how do I change the colors, how do I change the buttons, how do I make it look pretty?" That's what folks were interested in with their avatars... how do I make myself pretty... I want to look like this or that... like an animal... that's what they were interested in doing. This is part of the problem. It's both a blessing and a curse. It gets people excited about it, but it distracts them from what they could be doing academically.

The administrator from Institution B noticed problems arising from faculty becoming too involved with their avatar’s features. This had a negative impact on students. Faculty would adorn their avatars with items such as sparkly shoes or flowing hair. This required scripting that caused the environment to be overloaded. The environment became overloaded due to the processing limitations of the scripts for each avatar in the area. The more scripts an area has to run, the slower the processing resulting in lag or delay in processing the graphics. The administrator from Institution B explained that even though written guidelines were prepared and training was provided for faculty regarding the reduction of lag associated with avatars, faculty still insisted on taking advantage of resource-laden items to enhance their avatar. According to the administrator from Institution B,

They never listened to me, and I don't think they understood. I had much more of the technologies’ perspective, and they were all about the pedagogy and andragogy that they didn't get it. To me that was a huge disconnect. Instructors in the class were wearing prim-heavy things and had the script to make it sparkly and that was making it impossible for the students to participate appropriately in
the class. To me, that's a good example of the kinds of issues that you encounter in Second Life because these faculty have Internet access at a higher rate at a public university and high-speed computers, and they don't get that the students might have something very minimal.

**Teaching Strategies.** In Theory, Second Life provides an immersive and interactive environment with the potential to engage students as active learners (Warburton, 2009). All of the administrators interviewed shared examples of the environment not being used to take advantage of this unique ability. Many instructors simply wanted to create what they were already doing in online classes in Second Life because they did not have the time to learn other strategies or did not know how to best leverage the technology. This strategy did not take advantage of the immersive, hands-on aspects of the platform, and students became confused and disinterested. According to the administrator from Institution F,

I think one of the biggest things we learned was, "don't come in to replicate what you're already doing." There's a comfort level to how you integrate this technology and coming in and just using it as a synchronous platform to do lectures from is about the equivalent of doing a fifteen minute video recording and putting it into your LMS. The students just don't get it if they don't get an opportunity to interact and that's what we did on we first came in.

The administrator from Institution G observed a similar situation and problem related to faculty learning how to best use the Second Life technology. Most faculty wanted to get in and lecture. They could not get past the point of understanding that doing synchronous delivery and just lecturing like you would
in a face-to-face class means you're not really leveraging the technology for what it's for. That was our challenge most of the time, whenever we were bringing in faculty, was getting them past the point of the learning curve of adopting the technology for the best use.

Another administrator described a situation where a group of faculty was interested in using Second Life to study the teaching and learning of movement and theater. A grant for this purpose was secured with the idea being to create animations and simulations whereby students would actively participate through their avatars in the environment to increase student interest and engagement. The administrator from Institution A described how the goal of the project never materialized.

They actually got a grant for about $5,000 to develop a space in Second Life to be used to engage their students in movement and theater. Their initial plan was to build animations and simulations, but unfortunately they did not realize what was going to be involved in that and they ended up doing streaming video. So, the students would come in with their avatars and watch videos and were quite passive. This is not the best use of Second Life.

The administrator from Institution F, the Institution that once offered a degree program completely in Second Life, described how the program changed as far as no longer using Second Life in a synchronous fashion. Second Life is no longer used as an interactive and engaging tool due to a lack of interest in continuing the virtual platform. According to the administrator from Institution F,

It eventually died out and they eventually quit using it. I followed back up to see what we could do to help them get back in and they had pretty much fallen back
to just using it as an LMS. They fell into the habit of just using it as a lecture platform instead of using it effectively. You have to spend time doing some investigations and making some connections in-world and there wasn't an interest there and they now just use the LMS and teach in an asynchronous form.

To use the Second Life platform for engagement and hands-on learning does take some creativity on the part of designers and instructors. The appearance of the learning space contributes to the ability to have an environment supportive of the types of activities needed for student engagement and immersion (Warburton, 2009). Land purchased or rented in Second Life does not come with buildings or structures of any kind. Everything used in Second Life, with the exception of raw land, must be built by the residents of the virtual world. Many higher education institutions elected to recreate their real world campuses in Second Life, and as additional higher education institutions entered Second Life the idea was duplicated with most universities creating content that looked quite traditional and like their real campuses (Administrators from Institutions B, D, & E). Designers and educators soon discovered that Second Life allowed for deviating from the normal and traditional classroom environments and began exploring more creative alternatives that would allow the immersive nature of the environment to be optimized. Second Life was a visual experience, and higher education institutions that did not consider the non-traditional aspects of the environment did not have student engagement and immersion (John Lester, former Director of Educational Services for Linden Lab). John Lester concurred that building a recreation of an actual campus was not always the best solution. According to Mr. Lester,
A lot of them came in here and they weren't really sure how to best use the environment. There were also a lot of people coming in here and building physical buildings, re-creations of physical world stuff. It's like here's a classroom, sit here and watch a slideshow presentation. I mean there's some value in that as far as creating some sense of familiarity. Sometimes people call it cultural touchstones meaning both of us look at something and both immediately understand what the purpose of this environment is and how to behave in this environment. So, you see a classroom and figure you should sit down and shut up and listen to whoever's at the podium. However, this was not the best and most creative use of the environment.

Some faculty originally became enamored with the *Second Life* platform and wanted to use it with their students without regard to whether it was the appropriate pedagogical approach for their content area. The administrator from Institution B claimed to have a group of faculty who were so enamored with *Second Life* and wanted to teach in the platform without regard for what was best for the students. This administrator believed that a need was created where one did not exist, and it was a case of faculty forcing the technology onto the course. This led to student dissatisfaction and the termination of support for *Second Life*. According to the administrator from Institution B,

Just because these faculty loved *Second Life* they were making their students use it even though it wasn't appropriate. *Second Life* is only appropriate if it's used in a distance course, and everyone in *Second Life* is doing activities you can't do in real life. This is the same with any technology. You can't marry yourself to any
specific technology. You choose the technology and the teaching tools that are most appropriate for teaching your subject matter to your students. Technology should not drive the process. I am talking about PowerPoint, pencil, and paper, or whatever you choose. Your teaching tools and your educational technology need to be based on what's going to help your students learn your content best, and when you start trying to teach totally inappropriately in virtual worlds, I just have issues with it.

Learning Management System Integration. Learning Management Systems (LMS) are ubiquitous in higher education. The push for online classes created the need for a place where students and teachers could post information and assignments, as well as track grades. Higher education institutions also integrate the LMS into their student enrollment software to allow faculty to automatically have students present in the LMS. Adopting and maintaining an LMS is a huge investment for higher education institutions considering the software expense, training and troubleshooting (Macfadyen & Dawson, 2012). Educators recognize the need for students to be able to access learning platforms and materials with as little trouble as possible in order to reduce the learning curve associated with platforms that are too complex as well as being able to participate in the learning experience without having to jump between separate platforms (Macfadyen & Dawson, 2012). According to John Lester, educators continually expressed a desire for Second Life to be integrated with their LMS, but Linden Lab was not willing to make this a priority. A major component of the Technology Acceptance Model (TAM) is perceived ease of use (Davis, 1989). Clearly, the educators involved in teaching and learning in Second Life wanted to make Second Life easier for students to use, thus increasing
acceptance of the platform. These efforts were largely out of the control of higher education institutions and rested with Linden Lab; however, the administrator from Institution F described how his university tried to make Second Life work with Blackboard and Moodle only to find that it did not work.

Traditional learning management systems are built to be asynchronous delivery. We were trying to build something for which the learning system was actively part of your class and it just didn't fit. We kept trying to make it work within Blackboard or Moodle, and it just didn't work. We were going backwards to do things in here and trying to figure out ways to manage the users and bring them in from point A. We built a group teleporter in our learning system so we could do field trips and manage the users, but it did not work seamlessly. It's just very difficult to see the relativity of having students bouncing back and forth like that between the LMS and Second Life. That's what the students were saying, they didn't like going over to Moodle and then jumping back into Second Life to do whatever they wanted and then jumping back into Moodle. They wanted it to be more seamless in the environment itself, so there was a little bit of angst from the students when we tried to do that. They weren't happy with how it worked.

(Administrator from Institution F)

Learning management systems are continually being upgraded with new features and functionality, but have never incorporated virtual world access. Originally, learning management systems were meant to post assignments and track grades. Recent updates include a more synchronous approach with the ability to hold meetings in real time and share content in real time. The addition of interfaces to social media and Web 2.0 tools
were also added to learning management systems by the developers of the systems (Kemp & Livingstone, 2006). Some administrators recognized the fact that if virtual worlds were fully diffused as learning platforms that learning management systems would integrate them for ease of use. According to the administrator from Institution D,

You noticed, I'm sure, that learning management systems are incorporating social media and they are much more like Facebook and Twitter and they are incorporating those features. So if things like Second Life or at least 3D immersive virtual environments were to become more popular and be attracting folks you would see companies like Blackboard and Desire to Learn start to incorporate those features. If students would become more interested in starting to live in these 3D immersive environments, then I think you'd see the companies change their products to incorporate that. So that's probably the way in because I think an LMS that is transparent is a necessity so students don't have to login so many places.

Pedagogy is an important consideration for designing and implementing learning activities. The administrators interviewed all commented that Second Life could have been an effective, pedagogically sound platform for delivery of instruction. However, the nature of Second Life and the requirements for the effective use of the platform were difficult to overcome and proved to be barriers.

Innovation Cycle.

According to Rogers (2003), diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system. For an innovation to be diffused, critical mass must be reached at some point in the
process where there are enough adopters for the innovation to be sustainable. The adoption of innovations typically follow an S-curve where adoption begins slowly with the early adopters and then rises significantly as additional adoption occurs and a critical mass is reached and then eventually levels off and decreases. At the end of the S-curve, a new innovation usually replaces the original innovation, or the original innovation is updated and changed which in either case causes a new S-curve to begin. Most of the administrators interviewed indicated that Linden Lab did not meet the needs of educators or provide the necessary upgrades to keep their interest in Second Life. According to the administrator from Institution C,

It did okay, but the more people you had the slower it ran and there really was a threshold at which it just didn't work very well. I think once you get more than 10 people in the space, things just start being really too difficult to manage. This proved troublesome in classes and presentations and Linden Lab did not seem to address this concern. Also, trying to conduct classes in Second Life was difficult, even posting PowerPoint slides. We tried to do it and there were a few tools that enabled you to do it but it was a pain in the neck. The adaptability was an issue. I also know that just being able to stream video in is difficult and the pipe is just not that big. It needs to be a dedicated pipe for that kind of media but you need pipes that are made for data, even if it's just text data. You can do a lot of great things that way, but Second Life simply won't let you do them.

John Lester explained how Linden Lab was not reactive to the needs of educators as far as having a stable environment where content could be backed up and transferred to other places, as well as integrated with learning management systems. In addition,
Linden Lab was not changing and bringing new innovations to the Second Life platform to keep users from leaving and attracting new users. According to Mr. Lester,

At the same time I think there were a number of realistic expectations that Linden Lab didn't move fast enough on. The platform, if you look at it today, and you login, the whole experience is not that different than it was five, six or seven years ago. To be honest, there's a lot of innovation that could've happened and it didn't. There was a subtler polishing of things, but not real innovation. There were little things like now we can import meshes, well that's good but at the same time using mesh models is something that is sort of an industry standard and it has been for many years and Linden Lab was just trying to play catch-up with that feature. It's not an innovative feature. The company that is Linden Lab today is a completely different company than when I was there. To be honest, it's like any other games development studio. They are polishing Second Life. It’s still a car. They're not turning it into a jet or evolving it into something else, it's still a car.

John Lester also discussed how Second Life followed a hype cycle and the events that occurred as a result. By hype cycle, Mr. Lester was referring to the Gartner Report’s Hype Cycle. The Gartner Group is a consulting company specializing in providing information about information technology to its clients. This information includes research about information systems and technologies and how those technologies are likely to influence organizations and which of those technologies should be adopted. This research caters to businesses, and as a result academics have paid little attention to the Gartner Report’s theories (O’Leary, 2008). The researcher thought considering the Gartner Report’s Hype Cycle was an important piece of this research as some
administrators interviewed thought it helped explain why *Second Life* did not become mainstream. The Gartner Report’s Hype Cycle was used to characterize a typical progression of an emerging technology to its eventual place in a market. There are five stages of the hype curve: Technology Trigger, Peak of Inflated Expectations, Trough of Disillusionment, Slope of Enlightenment, and Plateau of Productivity (O’Leary, 2008). Figure 19 presents a generalized diagram by the Gartner Report of the Hype Cycle.

![Hype Cycle Diagram](image)

*Figure 19. The generalized Hype Cycle diagram (Gartner Report, 2013).*

According to the 2013 Gartner Report Hype Cycle for Emerging Technologies, virtual reality reached the height of the hype cycle in 2007 and in 2013 is currently at the bottom of the Trough of Disillusionment and has not started to climb up into the Slope of Enlightenment (Schofield, 2013). Figure 20 presents a detailed diagram by Gartner of the Hype Cycle for Emerging Technologies 2013.
When *Second Life* was at the peak of the hype cycle, media coverage was substantial, businesses were scrambling to get and maintain a presence in the virtual world, and research and publications from the academic community were abundant. According to John Lester, 2007 was the peak of the hype cycle for what *Second Life* was all about because this was when *Second Life* was on the cover of *Newsweek* with Anshe Chung who was the first person to make one million dollars in *Second Life*. The problem is whenever there is a technology that hits a hype cycle at this peak of expectations you're just setting yourself up for some kind of a fall. The question
is how far is it going to fall? How far will the unrealistic expectations chasm be for you to fall into? I wish the hype cycle had not peaked so fast. There would have been more of an opportunity in education to explore these areas. In education it is a slow, progressive process, and the speed of the hype cycle did not give educators enough time to explore and adopt the technology. Educators are very different. The market for educators is very different. They are really into exploring the leading edge of technology that could potentially have a positive impact on learning. So there's this exploration process and there's this research process where you have to prove the efficacy of this new technology as a platform and it takes time.

At the peak of the hype cycle users became aware of other technologies such as Facebook, Twitter, and Google Plus that could replace Second Life. The administrators interviewed had various reasons for their institutions using Second Life such as collaborating among colleagues and other institutions, communicating, and promoting their institution. Many administrators found other solutions and technologies such as social media that better fit their needs. The administrator from Institution A described how Second Life was being used mainly to have a place to hold their research symposium. At the peak in 2008, there were 28 students presenting research at their research symposium and an average of 500 visitors each day for three days. Previous real-world research symposiums were only able to attract about 100 visitors. By 2010, there were only four students participating. According to the administrator from Institution A,
I think it takes a lot of time to do anything in Second Life well, and I think that was part of it. I think another part was that other ways to use technology became available on our campus, and they were easier to use. I wonder sometimes about us using Second Life with the research symposium being our main use of it. Maybe that wasn't the use that needed to be the main focus of it during that period of time. I think that we pushed to move away from Second Life after about the fourth year because other people were leaving, people are looking at other stuff, and maybe we need to start doing that too. Facebook was one of my suggestions for replacing the symposium. I said "let's move to Facebook, let's move to a social media platform for this because you still get that instantaneous feedback or fast feedback but it's longer lasting and it's more accessible."

Institution C used Second Life to collaborate with other institutions and provide opportunities for students and faculty in the arts and humanities. Conferences were held on the institution’s Second Life campus to allow researchers and students from all over the world to come together and share content and ideas. Art exhibitions and music concerts were conducted in Second Life in 2007. In 2010, the institution’s Second Life campus was destroyed by cyber vandalism and was not rebuilt. The administrator from Institution C described the situation as one where the Second Life campus was suddenly gone and no one asked about what had happened. The conclusion was reached that no one was using the virtual campus. There were no complaints or inquiries as to what had happened or if the campus would be rebuilt. By 2010, other ways of using technology emerged that were easier and more accessible. According to the administrator from Institution C,
I think that with the advance of telecommunications with Skype and Google Hangouts we did not need *Second Life*. The real advantage that *Second Life* had was that you could have a group conversation in *Second Life* without having a conference call line. This was in 2007 when there were no Google Hangouts and there was no other way to do voice conferencing except in *Second Life*. That was actually a powerful tool and being able to chat and do group chat and talk about things in a collective way made those kinds of tools really useful. We have those tools now in other forms that are much more agile and much more deliberate in what they able to do so there's no longer a need for *Second Life* from that regard and for that purpose it's gone.

From the perspective of John Lester there is a natural tendency for a technology to replace another technology after a hype cycle. This is consistent with diffusion theory (Rogers, 2003) as well as the Gartner Group’s philosophy (O’Leary, 2007). According to John Lester,

Whenever a hype cycle is over there is a new one that occurs. The new one occurred after 2007, after the whole virtual world mania was social media and mobile technology. I really think we are in the middle of another hype cycle around all that and when all that took off, a lot of the funding availability for grants and a lot of the focus for educational institutions around IT were on things like, "let's give students all mobile devices or laptops instead of PCs and let's see how we can integrate Twitter, Facebook, and social media with how learning happens." This was something that was completely out of the control of Linden Lab. I think there's some causality that can be attributed to the fact that *Second*
Life didn't take off because suddenly the bright spotlight was being shown on social media and mobile devices.

While the Gartner Report’s Hype Cycle is not fully accepted by the research community, it does help to explain what may have happened as virtual worlds became popular and then declined.

The concept of critical mass as defined by Rogers (2003) is the point after which further diffusion of a technology becomes self-sustaining. Figure 21 presents a diagram of Roger’s critical mass concept. Virtual worlds, including Second Life are interactive communication innovations meaning that a critical mass of individuals must adopt the technology for it to have utility for the average individual user. After the critical mass is reached, the norms of the social system encourage further adoption by individual members of the system implying a reciprocal interdependence as early adopters influence later adopters. Because this is a reciprocal relationship it can also work the other way with later adopters influencing the early adopters if they decide to discontinue using the technology (Rogers, 2003). Second Life, being an interactive innovation, was affected by

Figure 21. A Diagram of Critical Mass by Rogers (Rogers, 2003).
the idea that more users entering created a critical mass, therefore Second Life was not effective unless other users were present to interact and to collaborate with. Many of the administrators interviewed described how their universities decided to abandon their presence in Second Life or scale down their presence because other universities were doing the same. When educational programs in Second Life no longer sustained a critical mass, the value of remaining in the platform diminished. The administrator from Institution B alluded to this by comparing Second Life to the early days of email and how Linden Lab could have used this strategy to obtain critical mass. According to the Administrator from Institution B,

The normal marketing curve just doesn't apply with this technology because you've got this disconnect between your early adopters and your early majority. It's not like you're marketing a new brand of toothpaste... you are marketing a whole new thing that people have never experienced before. I talked to Robin Harper at Linden Lab and I used to go to their developer’s meetings in Second Life. I told them, "If you want Second Life to become widely used, you really need to focus on higher education because you can set it up there and it will continue.” Ten or fifteen years ago people first got email and first got online. Higher education caused email to continue after students graduated, and higher education can serve that same purpose giving people their first experience in a virtual world and then making it seem so common that they take it with them out of college and into their real-life. They agreed with me, but this was about the time they had a new CEO. They made their decisions based on money. Higher education was not bringing in much money.
According to Innovation Diffusion Theory (IDT) and the Gartner Report’s Hype Cycle, all new technologies go through a cycle where they are introduced, gain in popularity, and then level off at which point improvements to the technology are made or the technology is replaced by a new technology starting a new cycle. Second Life seemed to follow these cycles. Many administrators described situations where Linden Lab did not make what they perceived to be needed improvements to the technology causing other alternatives to be adopted that better met their technology needs.

Summary

Phase One of this research involved interviewing seven higher education administrators as well as John Lester, former Education Director for Linden Lab. All of the participants believed in the idea of virtual worlds and articulated how virtual worlds had the potential to be a powerful tool in education even though this potential was not realized. These eight participants provided insight into why Second Life did not fully diffuse and become a mainstream platform for teaching and learning in concurrence with the theories of the Technology Acceptance Model (TAM), and the Technology Task Fit Theory (TTFT), and Innovation Diffusion Theory (IDT).

The TAM theory is concerned with the reasons for adoption of a technology and considers the significant effect of perceived usefulness and perceived ease of use of that technology to user acceptance of the technology. The technology must solve a problem for the user as well as not being overly complex or difficult to use in solving the problem (Davis, 1989). The administrators interviewed clearly identified problems that could potentially be solved through the adoption of Second Life as a platform including: increased student engagement, higher level of student retention, increased enrollment,
increased visibility for the institution, enhanced communication, and widespread collaboration. However, upon implementing the Second Life platform, specific problems arose such as legal issues, concern over control of the environment, availability of essential resources, effect on tenure and promotion issues for faculty, and time constraints. As the TAM theory states the technology to solve the problems must be perceived as easy to use. The administrators interviewed consistently reported that stakeholders had a variety of issues with the Second Life technology. Many students did not have the appropriate hardware required, and thus, had a sub-standard experience and became frustrated. The interface proved to have a steep learning curve for students and faculty. The one administrator interviewed whose institution was still using Second Life had a staff dedicated to Second Life to help alleviate these problems, while the other six institutions did not have the resources for a completely dedicated person or staff and experienced substantial problems dealing with the hardware and software.

The TTFT concerns the degree to which a technology helps or assists technology users in completing their tasks and objectives. According to Goodhue (1997), task-technology fit is determined by the characteristics of the task, individual user characteristics, and technology characteristics that in turn determine the utilization of the technology. From the perspective of students, the technology was not a good fit. Students experienced a steep learning curve and had multiple technical issues and did not see the purpose or relevance of Second Life. Faculty also had a myriad of difficulties with the hardware and software and further experienced a poor fit due to the vast amount of time required to assure that learning activities in Second Life were pedagogically
sound. Many administrators were confused as to what the technology was and how it could be used, thus experiencing disconnects and poor fit.

As part of IDT, Rogers (2003) identifies five steps that describe whether and how an innovation is adopted or rejected. These stages are knowledge, persuasion, decision, implementation, and confirmation. Rogers (2003) describes innovation as following a pattern and progressing through these stages as critical mass is reached and adoption results, or critical mass is not reached and adoption fails. The administrators interviewed and John Lester offered insight into the process and what occurred. Linden Lab was not reacting to concerns that troubled the administrators such as being able to download content on university servers, transferring content to a different environment, integrating with LMS, and supporting the goals of education. Even the administrators reaching the implementation and confirmation stage of adopting Second Life backed off due to these concerns. The termination of the educational discount further resonated with the education community and caused a perceived lack of interest in the education market on the part of Linden Lab. Rogers (2003) discussed the innovation cycle and how all innovations follow an S curve plotting time and adoption. At the end of the S curve innovations die unless improvements and enhancements are made. Linden Lab did not make the necessary enhancements for the Second Life platform to begin a path on a subsequent S curve as demonstrated by its disregard for the education market. New technologies such as Facebook, Skype, Twitter, and other social networking platforms with the ability to solve educators’ problems became available and educators began replacing Second Life with these new technologies. LMS platforms began integrating
these social media technologies into course offerings making them easier and more appealing than *Second Life*.

The qualitative data obtained in Phase I of the study was then used to create a survey for Phase II. Survey questions were developed covering both demographic data collection and content data collection. Based on the findings above, the survey was targeted to three groups of respondents: students, instructors, and instructional designers. A single survey was designed and deployed that allowed for a participant was active in more than one group to provide responses for all relevant groups. The next section describes the quantitative findings of the Phase II data collection.

**Phase II – Quantitative Findings**

The purpose of this study was to analyze and attempt to discover the reasons why *Second Life* did not emerge as a mainstream educational course platform system as was predicted. The researcher designed and implemented a mixed methodology approach, with Phase One being a qualitative study involving personal interviews with administrators at higher education institutions that maintained a presence in *Second Life*. Phase One was conducted as a phenomenology with data being gathered, coded, and analyzed resulting in the emergence of four themes and eighteen sub-themes. The themes and sub-themes were used to construct a survey instrument that was subsequently deployed to students, instructors, and instructional designers experienced with teaching and learning in *Second Life*. The quantitative phase of the study consisted of disseminating a single online survey distributed openly via LISTSERVES as well as to known students, instructors, and instructional designers who had participated in an educational activity within *Second Life*. Data were gathered from this survey with the
total potential sample size unknown. The results were provided by 658 respondents from institutions where Second Life was actively used as a course platform. The participants consisted of 202 students, 250 instructors, and 206 instructional designers. Figure 22 illustrates the participants by group.

The data gathered from survey respondents were used to perform an exploratory factor analysis (EFA). An EFA analysis using SPSS was carried out to identify groups or clusters of variables and to reduce the data set to a manageable size while concurrently retaining the variables that helped explain why Second Life did not become a mainstream course delivery system as predicted. The EFA was also performed on the quantitative data derived from the qualitative analysis in an effort to validate and triangulate the qualitative data. A separate EFA was performed for each survey group as the variables differed from group to group. This section contains the results and interpretation of these analyses.

![Participants](image.png)

*Figure 22. Total Quantitative Survey Participants. Breakdown of the 658 participants leaving usable survey responses by relevant grouping (C. Mark).*
Students

The student sample consisted of 202 respondents who had taken at least one higher education course with all or some portion requiring the use of Second Life as a course platform. Students, as a major stakeholder group, were able to provide data from the user’s perspective concerning the effectiveness of the platform as well as ease of use.

Reliability of Student Factors. The reliability of each factor was determined using Cronbach’s alpha. The student acceptance and hardware issues subscales had reliabilities over .7. On the other hand, the usability subscale had a relatively low reliability, with a Cronbach’s alpha of $\alpha = .37$. Generally, a value of .7 is acceptable; however, when dealing with psychological contracts values below .7 can realistically be expected because of the diversity of the constructs being measured (Field, 2009).

Analysis. A principal component analysis (PCA) was conducted for the student group on the nine items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin (KMO) measure verified the sampling adequacy for the analysis, KMO = .609, and all KMO values for individual items were above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 = (36) = 394.787, p < .001$, indicated that correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Three components had eigenvalues over Kaiser’s criterion of 1 and in combination explained 60.16% of the variance. The scree plot confirmed these results and justified keeping the three components of student acceptance, hardware issues, and usability. Table 1 shows the factor loadings after rotation, the eigenvalues, and the reliability of each component. The items that cluster on
the same components suggested that component one represented student acceptance; component two, hardware issues; and component three, usability.

**Student Acceptance.** Student Acceptance accounted for 25.1% of the variance and consisted of three items as shown in Table 1. Students found Second Life to be substandard in terms of graphics and the appearance of the environment, reporting they did not make the connection between the nature of the technology and how the technology will be of benefit, user acceptance will be low and the technology will not become adopted and diffused. Students who perceived that Second Life was a waste of time clearly did not see how the technology provided an environment for learning. Rogers (2003) explained how the characteristics of innovations as perceived by individuals help explain adoption rates. The perception of the students sampled was that Second Life did not serve a purpose indicating that relative advantage of the technology was low. Relative advantage is the degree to which an innovation is perceived to be better than the idea it supersedes (Rogers, 2003). Students did not perceive a relative advantage because they did not see the purpose of the technology.

**Hardware Issues.** Hardware issues accounted for 19.64% of the variance for the student sample as shown in Table 1. Second Life is hardware intensive, and not having adequate hardware significantly affects the overall experience when trying to use the platform. Students indicated they had a high degree of serious hardware issues, and the frequency of those issues was high. Hardware issues could be due to not having an enhanced graphics card, not having a fast enough Internet connection, or having a slow
processor. These issues may have caused frustration for students because not having the proper hardware makes seeing and moving through the virtual environment difficult.

Table 1

*Rotated Factor Loadings for Student Group*

<table>
<thead>
<tr>
<th>Item</th>
<th>Student Acceptance</th>
<th>Hardware Issues</th>
<th>Usability</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a Student SL is Too Cartoonish</td>
<td>.779</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a Student Did Not see a Purpose to SL</td>
<td>.777</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a Student SL Was a Waste of Time</td>
<td>.740</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a Student Graphics not Up to Expectations</td>
<td>.627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a Student Seriousness of Hardware issues</td>
<td></td>
<td>.917</td>
<td></td>
</tr>
<tr>
<td>As a Student Frequency of Hardware Issues</td>
<td>.895</td>
<td></td>
<td></td>
</tr>
<tr>
<td>As a Student SL Distracted from Learning</td>
<td></td>
<td>.736</td>
<td></td>
</tr>
<tr>
<td>As a Student Technical Issue Improvement</td>
<td></td>
<td>.656</td>
<td></td>
</tr>
<tr>
<td>As a Student How Easy to Become Proficient</td>
<td></td>
<td>.547</td>
<td></td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>2.26</td>
<td>1.77</td>
<td>1.39</td>
</tr>
<tr>
<td>% of Variance</td>
<td>25.1</td>
<td>19.64</td>
<td>15.42</td>
</tr>
<tr>
<td>α</td>
<td>.722</td>
<td>.831</td>
<td>.372</td>
</tr>
</tbody>
</table>

*Usability.* Usability accounted for 15.42% of the variance in the student group as shown in Table 1. Usability and functionality are important to the overall outcome and experience of the learning process. The Task-Technology-Fit theory (TTFT) considers the fit among task requirements, individual abilities, and the functionality and interface of
the technology (Goodhue, 1997). The fit between the individual and the functionality of Second Life was problematic for the students surveyed. Students indicated that the environment distracted them as far as their learning process, and they did not perceive Second Life as a serious place for education, indicating a poor fit between the students’ expectations and the inherent nature of the platform. Further contributing to the issue of usability, students did not experience enough improvement with their technical issues to render Second Life as fully functional. Students reported problems with the initial learning curve and experienced difficulty becoming proficient enough to function comfortably in Second Life. According to Rogers (2003), complexity affects overall experience and the rate of adoption of technology. When technology is perceived as difficult to understand and use, many users will be resistant and develop an unfavorable perception of the technology.

Instructors

The instructor sample consisted of 250 participants with direct experience teaching a higher education course in Second Life. Instructors were a critical component of the study as they were usually the driving force behind an institution having a presence in Second Life. Instructors had to deal with students’ attitudes and perceptions, the institution’s concerns, delivering instruction, and technical problems with the Second Life platform.

Reliability of Instructor Factors. A Cronbach’s alpha analysis was performed on each of the six factors resulting from the Instructor EFA. Three of the factors had an alpha ($\alpha$) well above the recommended .7. One factor, lack of institutional support, was close to the recommended level at .684. The factors for time issues and Linden Lab
issues had lower values of $\alpha=.524$ and $\alpha=.650$ respectively. According to Field (2009), some factors in EFA are expected to be below the limit of .7 simply due to the sheer number and diversity of factors.

**Analysis.** A principal component analysis (PCA) was conducted for the instructor group on the 19 items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, $KMO = .672$, and all KMO values for individual items were above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 = (171) = 1293.083$, $p < .001$, indicated that correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Six components had eigenvalues over Kaiser’s criterion of 1 and in combination explained 64.189% of the variance. The scree plot confirmed these results and justified keeping the seven components: hardware issues, lack of institutional support, Linden Lab issues, time issues, increased time requirements than other teaching methods, and student acceptance. Table 2 shows the factor loadings after rotation, eigenvalues, and reliability for each component. The items that cluster on the same components suggest that component one represents hardware issues; component two, lack of institutional support; component three, Linden Lab issues; component four, time issues; component five, increased time requirements than other teaching methods; and component six, student acceptance.

**Hardware Issues.** Hardware issues contributed 20.658% of the variance and consisted of three items as shown in Table 2. The instructors surveyed experienced hardware problems much like the student group, with issues being classified as serious in nature and occurring with regular frequency. Instructors also had to deal with students’
hardware issues when students could not access the platform or had a less then optimal experience due to substandard hardware.

*Lack of Institutional Support.* Lack of institutional support accounted for 12.627% of the variance and consisted of four items as shown in Table 2. Instructors indicated they believed their institutions were not interested in the concept of virtual worlds, and *Second Life* in particular. This lack of interest led to instructors receiving little or no support to allow for effective teaching in *Second Life*. Institutions did not provide a great deal of technical support, which did not help with the ongoing hardware problems experienced by students and instructors. Teaching in virtual worlds requires commitment and support from instructional designers with knowledge of how to best teach in this environment, as well as how to construct the environment to take advantage of the potential benefits offered. Instructors indicated that instructional designers did not provide support, and thus, instructors did not have enough knowledge about the environment to be helpful to themselves and students. According to Rogers (2003), an innovation will not be adopted unless it is compatible with stakeholders’ values and beliefs. If administrators at these institutions did not understand the concept of virtual worlds fully or were uncomfortable supporting *Second Life* this may have contributed to the frustration of instructors who lacked the support from administrators, technical personnel, and instructional designers necessary for class success.

*Linden Lab Issues.* Linden Lab issues accounted for 10.038% of the variance and consisted of four items as shown in Table 2. Linden Lab is the creator and owner of *Second Life* and an important stakeholder for institutions involved in teaching and learning in this environment. Instructors perceived sufficient support was not received
Table 2

*Rotated Factor Loadings for Instructor Group*

<table>
<thead>
<tr>
<th></th>
<th>Hardware Issues</th>
<th>Lack of Institutional Support</th>
<th>Linden Lab Issues</th>
<th>Instructor Time Issues</th>
<th>Time vs. Other Platforms</th>
<th>Student Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of Hardware Issues</td>
<td></td>
<td>.855</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seriousness of Hardware Issues</td>
<td></td>
<td>.825</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students’ Hardware Issues</td>
<td></td>
<td>.730</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack Instructor Design Knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.772</td>
</tr>
<tr>
<td>Lack of Technical Support</td>
<td></td>
<td>.747</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Interest Institution</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.737</td>
</tr>
<tr>
<td>Lack Support Instructional Designers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.627</td>
</tr>
<tr>
<td>Not Enough Technical Support Lind Lab</td>
<td></td>
<td>.853</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Support Lind Lab</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.776</td>
</tr>
<tr>
<td>Not enough Technical Support on Lind Lab Issues from Institution</td>
<td></td>
<td>.552</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in Educational Discount Policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.543</td>
</tr>
<tr>
<td>SL is Difficult to Learn</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.699</td>
</tr>
<tr>
<td>SL is Time Consuming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.687</td>
</tr>
<tr>
<td>Takes Too Much Time to Teach Effectively</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.682</td>
</tr>
<tr>
<td>As an Instructor Too Many Demands on Time for SL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.486</td>
</tr>
<tr>
<td>As an Instructor More Time Required for SL vs Online</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.845</td>
</tr>
<tr>
<td>As an Instructor More Time Required for SL vs FTF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.766</td>
</tr>
<tr>
<td>SL Graphics Were Not What Students Expected</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.803</td>
</tr>
<tr>
<td>Students Thought SL Was Too Cartoonish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.787</td>
</tr>
<tr>
<td>Eigenvalues</td>
<td>3.925</td>
<td>2.399</td>
<td>1.907</td>
<td>1.544</td>
<td>1.353</td>
<td>1.067</td>
</tr>
<tr>
<td>% of Variance</td>
<td>20.658</td>
<td>12.627</td>
<td>10.038</td>
<td>8.127</td>
<td>7.121</td>
<td>5.618</td>
</tr>
<tr>
<td>α</td>
<td>.807</td>
<td>.684</td>
<td>.65</td>
<td>.524</td>
<td>.892</td>
<td>.712</td>
</tr>
</tbody>
</table>
from Linden Lab. Linden Lab experienced a change in leadership in 2009 and 2010 shifting focus away from education and towards becoming a general entertainment platform. Instructors thought that due to this change in vision, Linden Lab did not address problems and issues that instructors faced in the higher education arena. In 2010, Linden Lab announced that the 50% educational discount given to higher education institutions would be eliminated. The impact on instructors using *Second Life* was significant, as strained higher education budgets did not allow for major cost increases. Instructors were not receiving support from their administrators regarding the continuing technical issues with Linden Lab and *Second Life*.

*Time Issues.* Time issues accounted for 8.127% of the variance and consisted of four items as shown in Table 2. Instructors indicated that being a faculty member required a significant time commitment and that many demands were made on their time, leaving little time to learn and master a new technology such as *Second Life*. *Second Life* has a steep learning curve and takes considerable time to learn. Trying to teach in *Second Life* is also very time intensive considering instructors need to find innovative and active learning activities in order to leverage the affordances offered to students by participating in *Second Life*.

*Time vs. Other Platforms.* Time vs. other platforms accounted for 7.121% of the variance and consisted of two items as shown by Table 2. Instructors are accustomed to preparing instruction for face-to-face classes and online classes. Support mechanisms are in place to assist instructors with existing technologies, for example, the use of a learning management system (LMS) often with the help of instructional designers. Due to the nature of *Second Life* and the lack of institutional support, instructors must invest more
time preparing, deploying, and teaching in *Second Life*. Instructors indicated teaching in *Second Life* is more work than teaching face-to-face or online. Instructors also have to deal with students’ technical issues, as well as their own technical issues that would not occur in a face-to-face or traditional online class.

**Student Acceptance.** Student acceptance accounted for 5.618% of the variance and consisted of two items as shown in Table 2. Instructors received feedback from students as to their perceptions of *Second Life* and found students thought *Second Life* was *cartoonish* with sub-standard graphics. These findings match similar results from the data analysis for the student group, as discussed previously.

**Instructional Designers**

The instructional designer sample consisted of 206 instructional designers with direct experience in designing the learning environment and learning activities for teaching and learning in *Second Life*. Instructional designers were included in this study because of their experience in dealing with administrators, faculty, students, and Linden Lab.

**Reliability of Instructional Designer Factors.** Of the three participant groups, the instructional designer group had the highest reliability measured by using Cronbach’s alpha. Four of the six factors had an alpha (\(\alpha\)) over .7, and one factor, the improvement of problems had a value \(\alpha=.673\). The lowest reliability score was for pedagogical value, with an \(\alpha=.618\) which according to Field (2009) is still acceptable.

**Analysis.** A principal component analysis (PCA) was conducted for the instructional designer group on the 24 items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO =
.712, and all KMO values for individual items were above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity $\chi^2 = (276) = 1871.232, p < .001$, indicated that correlations between items were sufficiently large for PCA. An initial analysis was completed to obtain eigenvalues for each component in the data. Six components had eigenvalues over Kaiser’s criterion of 1 and in combination explained 61.561% of the variance. The scree plot confirmed these results and justified keeping the six components: hardware issues, stakeholder engagement, lack of stakeholder interest, time issues, pedagogical value, and poor problem improvement. Table 3 shows the factor loadings after rotation. The items that cluster on the same components suggest that component one represents hardware issues; component two, stakeholder engagement; component three, lack of stakeholder interest; component four, time issues; component five, pedagogical value; and component six, poor problem improvement.

**Hardware Issues.** Hardware issues accounted for 19.855% of the variance and consisted of six items as shown in Table 3. Instructional designers had hardware issues of their own and indicated the issues were serious and frequent. Instructional designers were also aware of hardware issues experienced by both students and instructors. Second Life requires sufficient hardware to be able to effectively participate in the environment, and designers noted that students lacked the necessary hardware.

**Stakeholder Engagement.** Stakeholder engagement accounted for 14.267% of the variance and consisted of four items as shown in Table 3. Research indicated that Second Life has the potential to engage learners through active learning (Warburton, 2009); however instructional designers noted that students were not engaged and excited about
Table 3

Rotated Factor Loadings for Instructional Designer Group

<table>
<thead>
<tr>
<th></th>
<th>Hardware Issues</th>
<th>Stakeholder Engagement</th>
<th>Lack of Stakeholder Interest</th>
<th>Time Issues</th>
<th>Pedagogical Value</th>
<th>Poor Problem Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seriousness of Hardware Issues</td>
<td>.836</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Hardware Issues</td>
<td>.794</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instructor Hardware Issues</td>
<td>.792</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of Hardware Issues</td>
<td>.740</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Life Viewer Problems</td>
<td>.530</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Hardware Students</td>
<td>.407</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty are Not Engaged and Excited</td>
<td></td>
<td>.822</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent Support from Institution</td>
<td></td>
<td>.762</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rewarded for Using Technology</td>
<td></td>
<td>.755</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students are Not Engaged and Excited about SL</td>
<td></td>
<td>.493</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Interest Students</td>
<td>.836</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Interest Faculty</td>
<td>.813</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Interest Institution</td>
<td>.682</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Prep Time for SL than FTF</td>
<td></td>
<td>.817</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More Prep Time than Online</td>
<td></td>
<td>.797</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Takes Too Much Time to Teach Effectively</td>
<td></td>
<td>.557</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Not More Engaged</td>
<td>.450</td>
<td></td>
<td></td>
<td></td>
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Faculty were also perceived as not being engaged and excited about *Second Life*, which could explain the low engagement on the part of students. Designers expressed concern that they were not supported on an institutional level concerning *Second Life*, and they were not rewarded for trying and using new technology.

**Lack of Stakeholder Interest.** Lack of stakeholder interest accounted for 8.447% of the variance and consisted of three items as shown by Table 3. According to Rogers (2003), innovations are not adopted when observability and trialability are impossible or low. *Second Life* as a new technology was difficult to understand or to explain to administrators and others with no knowledge of the concept of virtual worlds. Observability and trialability were difficult unless an institution actually adopted *Second Life*, thus supporters of teaching and learning in *Second Life* had a difficult time convincing administrators to make this investment. Therefore, there was a general lack of interest amongst administrators, faculty, and students.

**Time Issues.** Time issues accounted for 7.595% of the variance and consisted of four factors as shown by Table 3. Instructional designers indicated that more time is required to teach effectively in *Second Life* than with other platforms. The designers also concurred with the instructor group in regard to *Second Life* requiring more preparation time as compared to face-to-face courses or traditional online courses.

**Pedagogical Value.** Pedagogical value accounted for 6.4% of the variance and consisted of four items as shown by Table 3. Instructional designers indicated that *Second Life* is not an effective means of providing education and deemed learning under this platform to be a waste of time. The Technology Acceptance Model (TAM) describes how new technology must have perceived usefulness and perceived ease of use for
adoption to occur (Davis, 1989). Instructional designers did not perceive Second Life to be a useful technology but rather an endeavor that was not worth the time and effort required. These participants went as far as declaring that Second Life does not increase student engagement but actually hinders the learning process due to distractive qualities.

Poor Problem Improvement. Poor problem improvement accounted for 4.997% of the variance and consisted of three items as shown in Table 3. Instructional designers indicated that Second Life is difficult to learn and has a steep learning curve. One would expect this learning curve to improve over time as more and more educators become involved in Second Life, but the instructional design participants indicated there was little learning curve improvement for students or designers. In addition, the designers did not see much improvement in the technical issues and problems with the hardware and software required to run Second Life. According to TAM, ease of use is a critical component of technology acceptance and refers to the degree to which a person believes that using a particular technology would be free of effort (Davis, 1989). Clearly, the designers did not perceive Second Life as having ease of use in the past, or present, as the learning curve and technical issues have not improved over time.

Summary

Phase Two of the study, the quantitative phase, consisted of analyzing responses to a survey instrument developed from the data derived from the qualitative phase. Responses were analyzed using exploratory factor analysis (EFA). EFA, a technique for identifying groups or clusters of variables was used in this study to understand the structure of the variables and to reduce the data set to a manageable size for analysis (Field, 2009). The survey instrument was used to gather data from three groups:
students, instructors, and instructional designers. A separate EFA was performed for each group due to each group having some unique variables.

After performing the EFA, three factors emerged for the student group: student acceptance, hardware issues, and usability. The data indicated that students have a difficult time accepting *Second Life* as a serious learning tool because they perceived the platform to be *cartoonish* in nature with substandard graphics. Moreover, students did not see the purpose of *Second Life* as it is not a game and there are no goals or quests to be made and won. Overall, students found the *Second Life* platform to be distracting with regards to serious learning and education. Students indicated that they had technical issues, particularly with the hardware required to run *Second Life* efficiently and felt that these technical issues were not improved or resolved over time.

After performing the EFA, six factors emerged for the instructor group: hardware issues, lack of institutional support, Linden Lab issues, time issues, course development time, and student acceptance. The data indicated that instructors had to deal with their own hardware issues as well as those of students as their institutions provided no technical support. Little support was available from instructional designers either. Linden Lab, the creator and owner of *Second Life* failed to provide technical support as well. Linden Lab became especially problematic for instructors when the company decided to no longer offer an educational discount to higher education institutions. Instructors became even more concerned and doubtful that Linden Lab would continue to provide any support to higher education, however mediocre. Time issues were a concern for instructors due to the steep learning curve experienced by both instructors and students. Instructors found that preparing a course to be taught in *Second Life* was more
time consuming than preparing a course in either a face-to-face or online format. Lastly, instructors found that their students were not taking Second Life seriously, believing the environment was *cartoonish* and the graphics were not up to expectations.

After performing the EFA, six factors emerged for the instructional designer group: hardware issues, stakeholder engagement, lack of stakeholder interest, time issues, pedagogical value, and poor problem improvement. Instructional designers also had issues with hardware, with the issue being compounded as the designers also had to deal with hardware problems experienced by the instructors and the students. Hardware problems were perceived to be serious in nature and occurring frequently, and as time went by these problems were not resolved. Engagement and lack of interest on the part of faculty and students caused the designers concern. A general lack of interest and support for Second Life by the institution existed causing designers to become frustrated and perceived that they were not being rewarded for experimenting with new technology. Designers, like instructors, also discovered Second Life required some serious time commitment to learn about the environment and design, and to prepare learning activities. Despite the amount of time spent on design activities in Second Life, students thought learning in Second Life was a waste of time, leading designers to believe that Second Life was distracting from learning, and was not an effective means of delivering education.

When reviewing and analyzing the data collected in Phase One and Phase Two, several similar themes, sub-themes, and factors emerged among the student, instructor, and instructional designers groups, although each group had a unique perspective on the issues facing their particular group. The next section discusses the combined findings from Phase One and Phase Two, the qualitative and quantitative phases of the study.
The Intersection of the Study Findings

This study used a mixed methods methodology to study the phenomenon of why *Second Life* did not become a mainstream course delivery method as was predicted. The findings from the qualitative data were presented and described at the beginning of this chapter followed by a discussion of the quantitative findings. This section analyzes factors that emerged from the quantitative phase as they intersect with the sub-themes that are derived from the qualitative phase and combines the results from the two phases.

*Student Group*

*Student Acceptance.* Students surveyed indicated that they found *Second Life* to be *cartoonish* in nature with substandard graphics. The administrator from Institution A described the issue with the graphical environment as being quite common. Students complained that the graphics were *lame* as compared to the graphics in *World of Warcraft* and *Minecraft* (two commercial video games). The administrator from Institution D had similar issues and compared the graphics to those available on games played on Xbox. According to the administrator from Institution D,

> The need for something like that has been superseded by gaming environments that have 3D communities. *World of Warcraft*, the military ones, even soccer has an environment, it's not quite this environment but I know that EA (Electronic Arts) has built that into a lot of their games. Massive multiplayer online games take advantage of this and are much more compelling. Because the software is being run on a dedicated machine like an Xbox, the graphics are much better. The interactions much better. If they built a *Second Life* client for Xbox that might solve some of that but I don't know if they can.
Of the participants surveyed, 33.6% indicated they were expert or regular gamers and another 35.3% indicated they were average gamers bringing the percent of respondents involved in gaming to 68.9%. Students entering Second Life expected the environment to be as graphically rich and textured as the ones they were used to and ended up with a disappointing experience in Second Life.

In addition to students finding the graphics substandard, the quantitative results for students surveyed also indicated that they did not see the purpose of Second Life, and therefore, believed using the platform for class was a waste of time. The administrator from Institution B experienced this situation and explained it as being related to students’ familiarity to gaming environments. In the gaming environment, there are quests, goals, points, and other rewards in a competitive situation. This does not exist in Second Life because Second Life is not a competitive game, although it is a virtual environment much like commercial gaming environments. This led to confusion on the part of students. According to the administrator from Institution B,

They really struggled with the idea of why we were doing this and I think that was a big struggle for a lot of people in the students’ age group. What's the point? There's no real motivation. There is no goal. It's not goal driven. It's whatever you want to make it. In modern games there are problems to solve.

**Student Hardware Issues.** Students surveyed indicated they dealt with serious hardware issues when interacting with Second Life with 27% of the students indicating the issues were very serious. These hardware issues were also happening with a high degree of frequency with 45% of students having issues frequently or continuously. Second Life is hardware resource intensive when optimizing the users’ experience.
Computers with enhanced graphics cards, high-speed processors, and a high speed Internet connection are critical. According to the Administrator at Institution D,

This was a concern for faculty going in and it turned out to be realized. There were some students who really struggled with the computer equipment they had not being sufficient. We actually upgraded at least two labs on campus to make sure they could run it which again is an expense that wasn't budgeted for and was covered by ITS that probably the value was never realized. So the students although they always didn't like to hear this especially, if they were distance learning oriented, could come to campus. We had access to Second Life or they [students] could do it from home on their less than desirable machine but it was a less than desirable experience as they had to tone things down or change the settings [of their Second Life viewer software] so they couldn't see much.

*Usability.* Students surveyed indicated that Second Life as a course platform distracted them from the learning process. The distraction from learning could be due to the graphical nature of Second Life appearing too game-like, but it could also be due to having to learn through the presence of an avatar. Avatars do not have to look like the actual person; the avatar represents and can even take any form including an animal or a machine. This was especially true when faculty were the ones enamored with the idea of creating an avatar for teaching that deviated from their appearance. According to the administrator from Institution D,

Just like in their online classes the first thing faculty asked me has traditionally been, "how do I change the colors, how do I change the buttons, how do I make it look pretty?" That's what folks were interested in with their avatars... how do I
make myself pretty... I want to look like this or that... like an animal... that's what they were interested in doing. Which is part of the problem. It's both a blessing and a curse. It gets people excited about it but it distracts them from what they could maybe be doing. It was also confusing for the students.

Second Life was also distracting for students because outside avatars could drop in during an active class without warning and without being invited. There was a concern among administrators that these visitors could do harm in the form of griefing, an action taken to intimidate, threaten, or harass others. Administrators described how training was conducted and instructors shown what to do should this happen although it could not be totally prevented. Students could also wander into other areas within Second Life and become distracted by the activities occurring—especially adult-themed activities—a grave concern for administrators concerned with students’ perceived well being.

According to the administrator from Institution C,

The interesting thing and the question came up largely because do you turn 18 to 21-year-olds lose in Second Life knowing that they can just as easily land in in a rather unscrupulous zone, as you might in an academic area. So that became one of the questions.

Students surveyed indicated that usability of the Second Life environment was hampered by the rather steep learning curve and the time required to become proficient as indicated by 50.23% of the students. Most institutions and instructors provided an orientation to Second Life in an effort to get students proficient enough to attend class and participate. The Administrators from Institutions B and D described situations where large portions of class time at the beginning of a course in Second Life were spent
training the students in how to navigate, communicate, and participate in the environment. As John Lester, former Education Director for Linden Lab pointed out, *Second Life* by design is difficult for students to enter and become functional. According to Mr. Lester,

> It also, to be honest, it also comes down to students. If you're trying to get students in these environments it's a lot easier to get them to just use a simple social media versus a complex client that you have to log into. It's ease of use. Ease of getting into it. Everybody gets the same registration system that everyone else has which is a long, unfortunate long process that is too complicated.

A comparison, then, of the issues described by university administrators in the qualitative research is echoed by the responses from students to the survey questions. The factors elicited by the exploratory factory analysis were indeed likewise reported by survey participants, thus providing a crosscheck on validity. Administrators of programs utilizing 3D online immersive virtual environments in the future should find ways of addressing the graphics quality issue, hardware issues, and perceived usability issues in order to improve the satisfaction of student participants and the effectiveness of the learning activities. This data also validates the findings of Rogers (2003) concerning the likelihood of an innovation being adopted and diffused.

**Instructors and Instructional Designers Groups**

The factors discussed in this section were common to respondents in both the instructor group and the instructional designer group and will be discussed together. The following sections will discuss factors for instructors not pertaining to instructional designers and then factors for instructional designers not pertaining to instructors.
**Hardware Issues.** Instructors and instructional designers surveyed indicated that they had serious and frequent hardware issues and observed and dealt with their students having hardware issues as well. Instructors and instructional designers reported issues with hardware with 51.8% classifying them as frequent or continuous, and 41.72 classifying them as serious. Instructors and instructional designers indicated that 58.27% of their students had frequent and continuous hardware problems. *Second Life* has above average hardware requirements for an optimal experience. Instructors and instructional designers had the advantage of using university equipment, which for the most part was upgraded, but there were issues with Internet connection and hardware limitations, especially when working off campus. The administrator from Institution F described a frequently occurring hardware situation that became more severe with inferior hardware. According to the administrator from Institution F,

> It did okay but like anything the more people you had the slower it ran and there really was a threshold at which it just wasn't it just didn't work very well. I think once you get more than 10 people in the room things really just start being really too difficult to manage and it was worse for students working on their own computers.

The administrator from Institution A described the situation encountered with students having inferior hardware and how it created a divide among the students trying to learn in *Second Life*. According to the administrator from Institution A,

> Students were not coming in to *Second Life* for the whole course because one of the things that we quickly found out was that a lot of our students at our school did not have computers that would support *Second Life*. There was this massive
hesitation after we tried it in the first class. It was wonderfully received by those who could access it, but for those who could not there was this automatic divide in the class of those who can and those who can't. My brother happened to be in the class at the time and he was like, "I hate this. I abhor this, and it wasn't because it was not a valuable activity but the platform kept getting in the way. His computer could not run it and again we ran into the computers just can't run it.

The administrator from Institution F summed up the issue of hardware issues by commenting, “Technology and non-technical people trying to work in a very technical environment creates these problems.”

*Lack of Support and Interest.* Instructors and instructional designers surveyed experienced a general lack of support from the various stakeholders in their institutions making the situation difficult for teaching and learning in *Second Life*. Of instructors and instructional designers responding, 26.8% indicated lack of interest and support was the main reason *Second Life* was no longer being used at their institution. Instructors and instructional designers indicated their institutions were not interested in *Second Life*. Administrators interviewed described how difficult it was to explain the concept of virtual worlds and *Second Life* to others at the institution. Most institutions did not have a dedicated staff or person to carry out the administrative and technical functions in *Second Life*. Instructional designers were allocated to other projects involving more mainstream technology such their LMS or social media. This lack of interest was further exacerbated by the control concerns expressed by many administrators. John Lester discussed how he had to continually explain the environment to administrators and address their concerns, some of which were quite valid. According to Mr. Lester,
Those concerns being things like being able to back up your content, being able to export your content, being able to have more control over who is in your environment, and being able to create a private environment in *Second Life*.

Budget allocation issues also caused administrators to stop supporting *Second Life*, as they could not justify spending budget dollars on a platform that appeared to be used by only a few stakeholders. According to the administrator from Institution C,

They (administrators) were very confused. Part of the problem was that the people, the faculty who were involved got it. For the most part. Saying, “hey this is something we could really do.” But at the upper administrative level they generally didn't see the full value and largely because it just didn't sync with what they had already laid out for their budgets. There wasn't a place. This was at a time when universities probably didn't have a social media person who was responsible for social media. This was 2008 - 2009 and we still weren't there yet. I think that there were people who were high enough where if there was enough interest we could've really put it forward but no one had the money and nobody wanted to spend money on something they thought was unproven.

*Time Issues*.

Instructors and instructional designers surveyed indicated that teaching in *Second Life* was time consuming due to the time it takes to learn the platform and the time it takes to teach effectively in the environment. In addition, 24.2% of instructors and instructional designers indicated that there were too many demands on their time. Administrators confirmed that the time commitment required to teach in the *Second Life*
environment and be effective is unrealistic when considering totality of demands placed upon faculty.

Administrators recognized that faculty did not have the time to actually build artifacts for teaching in *Second Life*, and some administrators looked for other resources within their institutions, but still had to manage time constraints. According to the administrator from Institution D,

I would've liked to have had more folks available to work with faculty, to encourage faculty, to help faculty to get engaged. Maybe we could have done some of the building for them. We had people with skills but not with time to do that because they had other full-time jobs and their supervisors were not giving them up. Any involvement was all on their own time.

The administrator from Institution D described how demands on faculty time are increasing and how difficult it has become for faculty to take the time to learn the *Second Life* platform, design learning activities, and then teach effectively has. According to the administrator from Institution D,

Others looked around and said this isn't for me, or what happened more often than not is that folks were just too busy with other things and they didn't have the time to devote to this. They are not going to get in here and do some research and get something published quick enough to get them help in the T & P process and that's what they really need to focus on plus other classes are teaching.

*Time vs. Other Teaching Platforms.* Instructors and instructional designers surveyed indicated that teaching in *Second Life* requires more time and preparation than teaching a face-to-face class or a traditional online class. Of instructors and instructional
designers responding, 68.1% indicated teaching in Second Life required significantly more time than teaching a traditional online course, and 74.2% responded that significantly more time is required to teach in Second Life than teaching a face-to-face course. Administrators discussed how teaching in Second Life is different from other forms of teaching and requires more of a time commitment on the part of faculty. According to the administrator from Institution B,

I think the learning curve was the biggest thing. I think they had difficulty envisioning it. I think to be really good at teaching in Second Life and to teach something better than you could teach in the real-life face-to-face classroom you have to do a lot of work. It's a lot of development. Usually it involves having to do building and requires a tremendous investment of time.

Other administrators realized that using Second Life effectively required a different type of strategy than those used for teaching face-to-face or in a traditional online setting. According to the administrator from Institution F,

I think one of the biggest things probably that we learned when we began implementing Second Life was, "don't come in replicate what you're already doing. It doesn't work well."

Instructors Group

The following discussion concerns factors that emerged for the instructor group, but did not emerge for the instructional designer group. These factors are concerned with issues dealing with Linden Lab in addition to issues surrounding student acceptance of Second Life.
Linden Lab Issues. Instructors surveyed indicated they had issues with Linden Lab as far as providing support for education as well as technical support. For the question concerning technical support from Linden Lab, 82.7% of instructors indicated that Linden Lab was not supportive and did not consider or meet their needs as far as teaching in Second Life. Administrators interviewed concurred with these issues and questioned whether Linden Lab was interested in the education market. Many of the concerns were technical in nature and concerned administrators as discussed previously, and it became clear those concerns were valid. The administrator from Institution C described how his/her university’s island was the victim of cyber vandalism with all content being destroyed. The content could not be retrieved because Linden Lab does not back up user content, and the university was unable to keep a copy on university servers.

John Lester admitted that Linden Lab did not meet the needs of educators. According to Mr. Lester,

I wish I could have done more to make things happen, like for example the whole idea of having the data portability is just so important I think. And other things like having a client that works on a web browser having a web-based interface and all of this. It's a nightmare for educators to get their computer science people and IT people to install new software. It is always a challenge but what you want to do is have it in your labs, so you have to sacrifice a goat or something to the gods of IT... "all I want to do is put up a new version but we know we have to have an approval technical review and its locked down on this workstation you can't do it," so there was a lot of that.
The problems with Linden Lab escalated during 2011 when Linden Lab announced they would no longer offer an educational discount to higher education institutions. According to the administrators interviewed this was a turning point in their institution’s decision to continue a presence in *Second Life*. Moreover, the change in the pricing structure sent a message to the education community that Linden Lab was no longer interested in supporting the education market. According to the administrator from Institution F,

> It was a push away from the educational side. I think it was shock to a lot of the environment. We realized an okay return on investment but to kind of answer your big question the reason that we got away from it was because they did away with the educational discount and we were not seeing a return on investment that justified the additional expense.

John Lester, after being hired by Linden Lab, was responsible for getting Linden Lab to understand the budget process and budget constraints in higher education. Mr. Lester understood the impact of changing the discount policy, especially during the middle of the academic year, would have on higher education institutions. According to Mr. Lester,

> One of the few things that I was able to lobby for that actually went through was the educational discount. That was because I said we should be discounting things for educators because that's the way it works with academics and so that was really something that I lobbied hard for. Ultimately, on the engineering side of things to be honest, I was very disappointed with the fact that the company didn't get behind some of these real needs for educators. So at the same time I
don't think it was fully Linden Lab's fault and it was also not just technical. For example not understanding the academic cycle of funding not understanding how their certain funding agencies work. How you don't suddenly change the monthly pricing of your regions in the middle of a cycle in a period of time when educators have already negotiated a budget for the next year.

*Student Acceptance.* Instructors surveyed indicated that students had a hard time accepting *Second Life* as a learning platform due to perceiving the graphics to be inferior and the environment to be *cartoonish*. Engaging students in a class in which they believe some activities are a waste of time can be difficult and demoralizing. Administrators concurred as described above in the Student Section.

*Instructional Designers Group*

The following discussion concerns issues reported by the instructional designer group, but not the instructor group. These issues concern the actual pedagogical value of learning activities created for virtual spaces and course delivery within *Second Life* and their frustration with the lack of improvement of technical issues that impacted the operation of course activities and management.

*Pedagogical Value.* Instructional designers surveyed indicated *Second Life* is not an effective means of providing education as the platform distracts students from learning and as a result is a waste of time. Administrators interviewed expressed concern about the way content was being delivered and how learning activities were being conducted in *Second Life*. The administrator from Institution F discussed how teaching and learning in *Second Life* could have a positive impact on knowledge and engagement, but the learning
had to be structured in a manner appropriate for the unique nature of the platform.

According to the administrator from Institution F,

After you look at all the data, we had a seven-point improvement in our students taking classes through this 3D virtual environment than any of the other students in any of the other platform delivery methods. We know that with the right use of the environment it can be a much better. The students just don't get it if they don't get an opportunity to interact. Some faculty went along with the idea that we're going to build our classroom just like what we have in our college and then I'm going to stand up in front of the group and I'm just going to lecture to them the whole time. We also fell into let's just do class hours. If you just do lab time or class hours or office hours without any real content it doesn't work and it is just setting it up to fail. There's no point to the student coming in unless they are actually learning something when they're in this environment.

John Lester worked with and advised many higher education institutions regarding how to structure learning in Second Life. Mr. Lester observed,

A lot of faculty came in here and they weren't really sure how to best use the environment. There was also a lot of people coming in here and building physical buildings, re-creations of physical world stuff. It's like here's a classroom, sit here and watch a slideshow presentation. This was not the best educational use for Second Life.

*Improvement of Problems.* Instructional designers surveyed indicated that they had not experienced improvements with problems dealing with technology issues in addition to problems dealing with improvement in the steep learning curve.
Administrators interviewed described how Linden Lab was not responsive to their concerns dealing with technology and did not respond with solutions for issues such as being able to own the content, being able to transfer the content, and making it easier and seamless for students to enter and navigate the environment. Clearly, to these administrators, Linden Lab had changed priorities and supporting education in *Second Life* was not one of them. John Lester confirmed this shift stating the following,

> A big chunk of the company got let go and Linden Lab clearly in 2010 stated that education and supporting educators is not important. They didn't say that with a press release they said that through action. And what happened in 2010 was that Linden Lab completely let go of anyone that had anything to do with supporting any specific market. So they let go every one having to do things with business, with education, which included me. They got rid of the entire community development team.

*Sub-themes not in Factors*

Some sub-themes contained in the qualitative analysis were not confirmed in the quantitative analysis. Figure 23 shows a listing of the sub-themes and factors with the commonalities between the two. Sub-theme items with an asterisk are those items that were not common to the factors and are explained below.

*Institutional Legal Concerns.* Institutional legal concerns were not an issue for the instructors or instructional designers surveyed. Administrators interviewed discussed several concerns with legal issues that arose at the executive level of their institutions such as use of school colors and logos, recreating buildings with donors’ names visible, and issues concerning student safety. These issues were on a level above the instructors
Figure 23: The Intersection: Qualitative Sub-themes & Quantitative Factors. The six major commonalities between the qualitative sub-themes and the quantitative factors (C. Mark).
and instructional designers; therefore instructors and instructional designers did not deal directly with these legal concerns, and legal concerns did not emerge as a factor in the quantitative study.

*Faculty Tenure and Promotion Concerns.* Instructors surveyed did not indicate that they had concerns that *Second Life* activities may hinder their chances for tenure and promotion. Instructors surveyed were concerned with time issues and the increasing demands placed on their time, but did not indicate there was an effect on tenure and promotion activities. Administrators were sensitive to additional time demands placed upon faculty and indicated that *Second Life* may not play well into research and publishing for some faculty. Of the instructors responding, 34.2% indicated they believed *Second Life* was a primary research area with 61.9% stating that *Second Life* activities had no effect on their tenure and promotion efforts.

*Lack of Learning System Management Integration.* Students, instructors, and instructional designers surveyed did not indicate that having *Second Life* integrated into their LMS would improve the overall *Second Life* experience. Administrators discussed the convenience of having one place for students and instructors to sign-in and suggested LMS integration may increase the usage of *Second Life*. Students, instructors, and instructional designers were neutral on the integration of *Second Life* into their LMS more so than administrators, possibly due to their different perspectives. These groups are used to signing-in to multiple social network platforms, and signing-in separately to *Second Life* is consistent with their current practices and habits.

*Technology Replacement for Second Life.* Students, instructors, and instructional designers did not indicate that they were actively using replacements for *Second Life*
technology. Administrators interviewed spoke about the ways their institutions used Second Life and the difficulties experienced trying to meet their goals using the technology. As technology advanced and other social media applications became available the administrators found other applications would better meet their needs and increase the ease of use at the same time. Students, instructors, and instructional designers surveyed indicated they were using different forms of social media in their classes, but did not see them as a substitute for Second Life.

Summary

The purpose of this study was to explain why Second Life did not become a mainstream course delivery method as was predicted. After coding and analyzing the qualitative data for the study, four themes and eighteen sub-themes were discovered. Three groups, students, instructors, and instructional designers were surveyed for the quantitative phase of the study, and after performing an EFA fifteen factors emerged for the three groups. After comparing the sub-themes and factors, six areas of commonalities were found to exist between the qualitative and quantitative data. These areas were: student acceptance and usability, lack of support, interest, and engagement, technical issues, time issues, Linden Lab issues, and pedagogical value.

This concludes the chapter of the study describing the findings from the qualitative and quantitative phases of the research. The final chapter follows and consists of the conclusions and discussion, limitations of the study, recommendations for stakeholder groups, and recommendations for future research.
CHAPTER V
DISCUSSION

This chapter wraps up the study by providing a discussion of the research questions and related findings in the opening section. Next, a look at the limitations of this study, issues that the reader must keep in mind, especially when considering whether to generalize the findings to other groups or other related experiences, past, present, or future. No research study would be complete without a discussion of how the results might impact policy and practice, so recommendations are suggested for all of the various stakeholder groups. Recommendations are also provided concerning avenues for future research, and suggestions for possible inquiry. Finally, a quick look ahead is provided, especially since indications are signaling a rekindling of educational interest in Second Life, namely the restoration of the educational pricing discount. This section also contains a quick look at a few of the emerging competitors of Second Life as well.

The purpose of this study was to investigate some of the reasons why 3D online immersive virtual environments, most notably Second Life, failed to live up to their promise as an educational delivery vehicle. Second Life was developed in 2003 and was heralded to be the next major technological advance in education. A thorough review of the literature reveals numerous predictions that Second Life would become the course delivery method of choice, and institutions of higher learning rushed to create their own online presence so that by 2007 over 300 colleges and universities would have installations within the virtual environment (Linden Lab, 2012). Articles about Second Life and education abounded in publications ranging from the popular press to serious academic journals, most of which sang the praises of this emerging technology.
Beginning in 2009 the tide began to change as Second Life moved quickly through the phases in the Gartner Report's hype cycle. By 2011, many institutions began to scale back their presence in Second Life, many going as far as to close down their installations completely. By 2013, few if any colleges and universities remained in Second Life. Some of these institutions discontinued the use of any 3D online immersive environment while others migrated to new virtual worlds which offered technical improvements and logistical solutions to some of the problems inherent within Second Life as indicated by the administrators interviewed and participants surveyed.

Much of the literature, albeit predating 2011, discusses the positive features of these new educational delivery vehicles while concomitantly glossing over or ignoring features concerning the acceptance, usability, and diffusion of the technology. Even literature post dating 2011 failed to address in-depth the actual reasons and decision-making pressures that caused what seemed to be a mass exodus from what was once a highly touted virtual world. This study attempted to partially fill that gap by gathering data specifically aimed at the reasons why an educational platform that once had so much promise failed to live up to expectations. Chapter V concludes this research project and provides a general discussion of the research findings, including the research questions. This chapter includes a discussion of the limitations of the study, recommendations for the various stakeholder groups as framed by the research questions, and a look at the implications of the research. The study will conclude with some recommendations for future research and a short look to the future—seemingly brighter by the end of 2013—as well as some suggestions for future research to add to the body of literature.
Many higher education administrators and instructors proposed the use of *Second Life* as a new way to deliver online courses, and researchers predicted that it would become the preferred method of course delivery. These predictions and expectations never materialized. The three theories that could be employed to explore and explain this phenomenon include: Roger’s (2003) Innovation Diffusion Theory (IDT), Davis’ (1989) Technology Acceptance Model (TAM), and Goodhue’s (1997) Task-Technology Fit Theory (TTFT).

Conclusions and Discussion

*Second Life*, a 3D online immersive virtual environment, appeared on the scene beginning in 2003 and was heralded as a major innovation in online teaching and learning reaching its zenith in 2007 when the scholarly world was awash in literature dealing with wide and varied aspects of the virtual world. By 2011, the educational usage of *Second Life* was in serious decline, and by 2013 the vast majority of higher education institutions had closed or scaled back their operations. In this study, the researcher has attempted to ferret out reasons why this occurred. Specifically, why did a software platform such as *Second Life* rise so quickly and then faded just as quickly?

For this study, four specific research questions were developed that centered on administrative decision-making. The researcher developed a mixed methods research design beginning with a qualitative study of higher education administrators coupled with a quantitative survey of students, instructors, and instructional designers. For Phase One, the qualitative portion of this study, seven university administrators and one Linden Lab executive participated through in-depth personal interviews that were recorded and transcribed. For Phase Two, the quantitative portion of this study, an extensive survey
instrument was deployed online and collected 658 usable responses from students, instructors, and instructional designers. Discussion in this chapter will begin with the research questions.

Qualitative Research Question 1: What are college/university administrators’ current opinions about the use of 3D immersive virtual worlds such as Second Life for teaching and learning in higher education?

Administrators interviewed all expressed that they believed in the idea of virtual worlds and the potential for using them for effective and engaging learning. There was consensus that Second Life was probably not the most sustainable platform of the future but some form of 3D online immersive virtual environment would eventually be used in education. According to the administrator from Institution A,

Virtual worlds will become prominent in education if we could get a platform that doesn't require massive computing ability and I think we'll see it happen. I think the potential is there. I think we just need to find the right platform to do it.

Virtual worlds provide an environment conducive to immersive learning. Research conducted by Salmon (2009) concluded that the use of virtual environments for teaching and learning has merit. The immersive nature of the environment allows users to feel connected to others in the environment leading to a reduced sense of isolation often experienced in a traditional online course. Students and instructors are able to develop a sense of belonging leading to a richer, more engaging experience (Salmon, 2009). Virtual worlds also allow for exposure to authentic content and culture (Warburton, 2009). Experiences and places can be recreated and experienced in an immersive fashion as described by the administrator from Institution D,
One of the sites I would often show to people was where you would walk in and experience what it's like to be schizophrenic. You heard voices and saw illusions. It was really pretty powerful. I would log into Second Life and show students in a psychology class and I said “listen I can tell you about schizophrenia and what it's like. I can show you videos of someone who's schizophrenic but here's where you are experiencing with your avatar what's going on." I think for me it was much more powerful than those other ways of being exposed to it.

Some administrators talked about simulations and how virtual worlds are the perfect place to use them in situations where tasks are not able to be done in real life because it would be dangerous or costly. The administrator from Institution F said,

I think they (virtual worlds) will have their place. I saw a cultural base simulation in Second Life for soldiers who are deployed to Afghanistan and it's a first-person style game where they go in and they interact with 100 to 200 characters. This is actually being used and is funded by the DOD. I'm not sure what the stats are but there's been a significant drop in problems because they found when the soldiers deploy they're most likely to be killed or wounded within the first two to three weeks and they want to know why this is. Is it that they don't understand the culture and do something stupid without realizing it? So now this has drastically reduced the number of deaths within that time window. For things like that, yes, there is absolutely a major place for these innovations.

The administrator from Institution F discussed how virtual worlds have the potential to increase knowledge and retention in education as compared to a traditional
online platform, as well as face-face delivery methods. According to the administrator from Institution F,

We compared all the traditional online courses and as well as the face-to-face courses and we began doing the numbers against our retention and overall performance for the students. Those were the two things that we pulled out and looked at and after looking at all the data we had a seven point improvement in our students taking classes through this 3D virtual environment than any of the other students in any of the other platform delivery methods. Seven points, so we had students that were literally going from 65 to a 72 and we were comparing apples to apples here as best as we could against all the environments and so we know that with the right use of the environment it can be a much better. Our retention rate was 88.9%. We know the environments can be very effective.

Most of the administrators interviewed discussed how virtual worlds have the potential to create a community of learners and researchers. The nature of virtual worlds allows participants to gain access and share space with others from all over the world allowing students and instructors to meet and collaborate with people they would never have met in person. This collaboration could include research, conferences, exchanges of ideas and information, and new relationships. Virtual worlds offer a unique opportunity for extended or rich interactions between individuals and communities creating a community presence that promotes a sense of belonging and purpose that creates cohesiveness among groups, subcultures, and geography (Warburton, 2009). According to the administrator from Institution G,
The thing I think that intrigued us the most about virtual worlds was the community itself. When I say the community itself of course I mean meeting people who are contributing content. We really like the idea of being able to share data with X University, creating environments like Y University with their biology build. We had the learning director from NASA give our aeronautic students, who are mechanic-based, tours of the NASA simulators as far as their rockets and turbine engines. That ability to share content within the environment is something that was very intriguing to us. We could take our students out on field trips and give them exposure to people that we would not normally be able to get in contact with. This expertise was out there and we have the ability to interact with them in a way that we never had before. We were bringing people in from IBM and they were very knowledgeable and we brought them into our classrooms and they were helping provide content to our students. It's just having that community where you can share this content back and forth that really attracted us to virtual worlds.

John Lester talked about how virtual worlds have a future as they have a unique power of creating a community of learners. According to Mr. Lester, Virtual worlds provide the subtle power of being able to have a lot of interdisciplinary encounters. People just bumping into each other with total different interdisciplinary perspectives on things are able to collaborate right then and there. They may say, "while we are standing here let's start building something, let's start designing something." I do think the one thing that Second Life did was to get the attention of some very innovative people, very quickly.
Within three years there were so many people piling into this environment who were truly pioneers in this education space, and those people, the connections made, the friendships formed with those people, will outlast any company or any particular technological platform. The way I think of it is that Second Life had this galvanizing effect on the education community and suddenly anyone interested in immersive leaning in the broadest sense came into Second Life and talked to each other at some point as the community was very tight. 

Overwhelmingly, the administrators interviewed cited example after example of the potential of virtual worlds with the general belief that with improvements in technology virtual worlds have a place in the higher education arena and will make a comeback in some form. None of the administrators interviewed described a bright future for Second Life as a course platform, even the administrator from Institution E where Second Life is still being used for its Early High School Program stated they were expecting to replace Second Life in the next few years with a more robust, problem-free virtual world platform.

**Qualitative Research Question 2: What criteria did higher education administrators use when deciding to have a presence in Second Life and/or continue a presence in Second Life?**

Administrators interviewed stated that being involved in a learning and research community was a major reason for creating and maintaining a presence in Second Life as described above. Second Life met a need for administrators interviewed and according to TAM, if perceived usefulness of a technology exists, the technology is more likely to be adopted (Goodhue, 1997). The usefulness for Institution C was met by using Second Life
to hold conferences during a time when budget dollars were not available for
conferences, and the event was able to take place with the conference being attended by
more participants than would have been present at a physical location. The administrator
from Institution G stated that the Institution started a presence in Second Life to create
exposure for the Institution. According to the administrator from Institution G,

> Our primary goal was to have exposure. We wanted to develop something where
we had something more than a Website where people could come in our
buildings. We built the virtual school of management there that looks an awful lot
like the lifelike school of management. We had advisers there so people could
check-in and if they had questions someone went up to a mailbox or whatever and
one of the advisers would get in touch with them. We had welcome sections in
there for our online students as well. We would give lectures there, primarily on
management topics and a few of them were fairly well attended. Primarily we
used it for outreach to students and prospective students. We offered some
lectures in there that our students could attend but it was also open to everyone.
We were trying to reach out to business leaders and other markets.

Benefiting from this type of exposure created a relative advantage for
administrators in the form of having a venue to showcase their institutions unlike any
other form of technology (Rogers, 2003). Like the administrator from Institution G
above, the administrator from Institution D described how a presence was established in
Second Life to gain exposure for the institution. According to the administrator from
Institution D,
We realized what might happen on campus as we instituted *Second Life* and realized it might take a while to get people from campus to do things and it's a much smaller market than if we had folks from all over the world potentially using and visiting our space. The idea was to post events on our campus to bring some recognition to the University in *Second Life* and we did host a number of events, never really any large conferences, but there were some satellite conferences where they had a few sessions on there. We could then give folks tours and advocate for what we were doing at the University.

The administrator from Institution A described how *Second Life* was primarily adopted and used to house their research symposium. Attendance was initially increased by using *Second Life*, and more students became involved. The Administrators from Institutions B and D both described how their institutions established a presence in *Second Life* because it seemed the thing to do to remain competitive with other universities that had a presence in *Second Life*, and they did not want to be left behind.

All of the administrators interviewed stated that they were able to establish a presence in *Second Life* because the cost was not unusually high, and funding for *Second Life* remained off the radar of budget personnel. Of course, this changed when Linden Lab announced the educational discount would no longer be offered, but initially the cost was not an issue for the administrators interviewed. The administrators from Institutions A, G, and B stated that the funds for *Second Life* came out of Information Technology budgets and went undetected by executives.
Qualitative Research Question 3: What criteria did higher education administrators use when deciding to decrease presence in Second Life or discontinue the use of Second Life for teaching and learning?

Around 2010 the administrators interviewed stated that their institutions experienced a budget crisis due to a decrease in student enrollments and state funding. It became difficult to justify spending budget dollars on a technology that was perceived as being problematic. Warburton (2009) discussed some of the barriers of Second Life technology with one being an economic barrier. While a basic Second Life account is free, anything beyond just being present in the virtual world requires real money including: buying land to create teaching spaces; purchasing buildings, furnishings, scripts and other items; uploading images and textures; purchasing in-world tools; and employing staff or hiring Second Life residents with expertise in building and scripting (Warburton, 2009). According to the administrator from Institution D,

They didn't want to continue it because no one was in it using it and there was a lack of interest and just no funding for that. There were other places that they needed to divert the money to as we were having all these cutbacks and Second Life was not something they needed. The budgets really got hammered as they did everywhere it really dried up. If things had continued the way they were we may still have a presence, I believe even with the little bit of interest that was there because somebody would've been able to pick it up but they were not able to fill positions and we had to cut back in a number of areas.

Other administrators relayed situations where they were asked to provide a return on investment analysis as far as what benefit was being received by the institution as far
as the dollars spent on Second Life activities. According to the administrator from Institution G,

I really didn't look at it too much, it was just a dollar and cents balance sheet thing and it was a pretty easy decision. I was actually the one that made the decision to pull the plug. I didn't see a return on our investment plus we were getting busier and busier with online courses and we really weren't having a whole lot of time and it would have really stretched us budget-wise.

According to the administrators interviewed, financial concerns were a major determinant as to whether to discontinue or scale back their institution’s presence in Second Life. Although the administrators indicated they were comfortable entering Second Life believing the cost was not preclusive; this all changed after Linden Lab announced the 50% educational discount would be discontinued effective January 1, 2011. The increased cost could no longer be kept off the radar of budget executives, and administrators began rethinking if the increased cost was worth the benefit derived. This decision by Linden Lab also caused administrators and others to question Linden Lab’s commitment to the education market. Clearly, Linden Lab did not understand the impact this decision would have on educators whose budgets were already set for the academic year (Young, 2011). According to John Lester, who was terminated from Linden Lab in 2010,

Second Life is still what it was and part of that involves cutting things, like getting rid of the educators’ discount rate. At that point, I think in particular, educators found that to be the final action. A lot of educators saw this and they said, "I can't do this anymore."
In addition to the financial concerns, the administrators interviewed encountered a general lack of interest for *Second Life* among the students, faculty, and the institution sometime around 2010. The administrator from Institution C described how their *Second Life* campus was destroyed by cyber vandals. The campus was not rebuilt, and there was not a single complaint or inquiry as to where everything went, indicating a low or non-existent rate of usage. Other administrators interviewed described similar situations where too few faculty were using *Second Life* to make it justifiable.

While Linden Lab’s general lack of support became obvious with the termination of the educational discount, this was compounded by the company not understanding or caring to understand the unique needs of educators. According to Kelton (2007) anytime an educational institution depends upon a for-profit company to provide a critical service or product, an amount of risk is involved. Linden Lab, a for-profit company, was more concerned about making a profit and shifted its focus away from education and began concentrating on what executives perceived to be more lucrative markets (J. Lester, personal communication, June 7, 2013). Educators placed demands on Linden Lab to improve features deemed important to their institutions, and Linden Lab did not respond, thus creating a disincentive for institutions to continue using scarce resources to maintain a presence in *Second Life*. According to John Lester, by 2010 Linden Lab had an entirely new executive team, and the focus of *Second Life* had shifted to a general entertainment platform where people would go for fun. According to Mr. Lester,

Needs of educators were not being met, things like being able to back up your content, being able to export your content, being able to have more control over who is in your environment, and being able to create a private environment in
Second Life. These things were critical for educators and Linden Lab did not respond. I think there may be usefulness in Second Life for educators but you know the big showstopper is being able to have ownership of what you have in here. I think Linden Lab will never change that because what they want is for this environment to be a space where you come in here and you don't actually own anything. You just are paying for a limited use license of your content.

Qualitative Research Question 4: What factors contributed to the failure of Second Life as a course delivery system?

This researcher analyzed and discussed many factors leading to Second Life not becoming a mainstream course delivery system as was predicted. Administrators interviewed indicated that virtual worlds hold a great deal of potential for teaching and learning. One of the major issues stemmed from Linden Lab’s mission, vision, focus, and policies not being congruent with the needs and expectations of the education market. Administrators were describing a situation where Second Life was no longer a good fit for their needs. According to Goodhue (1997), TTFT considers technology adoption to be based partly upon the fit between the technology and the task. Educators have little power or control over Linden Lab’s actions, and when its vision and focus changed educators found the Second Life technology no longer fit in with the tasks they wished to carry out. Linden Lab experienced several changes in leadership since Second Life was deployed in 2003, and with each change a new focus was adopted shifting away from education.

Faculty, an important stakeholder in the higher education arena, had issues with using Second Life for teaching and learning causing a shift away from supporting the
platform. Administrators recognized that developing courses and teaching in Second Life was time consuming partly due to the steep learning curve encountered with the technology. Second Life is difficult to learn and to become proficient in, especially in mastering the technology enough to implement learning activities (Mayrath et al., 2010; Warburton, 2009). When faculty perceive the features of a new technology such as Second Life to be complex and time consuming to learn in addition to having low relative advantage, adoption will be difficult or will not occur (Macfayden & Dawson, 2012). Administrators interviewed concurred stating that time was a major concern among faculty resulting in a lack of interest in learning and implementing the Second Life platform. The administrator from Institution D discussed how difficult it was for faculty to learn any new technology due to time constraints and the lack of incentives.

According to the administrator from Institution D,

> It's the issue of what do I do to enhance my class or what do I need to change. If it's working just fine it would take me a lot of effort to change when I need to be doing these other things. I need to be publishing and don't need to be figuring out ways to incorporate Second Life or other social media. If it's not broken, don't fix it, especially if you don't have time. I think that's keeping faculty from investing largely and investigating new technologies.

In addition to time, administrators interviewed discussed the importance of the tenure and promotion process and cast doubt on whether Second Life supported the process. Second Life activities are not rewarded in promotion and tenure review the way scholarly publications are, and faculty became reluctant to spend time learning the platform that took time from research and publications (Gumport & Chun, 1999).
Promotion and tenure review boards often do not recognize instructional excellence or course development, and the implementation of innovative course materials such as Second Life would be seen as unimportant. Due to time limitations, faculty do not see value in pursuing innovations that will not help with the tenure and promotion process (Spotts, 1999). The tenure and promotion concerns also apply to online course teaching and development. As long as distance education contributions are not considered in tenure and promotion decisions, and as long as professors have their own traditional methods of course teaching, many faculty members will be reluctant to engage in online teaching (Howell et al., 2003). According to the administrator from Institution D,

They are not going to get in here and do some research and get something published quick enough to get them help in the T & P process and that's what they really need to focus on plus other classes are teaching.

Faculty and students also experienced issues with the Second Life technology including the interface and hardware requirements. According to the administrators interviewed, many faculty and students experienced difficulty learning how to navigate through the Second Life environment. Linden Lab made improvements; however, the learning curve remained steep. Hardware requirements were also a problem for faculty, but more so for students. Many distance students could not travel to campus to use upgraded lab equipment and had to rely upon their own computers which often did not have the necessary enhanced graphics card and memory, as well as a high speed Internet connection. Lack of appropriate hardware led to a dissatisfying and inconsistent experience for students and more frustration for faculty. According to Warburton (2009) users experienced client-side issues including inadequate bandwidth, hardware problems,
and firewall issues in addition to server-side issues of down time and lag. These issues acted in combination and created different and varying impacts on users creating an in-world experience that was not consistent for all participants leading to confusion and frustration. All of the administrators interviewed described situations where hardware was a barrier to an effective learning experience, as well as the problems associated with lag in the environment. The administrator from Institution A was trying to convince a faculty member to use Second Life by giving a demonstration of the environment and instead ended up showcasing the lack of dependability. According to the administrator from Institution A,

Frankly accessibility was a big thing, it was a big problem with Second Life. I will never forget we took this one faculty member and her graduate assistant out to breakfast to talk about Second Life and have a demo. We were sitting in the café and we pulled it up on Wi-Fi and it's like gray sludge... hello welcome to Second Life. They said, "Is it always going to look like this?" and then the other faculty advisor just looked at me and we just looked at each other kind of shook our heads and I think we both knew at that moment that was the end of Second Life. "If our campus is always going to look like this why don't we use something else?," they said.

Some students did not like the Second Life environment, as they did not see a purpose as compared to similar technology used in gaming. Students found the graphics to be less life-like and inadequate when compared to the commercial, stand-alone gaming consoles with which they were very familiar. Kelton (2007) found that students were not taking learning in Second Life seriously. Some students were used to gaming and found
the environment fun and not supportive of learning. Most of the administrators interviewed had similar impressions of student perception of Second Life as a serious venue for learning. According to the administrator from Institution G,

We had to get past that anxiety stage and we had to get past what we call the "cartoon stage." A lot of people dismiss this platform because it looks like a game.

Administrators described how their institutions implemented Second Life without a clear vision or pedagogical strategy. According to Ely and Plomp (1986) any use of educational technology must be implemented in response to a problem. When that technology is implemented to create a specific solution, rather than solving a problem, the result is confusion and ineffectiveness. The end result is an emphasis on the medium rather than the design of the program and a lack of a system focus (Ely & Plomp, 1986). Administrators interviewed cited examples in their institutions where Second Life was implemented without regard for pedagogical value and proved to be ineffective.

According to the administrator from Institution B,

You choose the technology and the teaching tools that are most appropriate for teaching your subject matter to your students. Technology should not drive the process. I am talking about PowerPoint, pencil, and paper, or whatever you choose. Your teaching tools and your educational technology need to be based on what's going to help your students learn your content best and when you start trying to teach totally inappropriately in virtual worlds I just have issues with it.

Data collected in the study indicated that Second Life may have simply run its course. Administrators interviewed and participants surveyed discussed the progression
of virtual worlds along the Gartner Report’s hype cycle. The Gartner Report’s hype cycle, developed by the Gartner group, plots innovations along a curve as the innovation moves from invention to peaking and to leveling off or discontinuing (O’Leary, 2008). Participants believed that virtual worlds and *Second Life* followed this hype cycle and are currently about to slightly increase in usage and then level off. Virtual worlds and *Second Life* in particular peaked quickly and then decreased in usage and popularity. According to John Lester,

> So fast forward to 2007...the peak of the hype cycle for what *Second Life* was all about because this was when *Second Life* was on the cover of *Newsweek* with and Anshe Chung making $1 million so the problem is whenever there is a technology that hits a hype cycle at this peak of expectations you're just setting yourself up for some kind of a fall.

> Whenever a technology peaks and then drops, improvements must be made to the technology in order for the technology to continue and not become obsolete (Rogers, 2003). Linden Lab failed to make the necessary improvements to meet the needs of the educational community. According to John Lester,

> The platform, if you look at it today, and you login, the whole experience is not that different than it was five, six or seven years ago. To be honest there's a lot of innovation that could've happened and it didn't. There was a more subtle polishing of things but not real innovation. There were little things like now we can import meshes, well that's good but at the same time using mesh models is something that is sort of an industry standard and it has been for many years and
Linden Lab was just trying to play catch-up with that feature. It's not an innovative feature.

When a technology reaches the end of the hype cycle and continuous innovation does not occur, the technology is replaced by a different technology that can more readily meet the needs of users (Rogers, 2003). According to the administrators interviewed that eliminated or decreased their presence in Second Life, the emergence of social media was the catalyst for their decision. Administrators believed that their needs could be better met some with other types of social media than by using Second Life. According to John Lester,

The other thing I saw as to why it never really took off with educators is whenever a hype cycle is over there is a new one that pops up. The new one that popped up after 2007 after the whole "virtual worlds will change the world" thing was really social media and mobile. I really think we’re just in the middle of another hype cycle around all that and when all that took off a lot of the funding availability for grants and a lot of the focus for a lot of educational institutions around IT were on things like, "let's give students all mobile devices or laptops instead of PCs and let's see how we can integrate Twitter, Facebook, and social media with how learning happens." So that was something completely out of the control of Linden Lab. I think there's some causality that contributed to the fact that Second Life didn't take off because suddenly the bright spotlight was being shown on social media and mobile devices.

Other administrators provided examples of how they moved away from virtual world technologies into social media tools. LMS providers began integrating social
media into their platforms making it seamless to use the social media tools. According to
Davis (1989), the TAM explains user adoption of technology as being the intersection of
maximum perceived usefulness and perceived ease of use. As other forms of technology
became able to meet the needs of educators and at the same time were easier to learn and
implement, Second Life began declining in favor of those technologies. According to the
administrator from Institution A,

I think another part was that other ways to use technology were becoming
available on our campus that was easier. We introduced Blackboard Collaborate
earlier that year so that the synchronous communication need was easily filled by
that because all you had to do was click that button and boom you are there and
you even got to see real-life faces.

The administrator from Institution C explained how Second Life was being used
for communicating with colleagues and others at a distance and felt better alternatives
were available. According to the administrator from Institution C,

I think that with the advance of telecommunications with Skype and Google
hangouts we did not need Second Life. The real need advantage that Second Life
had was that you could have a group conversation in Second Life without having a
conference call line. There were no Google hangouts at the time and was no other
way to really do voice conferencing except in Second Life. That was actually a
really powerful tool and being able to chat and do group chat and talk about
things in a collaborative way, those kinds of tools were really useful. We have
those tools now in other forms that are much more agile and much more
deliberate in what they able to do so there's no longer a need for Second Life from that regard, for that purpose it's gone.

*Quantitative Research Question 1: What factors for students are associated with Second Life not becoming a mainstream course delivery platform in higher education?*

The student group was surveyed to discover and analyze their perceptions about Second Life as a course delivery system. Data were collected and an Exploratory Factor Analysis (EFA) was conducted to find the variables underlying the data. After the EFA was performed, three factors emerged to explain why students did not accept Second Life as a learning platform: student acceptance, hardware issues, and usability. Students not accepting Second Life can be explained by Innovation Diffusion Theory (IDT) as far as lack of compatibility (Rogers, 2003). Students found Second Life to be *cartoonish* with substandard graphics. These perceptions were inconsistent with their beliefs about how a virtual reality environment should look, as formed through being involved with gaming where the graphics and movement were more life-like. Students did not take Second Life seriously as a learning environment as they did not see a purpose to what they were doing in the environment as it is not a game. Students also tended to be distracted by being represented by an avatar that may or may not look like them as well as the identity of the other avatars they interacted with which may not have resembled the owner. Objects in the environment could also be distracting, as well as random avatars who may wander into learning spaces (Dalgarno et al., 2011).

*Quantitative Research Question 2: What factors for instructors are associated with Second Life not becoming a mainstream course delivery platform in higher education?*
Instructors were surveyed and the responses collected helped determine why instructors believed Second Life did not become the preferred platform for course delivery. An EFA was performed on the data with six factors emerging: hardware issues, lack of institutional support, Linden Lab issues, time issues, time vs. other delivery methods, and perception of student acceptance. According to Warburton (2009), these issues are consistent with research. Research has shown that planning, preparing, and teaching in Second Life require more time and commitment than other traditional course delivery methods. Second Life is complex and time consuming, and instructors struggled with finding a relative advantage to learning and using the Second Life platform (Macfayden & Dawson, 2012). It would appear from the six factors identified by the analysis that instructors did not accept Second Life due to perceived usefulness and perceived ease of use. According to Davis (1989), unless users see the new technology as having usefulness, adoption will not occur. Users did not believe that the platform had enough merit to overcome the issues associated with learning and implementing Second Life. The perceived ease of use was difficult to overcome as shown by the issues with hardware, time, and Linden Lab support.

Quantitative Research Question 3: What factors for instructional designers are associated with Second Life not becoming a mainstream course delivery platform in higher education?

Instructional designers were surveyed, and responses collected helped determine why instructional designers believed Second Life did not become the preferred platform for course delivery. An EFA was performed on the data with six factors emerging: hardware issues, stakeholder engagement, lack of stakeholder interest, time issues,
pedagogical value, and software improvement. Research also identified technological problems as a major issue. Bandwidth issues from users’ home locations caused problems with the software being slow, thus the 3D virtual environment had a difficult time appearing on computers. Lag time also occurred with images, including the users’ own avatars not appearing or being difficult to navigate causing frustration. Insufficient computer hardware also caused viewing and lag issues if users did not have fairly powerful graphics cards installed; this also led to confusion and frustration (New Media Consortium and EDUCAUSE Learning Initiative, 2007; Warburton, 2009). The task technology fit model (TTFT) suggests that this situation will not result in a good fit between the user, the task, and the technology (Goodhue, 1997).

Research conducted by Pfeil et al., (2009) supported the findings of the EFA and suggests that despite recognizing the potential benefits of virtual worlds for teaching and learning, many faculty and administrators had chosen not to adopt them. There are skeptics among faculty and administrators who question the pedagogical benefit and justification of teaching in virtual worlds; thus it was not surprising to find the perception of lack of interest among stakeholders emerged as a factor in the EFA.

Quantitative Research Question 4: What factors are common for students, instructors, and instructional designers as to why Second Life did not become a mainstream course delivery platform in higher education?

Students, instructors, and instructional designers were surveyed with the results being analyzed separately to determine the reasons why Second Life was not adopted as a course delivery platform. The groups were surveyed separately due their differing perspectives and experiences in dealing with Second Life as a tool for teaching and
learning. An EFA was performed for each group, and three factors emerged for the student group, with six factors emerging for the instructor and instructional design groups respectively with the total factors emerging being 15. Several common factors emerged between the groups. Figure 24 illustrates the commonalities between and among the three target groups of students, instructors, and instructional designers.

![Diagram](image)

**Figure 24.** Commonalities Between Students, Instructors, and Instructional Designers. Results from responses to the quantitative survey after Exploratory Factor Analysis (C. Mark).

All three groups had one factor in common: they experienced hardware issues. This was not surprising considering the hardware needed to have an optimal experience in *Second Life*. *Second Life* is server-side software highly dependent on a high-speed and
stable Internet connection, and *Second Life* graphics requires advanced technology; factors that are common to all three groups, albeit on differing levels of concern.

Students and instructors had one factor in common: they shared the factor for student acceptance. Students had a hard time taking *Second Life* seriously due to the substandard graphics and considered *Second Life* a waste of time. Instructors, upon receiving feedback from their students, perceived that students did not take the platform seriously and attributed this to students’ gaming experiences where the graphics and movements were much more sophisticated and life-like.

Instructors and instructional designers had two factors in common: time issues and stakeholder engagement, interest, and support. Instructors and instructional designers had to learn the intricacies of *Second Life* in order to create learning activities and agreed there was a steep learning curve and time commitment. Both groups also agreed the time required to prepare and teach in *Second Life* exceeded the time it took to prepare and teach in face-to-face and traditional online course delivery systems. The other commonality involved the interest and support of stakeholders, defined as the institution, students, and faculty. The two groups agreed it was difficult to explain *Second Life* to administrators and get their support. Even when administrators, faculty, and students originally supported *Second Life*, the interest waned and stakeholders returned to previous methods of course delivery such as an LMS.

**Limitations of the Study**

As with all research studies certain limitations are inherent in the design data collection process due to a variety of reasons. For this particular study, four primary limitations should be considered by the reader when considering the results.
The first limitation is one that applies to any type of survey research where the results are based on self-reported data. All respondents, no matter how objective and diligently they try to be, are victims of their own personal biases and points of view. The survey instrument that was used for the quantitative portion of this study also has the layer of complexity added due to the fact that the survey was distributed and completed online using Survey Monkey. The researcher in this case had no opportunity to determine who actually completed the survey. In other words, while the survey link was distributed to a broad-based group of potential respondents, there was no way to control whether those respondents actually did complete the survey instrument. That being said, the researcher did receive a large number of emails from survey respondents, which added to the comfort level that the survey link was indeed received by the expected population. As with all survey research, the linchpin is the expectation that survey respondents will complete the survey diligently and respond to the questions appropriately. The sub-limitation that multiple surveys may have been completed by individual respondents was addressed and mitigated by controls that limited responses to one per each individual IP address; however, individual respondents could possibly have used multiple machines to complete duplicate surveys. Because it may be argued that most survey respondents will minimize the amount of time they invest, the chances that multiple surveys have been completed by a single respondent is considered to be very low.

A second limitation relates to the sensitive nature of the issues surrounding the use of Second Life in that many of the administrators willing to be interviewed were concerned that their opinions and comments would be made public. This issue became clear both from the survey emails as well as the interview selection process that many
educators had very polarized opinions of Second Life. Some viewed this research study as a welcome inquiry into what caused Second Life to fail as an educational delivery vehicle and embraced the opportunity to provide insights that may lead to future improvements. Others viewed this research study as an attack on a beloved technology, and therefore were reticent to participate. In most cases, the interviewees were still employed by the respective institutions and had some trepidation that public responses might be seen as negative and used against them. This limitation was mitigated by the fact that all of the interviewees’ identities were kept confidential in a series of letters used to identify them and their institutions in this text.

A minor limitation, at least to this researcher, concerns the offering of rewards to survey respondents. The decision was made to offer $10 iTunes gift cards to 30 survey respondents by means of a blind drawing. Survey participants who were interested were asked to leave their email addresses in the last question on the survey, and 126 participants chose to do this. While the reward was not significant enough to generate a larger pool of interested participants, it is possible that one participant with multiple email addresses and access to multiple computers could conceivably have completed more than one survey to increase their chances of earning a prize. This researcher believes the amount was not significant enough for people to invest the time required to manipulate the chance of winning a gift card.

The final limitation is created by the fact that this is a post-facto study that deals primarily with activities within the time period 2005–2012. During the time, many higher education installations in Second Life have come and gone, many without so much as a trace including artifacts such as photographs, documentation, or archives. Students, who
have completed courses within Second Life and for the most part were present in Second Life and active in their class, have now long since moved on. Evidence suggests that a large majority of these students were only active in Second Life for the length of the class and very few stayed on to become active virtual world participants. Trying to contact former students who may have left the virtual world of Second Life was daunting if not impossible. Thus, it may be expected that students who responded to the survey are still active in Second Life or are faculty who now teach in Second Life, or are friends of respondents who passed the survey link on to them. Likewise with faculty, many of those who taught in Second Life during the primary time period have moved on to other learning technologies or learning management systems. One might safely expect that many faculty, like their students, participated in Second Life only within the constructs of an academic course or an academic activity, rather than a personal adventure. That is to say that many faculty probably taught courses, became frustrated, and left Second Life permanently.

Like the students, many of the respondents are most likely those currently still attached to Second Life in some form. The same conclusions are probably less applicable to the instructional designer group as many of those participants may still be employed at their home institutions, but working on other projects. Here one might surmise that instructional designers, who may inherently have a love of technology, continued to have a presence in Second Life if only to keep abreast of changes and evolutions in the virtual world with an eye to one day revisiting the creation of learning activities and learning spaces for students and instructors. The bottom line is that the pool of potential participants and respondents for this study has a practical limitation of those who are still
involved in some form or fashion with *Second Life* or those who are associated with someone who is. While it would be nice to have more data from a larger pool of respondents, the fact that the quantitative results clearly dovetailed with the qualitative results seemed to lend a high degree of reliability for the data that was collected thus reducing concerns over the historical nature and availability of a larger sample.

**Recommendations for Policy and Practice**

In order to be useful, research should benefit the area under study, in this case the use of 3D online immersive virtual environments, specifically *Second Life*. In order to be useful the data collected have been analyzed and cross-compared resulting in a tangible set of themes, sub-themes, and factors. With the results in mind, the following sections present specific recommendations for members of each group with the aim of making future interactions with virtual worlds and education a more beneficial and satisfying experience. Bear in mind that the following are suggestions and by no means an exclusive set, but rather obvious starting points for discussion and planning.

*Recommendations for Students*

Student respondents in this study clearly had three issues that must be addressed if they are going to be engaged with learning in 3D online immersive virtual environments, including *Second Life*. A caveat is necessary here, because students must accept that everything is not a self-contained videogame, CGI movie, or other visual experience wherein high-end graphics are simply beyond the scope of many technologies.

One of the major issues students had with *Second Life* was the *cartoonish* feel to both the avatars and the environment. Because *Second Life* is server-side software, the ability for Linden Lab to provide videogame quality graphics is severely limited. Perhaps
one day Linden Lab will offer a client-side version that would vastly improve the look and feel of Second Life, much like what is happening with OS-Grid and Open Sim. This is an area where instructors, instructional designers, and administrators can work together to improve the experience. Administrators can invest the funds so that the physical environment can be as textural and immersive as possible either through hiring graphic designers to do the building, or by purchasing high quality components. Instructional designers can become more engaged and provide a higher level of realism in the learning environments and learning activities that are created for students to use. Finally, instructors can do a better job of marketing what students will experience so they are prepared for the fact that Second Life is not a high-end videogame. If instructors set the stage perhaps students will have more realistic expectations.

In addition to the limitations of the current software, there are limitations to the level of sophistication of computer components available to most students, especially students who are on a tight budget and for whom price is a major consideration when purchasing computer equipment. Granted, the level of sophistication and the quality of graphics provided has increased exponentially in the last few years to the point where even low-cost laptops come with enhanced graphics cards. That said, students must be willing to either purchase better quality computers, or be afforded community computers that have been built with high graphic standards. Here again, administrators can improve this situation by investing in top quality computer equipment even if in a single lab. Another factor with the quality of graphics is the Internet speed available to students and for which they are willing to pay. Internet speeds have been rapidly increasing over time and should continue to increase in the foreseeable future. Students must be willing and
able to avail themselves of these higher speeds even with the additional cost. This is another area where a high-speed community lab with 24-hour access could be a reasonable alternative so that students could experience the highest quality graphic representation possible.

Finally, students reported issues with the relevance of Second Life activities to their coursework and course expectations. As any instructor knows, students always question the relevance, no matter what the activity. This can be mitigated by a thorough explanation and discussion of the purpose that Second Life plays in any particular course. Along these same lines, instructors must do a better job of developing quality learning activities and experiences for students that mesh with class objectives and expected outcomes. In other words, instructors and instructional designers must invest time to learn the intricacies of the platform so that these learning activities appear well thought out and well designed rather than thrown together and dumped on top of a course. Second Life activities that reinforce specific course objectives will seem more relevant to students than Second Life activities in which the instructor appears to be learning at the same time as the students.

Recommendations for Instructors

The following recommendations address the six major issues emerging from the data for the instructor group. Some of the issues reported have no easy solutions and therefore, illuminate few recommendations for mitigation.

A good example of this had to do with hardware issues, the number one complaint of the instructor group. In order to make this easier the instructors need to become more technologically savvy and more experienced at troubleshooting and solving problems just
as they would if teaching any type of technology, especially to less prepared students.

Instructors must make themselves competent to provide basic technical support to students and be willing to accept this role in their classes. This is particularly germane to the use of software such as *Second Life*, with which fewer than expected numbers of students have direct hands-on experience.

Another frustrating issue for the instructor group was lack of institutional support for their projects and activities; this includes lack of technical staff and funding. The recommendation from this study is for instructors who initiate and drive emerging technology projects such as *Second Life* to take the responsibility of educating the appropriate administrators. For example, a faculty member who wanted to create a model classroom for online students to use to complete a teaching methods course would be well served to educate her/his dean concerning the benefits of using a virtual world for class. This might consist of demonstrating the software, providing scholarly research articles, providing popular press articles, etc. Logic seems to dictate that educated administrators will likely make better decisions and provide more support for projects they understand and can describe to other administrators.

The instructor group reported dissatisfaction with the level of technical support from Linden Lab and reported that this dissatisfaction had a direct impact on their willingness and interest to continue with *Second Life*. As with any technical support in this era Linden Lab provides highly firewalled, very labyrinthine pathways to obtain technical support, thus making it difficult for users to get help. Although this is the case for personalized support, Linden Lab does provide an extensive user forum and FAQ section on their official Website. Users can also submit support tickets via an online form.
with reasonably timely responses. Instructors who spend time familiarizing themselves
with the support documentation provided online will find an easier time working with the
Second Life product than simply choosing to make a telephone call.

Student acceptance was also mentioned as an issue by the instructor group, and it
seems reasonable that this is the corollary to the students’ view that Second Life was a
waste of time and not relevant to their courses. Like the famous chicken and egg
dilemma, the question becomes should student acceptance be addressed or should student
attitudes come first? In other words, students who perceive Second Life as a waste of time
and have not been shown the relevance to their learning will certainly be unaccepting of
the technology; this will lead to frustration on the part of their instructors. Therefore, the
recommendation in this case is the same as mentioned above that instructors must do a
better job of demonstrating the purpose of Second Life, the way it fits into the students’
course, and the relevance to the learning objectives and methods. Instructors who take
time to carefully frame the use of Second Life and who illustrate the relevance of the
technology should, it seems fair to argue, find a noticeable improvement in overall
student attitude.

Finally, time issues made the list of sub-themes twice for the instructor group. On
the one hand, instructors found it difficult to find enough time in their busy schedules to
learn a new technology, create artifacts and builds, develop learning materials and
activities, and then teach the students how to use the software. Because of their busy
schedules and demands, Second Life became increasingly difficult to use successfully. On
the other hand, instructors reported institutional requirements to use other learning
management systems, such as Blackboard, which were more institutionally ingrained and
supported by full-time staff. Again, the lack of dedicated Second Life experts and their ability to assist instructors with their virtual world courses, created a friction point that led to the abandonment of the technology. The recommendation is for instructors to demonstrate the importance of emergent technologies such as Second Life and lobby for dedicated instructional design staff who will then be able to assist all instructors in leveraging those emerging technologies to enhance student learning.

One of the most far-reaching solutions for instructors that will address several issues, especially the hardware issues is applying for grants to fund a class to be held in a virtual world. Grants are probably available, in small amounts, that will cover the cost of upgraded computer technology and the out-of-pocket expenses related to purchasing some land, buying some products, and creating some learning materials inside of Second Life or an alternative platform. Grant money may also be available that will cover the cost of training and specialized services. Too often instructors complain about the financial pressures of teaching, but fail to consider grant opportunities.

*Recommendations for Instructional Designers*

As with the instructor group, the instructional designer group had six major issues of concern, and not all of them can be solved easily; therefore recommendations are limited. Recommendations are given when feasible, although all six factors will be discussed.

Hardware was the major issue with the instructional designer group, both with their clients (students and instructors) and with their own equipment. One of the differences is that the instructional designer group reported more serious and frequent hardware issues than either the student group or the instructor group. Members of this
group were frustrated primarily because students and instructors could not effectively participate within the *Second Life* environment to the level that was planned for based on instructional design and support. Few recommendations are available as this is more of a macro problem requiring a variety of improvements. That said, one recommendation would be for instructional designers to obtain more technical training that would better prepare them to handle hardware troubleshooting and repair. One might logically surmise that many instructional designers have excellent skills with software and program manipulation but less developed skills with the actual hardware involved.

The second and third most critical issues for the instructional designer group concerned stakeholder engagement and stakeholder interest. This may arise from what has been previously discussed about the difficulty of the *Second Life* learning curve and the associated distractions revolving around graphics, computer hardware, and Internet connectivity. One recommendation for the instructional designer group would be to develop and deploy more hands-on training programs and provide more personal attention to individual users. For some instructional designers, this might be training that has never been done while for other instructional designers this might be an increase in the amount of training that is provided. Another recommendation would be for instructional designers who are attempting to entice instructors to provide more in the way of concrete demonstrations and examples of successful teaching and learning activities. The easier instructional designers can make their clients’ lives the more likely engagement and interest would increase.

Because instructional designers reported they perceived *Second Life* to be distracting to students and because they reported *Second Life* was an endeavor not worth
the time and effort required, this group had issues with both the time commitment and the pedagogical value of using such a virtual world for teaching and learning. Administrators who are considering implementing a 3D online immersive virtual environment as part of an emerging technologies initiative would be well advised to either take time to convert their existing instructional designers or to secure a dedicated instructional designer familiar with *Second Life*. The recommendation is to develop instructional designer buy-in for any emerging technology project. In other words, instructional designers will have less of an issue with time and pedagogical value if they believe in platforms like *Second Life* from the beginning.

Finally, instructional designers were frustrated because the problems they encountered when using *Second Life* as an educational delivery vehicle improved very little over the time. These instructional designers specifically noted the ongoing trouble with Linden Lab and support for the software. Members of this group reported little improvement with learning curve issues and little improvement with technical issues, as well as problems with hardware and software. With no clear recommendation to directly solve these issues, instructional designers could be provided with additional product-specific training if available. Additionally, instructional designers must become more patient and allow for solutions to be developed organically. For example, the learning curve for *Second Life* circa 2005 to 2009 was steep to say the least; however, Linden Lab has made great strides since 2009 to make the user interface far more familiar while concurrently reducing the amount of training required of new users for basic proficiency. Sometimes improvements to major infrastructure issues simply take time to evolve, and participants must be willing to accept the limitations while they wait for life to get easier.
Recommendations for Institutional Administrators

While not an official group in the quantitative phase of this research study, the qualitative interviews provided by institutional administrators (those connected with Second Life projects) illustrate three major issues that must be addressed going forward if 3D immersive online virtual environments such as Second Life are going to be employed successfully for teaching and learning. The problem became clear during the course of the interviews that many of the administrators had difficulty securing institutional buy-in from the people in charge.

First, administrators must take the initiative to become familiar with any and all delivery vehicles used by their instructional designers, instructors, and students. Most of the respondents remarked that trying to convey the feel of Second Life to administrators who had no understanding about the environment was frustrating and led to unsuccessful implementations. This is not to say that administrators need to be experts, but rather need to be engaged and learn enough about emerging technologies to facilitate intelligent decisions and the development of successful programs. Administrators also need to be comfortable with the technology, welcome the advantages technology provides, and be willing to think of technology as a tool that can be leveraged. Too often, as indicated by several of the respondents, administrators were caught up in legal complexity, institutional branding, student monitoring, and security implementing that have more relation to face-to-face situations rather than online and virtual ones.

Second, administrators who approve projects and who welcome the implementation of new technologies must be willing to concomitantly fund those technologies at a reasonable level so they can be successful. Much was said about the
elimination of the educational discount as a rationale for disbanding *Second Life* programs. In reality, the difference between full price and half price annually for most institutions whose budgets run in the tens, if not hundreds of millions, of dollars appears inconsequential. In fact, most *Second Life* educational projects are very inexpensive, given that many resources for building and creating objects within *Second Life* are free, other than the original land. In other words, many instructional designers and instructors could create very usable, very texturally rich, and very relevant teaching and learning opportunities within a 3D online immersive virtual environment, such as *Second Life*, with a very small budget. Unfortunately, based on the interviews, one might make the assumption that decisions to discontinue operations in *Second Life* may have been more related to a lack of administrative understanding rather than true financial impact which may have meant that funding was used as an excuse for those decisions.

Administrators must also develop and provide a reward system for instructors so that designing and creating teaching and learning experiences using emerging technologies is professionally valued and rewarded, other than through peer-reviewed journal articles about their activity. For example, artists and musicians are often allowed to count their creations as *scholarly activity* because those creations are a major artifact for their disciplines. Likewise, if instructors were actually rewarded for the quality and creativeness of their learning spaces in these 3D online immersive virtual environments, perhaps they would be more willing to invest valuable time and even personal resources in virtual worlds like *Second Life*. Clearly, from the instructor input, the lack of value and reward system hampered their ability and willingness to participate in blazing new trails on the *Second Life* frontier.
Finally, higher education administrators must give full thought to providing a dedicated instructional or graphic designer to oversee any projects that involve a 3D online immersive virtual environment, especially where customized materials will be needed. A dedicated person will relieve instructors of the time-intensive building and creating often required to develop a learning or classroom site. One major East Coast University that still maintains a full campus in Second Life has exactly this scenario. In fact, their administrator discussed in the interviews how this decision at the beginning of their Second Life project had allowed the university to develop an active presence in the virtual world. One dedicated staff technologist would address several of the issues reported by participants in all groups, thus protecting the initial investment in Second Life, as well as managing the expenditure of maintenance funds.

Recommendations for Linden Lab

Based on the research findings from both the qualitative and quantitative portions of the study, Linden Lab must make a corporate level decision to either embrace the educational use of their software or abandon it altogether. Given that they have recently reinstated the educational discount, indications are that Second Life is becoming more welcoming to educational users. Whether they can attract those users who moved on to more usable emerging virtual worlds is a question only time can answer.

In any case, instructors, instructional designers, and administrators unanimously indicated that support services provided by Linden Lab were poor at best and nonexistent at worst. If Linden Lab is going to fully support educational uses, wherein Second Life residents depend on the stability and usability of the platform, they must overhaul their infrastructure in order to provide quality support. This support may be technical support
offered to individual users or institutional support aimed at administrators. Many private firms offer custom 3D online immersive virtual environments albeit for a hefty price, but Linden Lab could easily take a cue from these private companies in order to develop and deploy enhancements, especially security enhancements, that will make faculty and administrators more comfortable with the technology.

Finally, Linden Lab must more fully address the issues of the environment in general and the concerns of their users. Although the adult themed activities were moved to separate regions several years ago, and although age verification is required, residents of Second Life can easily still navigate to these areas. Another issue that must be addressed is a more robust means of containing avatars within a prescribed geographical area; in other words, faculty and administrators need to feel comfortable that a learning environment is self-contained. If Linden Lab chooses to improve their overall level of service and embrace the educational community, the issues raised by the participants of this study could easily be addressed and mitigated.

Recommendations for Future Research

This study has illustrated a clear disconnect between the possibilities and optimism surrounding 3D online immersive environments, specifically Second Life, and the realities of the actual experiences of students, instructors, instructional designers, and administrators. Future research could use these findings as a launching point to discover more about what makes some higher education institutions successful at implementing a technology tool such as Second Life as a learning delivery vehicle.

The fact that this study was a post-facto design must be taken into consideration by future researchers, especially the limitations concerning the difficulty in finding
suitable past participants. As the historical timeline widens, opportunities for reaching the existing pool of participants become fewer and fewer. Thus, this researcher recommends that future projects and studies be aimed at those institutions and faculty who are still active in *Second Life* and what they have done to successfully maintain their presence. Perhaps the study of the success stories, in combination with the results of this study, will provide more useful information to those interested in pursuing teaching and learning in 3D online immersive virtual environments. The following are a few suggestions.

For example, at least one major university remains very active in *Second Life* with the same footprint developed in 2008–2009, and is, in fact, finding new and unique ways of leveraging their *Second Life* investment. One of these new ways is the delivery of secondary-education classes using the virtual campus facilities and current University faculty. Clearly, this institution has found ways to overcome, or at least mitigate, the negative aspects of *Second Life* as enumerated in this dissertation. One very interesting study might be a case study of their experience.

Another recommended research project would be centered on the emerging 3D online immersive virtual environments, such as OS-Grid, in order to determine if students, faculty, instructional designers, and administrators have migrated to these new virtual worlds. Anecdotal evidence from this researcher’s being an active participant in *Second Life* for several years indicates that some of the educational activity did indeed migrate to new worlds, albeit perhaps friendlier worlds, particularly when *Second Life* eliminated their educational discount and educational support. What have been educators’ experiences in these new virtual worlds, and have some of the major issues discovered by the study been overcome, or do they continue to be problematic?
There has also been little research in the last two years concerning teaching and learning in *Second Life* as well as emerging virtual worlds, in contrast to the research effort between 2007 and 2009. Perhaps it is time for researchers to conduct a meta-analysis of the topic area to determine if an educational activity is indeed a beginning resurgence, or as the Gartner Report (2007) described it, beginning the “slope of enlightenment.” One recent sample is entitled *A Systematic Review and Environmental Analysis of the Use of 3D Immersive Virtual Worlds and Australian and New Zealand Higher Education Institutions*, which was completed in 2013. At over 200 pages, this report is substantial and could offer a springboard to a similar effort within the United States.

Finally, during the completion of the quantitative survey instrument, respondents were given ample opportunity—on nearly every substantive question—to leave open-ended feedback for the researcher, and over two-thirds chose to do so. In addition, many of the respondents replied via email directly to the researcher with quite a number of anecdotal comments and information. Because of the nature of this study, much of this rich written information could not be used here; however, it is this researcher’s belief that an entire scholarly project could be completed simply by analyzing this additional data with a view towards advancing educators’ knowledge concerning 3D online immersive virtual environments in general, and *Second Life* specifically.

This dissertation study is only the beginning in an attempt to use past experience to improve future experience. Until the pervasiveness of the serious issues uncovered by this research are mitigated in a major way, 3D online immersive virtual environments such as *Second Life* will never become fully diffused until such technology radically
changes the way teaching and learning is delivered around the world. It is this researcher’s hope that others will pick up the mantle and continue this research, so that using virtual worlds will become a satisfactory and positive experience for students, instructors, instructional designers, and administrators at all levels of education, not just higher education.

Looking Forward About 3D Online Immersive Virtual Environments

If 2011-2013 represents the “trough of disillusionment” in the Gartner Report’s (2007) hype cycle for emerging technologies, then perhaps 2014 will represent the beginning of the “slope of enlightenment” as anecdotal information indicates a sort of rebirth for 3D Online Immersive Virtual Environments in general, and *Second Life* in specific. Linden Lab reinstated the 50% educational discount in the second half of 2013, and a quick search within *Second Life* shows some educational institutions reinstated their presence. Interestingly, a major East Coast university has pioneered a virtual high school where the classes are held inside the virtual world. In addition, Linden Lab has streamlined the viewing software, improved the user interface (more like a browser), and reduced the learning curve substantially. In other words, *Second Life* is more user friendly. Finally, Linden Lab has improved the quality of the graphical experience with the introduction of *mesh* technology that allows for increased detail in created objects, especially clothes, and improved, more natural looking avatars. While certainly not the quality of stand-alone gaming consoles, the experience has drastically improved. The need for high-end graphics components in computers has not been eliminated, but rather the level of sophistication in consumer computers has increased markedly, with many off-the-shelf computers, especially laptops, performing better than their counterparts even
as recently as 2011. Internet access is still problematic, with many college students not having sufficient access; however, the Internet connection speeds generally available far exceed those of a few years ago.

*Second Life* notwithstanding, the last few years have seen new growth in other 3D virtual worlds, although *Second Life* is still far and away the most popular. Programs like *Blue Mars*, *Open Sim*, *OS Grid*, and *Utherverse*, have brought much needed competition and alternatives to the marketplace.

*Blue Mars* has left the computer world to pursue iOS devices, and may be the first to bring 3D virtual worlds to mobile devices such as tablets and smartphones. *Open Sim* is a recent technology that may one day provide a major solution to some of the administrators’ concerns revealed in this study, that of security and customizability. *Open Sim* software allows users to create their own stand-alone virtual worlds that reside on their own computers, and then connect to a larger grid. This eliminates the major problem with *Second Life*—being server-side software resident in San Francisco, California server farms. In the not too distant future, educators will more easily be able to download the 3D virtual world software to their office computers and create their own unique learning experiences complete with total security and privacy independent of any other world. Being able to connect a private world to a communal grid could bring exciting learning applications. *Utherverse* is a new entrant into the group of commercial 3D online immersive virtual environments. Very similar to *Second Life*, *Utherverse* claims increased stability, lower cost, and a better experience for users, although this has not been proven. Unlike *Second Life*, *Utherverse* seems more aimed at social networking and partying, so its use as a space for virtual teaching and learning may be limited.
Finally, *OS Grid* is currently the major *Second Life* competitor that runs using *Open Sim* software, theoretically combining the best of both worlds as this company is pioneering client-side virtual world software available at little or no cost to users. The benefit with *OS Grid*, like *Open Sim*, is the availability for users to run self-contained virtual worlds client-side, including from an instructor’s personal office computer. Please see Appendix I for information and websites for these four emerging virtual worlds.

Clearly, the emerging future in 3D Online Immersive Virtual Environments seems poised to address many of the themes, sub-themes, and factors elicited in this study, and one day this technology may be the primary form of educational delivery. Results from this study and other research in the future may provide critical information to administrators, instructional designers, instructors, and students so that future-learning experiences can become better than previously. The results and findings from this study can serve as guidelines so that future innovations might be more easily adopted and diffused, and that past experiences can help inform future actions.

**Summary**

This study investigated four qualitative research questions and four quantitative research questions centered on the apparent failure of *Second Life*, a 3D online immersive virtual environment, to become a platform of choice for delivering virtual learning. *Second Life* was highly touted after its introduction in 2003 as a place that provided situated learning spaces and opportunities for exciting learning activities within a virtual environment accessible by students from any place with an Internet connection. In 2007, *Second Life* reached its pinnacle as an educational platform, and subsequently interest and use began to wane until 2011-2013 when the virtual world wallowed in the Gartner
Report's (2007) “trough of disillusionment.” Even now, two years later, Second Life is still faltering as an educational delivery vehicle although bright spots are appearing on the horizon as the virtual world begins to ascend the Gartner Report’s (2007) “slope of enlightenment.” The researcher hopes that the results of this study can be used to assist existing and potential users in making Second Life, as well as other virtual worlds, reach the potential that had been so highly acclaimed in 2007 by improving the overall experience and educational satisfaction of students, instructors, instructional designers, and administrators.

Phase One of this study consisted of in-depth personal interviews with seven higher education administrators who had, or who had, direct involvement with initiatives involving the delivery of education using the Second Life platform. In addition, interviews were conducted with John Lester, who was the educational director at Linden Lab and was responsible for many years for the educational development of Second Life. When Linden Lab made the decision in 2011 to refocus their vision and mission toward social networking and away from education, Mr. Lester left the company to create virtual worlds of his own. The fact that someone of this magnitude was willing and excited to participate in this study certainly strengthens the quality of the data.

All of the qualitative interviews were transcribed and a sophisticated qualitative analysis software package called NVivo was used to perform analyses of the data. These analyses developed a set of four major themes and 18 sub-themes, which have been discussed previously.

In order to strengthen the findings, Phase Two involved the development of an extensive survey instrument based on the results of the qualitative analyses, which was
then deployed to students, instructors, and instructional designers who have had direct experience with educational uses of *Second Life* both in the past and the present. The survey was distributed electronically and resulted in 658 usable sets of responses that included 202 students, 250 instructors, and 206 instructional designers. The data were analyzed using an Exploratory Factor Analysis and Principle Component Analysis with orthogonal rotation and varimax. This analysis resulted in a set of factors that closely approximated the themes and sub-themes found in the qualitative analysis.

When the qualitative and quantitative results were interfaced, the implications became clear and provided a tangible set of guidelines that can be used to improve future educational and learning activities using *Second Life*, or other 3D online immersive virtual environment. This analysis also provided answers to the eight research questions posed by this study. As this discussion section has illustrated, much of the data obtained has practical use to students, instructors, instructional designers, and administrators as technology advances to a point where sophisticated emerging technologies can be more easily implemented and deployed. The researcher hopes that readers of this study will be able to use the information provided to directly impact their decision-making when considering future educational projects involving virtual worlds and other emerging technology.
APPENDIX A

SELECTED AVATARS IN SECOND LIFE

Some additional examples of avatars in Second Life (C. Mark).
More examples of avatars in *Second Life* (C. Mark).
APPENDIX B

SELECTED SOCIAL SETTINGS IN SECOND LIFE

The Blue Fusion nightclub (C. Mark).

Date Night in Second Life (C. Mark).
Singing and dancing venues are extremely popular in Second Life (C. Mark).

Role playing is another extremely popular social activity in Second Life (C. Mark).
APPENDIX C

SELECTED SITUATED LEARNING SPACES IN SECOND LIFE

Avatars attending an etiquette dinner in Second Life (C. Mark).

An education class meets in Second Life with their instructor (C. Mark).
A large class meets in a pit-style classroom with the instructor on stage (C. Mark).

A group of Second Life avatars gather in Second Life for a multimedia presentation (C. Mark).
APPENDIX D

SELECTED UNIVERSITY SITES IN SECOND LIFE


The campus of the University of Cincinnati in Second Life (C. Mark).
Another view of buildings on the East Carolina University *Second Life* campus (C. Mark).

Case Western Reserve University campus in *Second Life* (C. Mark).
APPENDIX E

INTERVIEW QUESTIONS – HIGHER EDUCATION ADMINISTRATORS

1. Demographic information (about administrator):
   a. Name
   b. Position title
   c. Brief description of position duties
   d. Age range – 18-30, 31-40, 41-50, 51-60, over 60
   e. Gender
   f. Education level
   g. Comfort with technology (scale of 1-10) 1=not comfortable at all, 10=extremely comfortable
   h. Describe any experience with gaming
   i. How did you hear about 3D online immersive environments?
   j. Describe any personal use of 3D online immersive environments

2. Demographic information (about institution):
   a. Number of students
   b. Public/private
   c. Type (undergraduate only, masters level, doctoral level)

3. Decision to use Second Life:
   a. How many people were involved in the decision to have a presence in Second Life and what were their positions?
   b. What was your initial budget for Second Life
   c. How was the decision made to have a presence in Second Life?

4. Entry into Second Life:
   a. What initial activities were conducted when entering Second Life?
   b. How did you decide what to build?
   c. How did you decide what to use Second Life for?
   d. Who was involved in setting up your region? Was it an institutional department or outside contractor?
   e. What were your expectations of using Second Life (financial savings, student engagement, gaining competitive advantage, etc.)?
   f. What factors drove your institution to build your campus in Second Life in the manner you did?

5. Use of Second Life:
   a. How long did your institution use Second Life?
   b. Are you still using Second Life? Is your region active?
   c. What was Second Life used for? (Classes, meetings, office hours, informational, etc.)
   d. Has your institution used any other 3D environment? If so which ones?
6. Experience with *Second Life*:
   a. Describe your experience with *Second Life* from an institutional perspective.
   b. Describe your experience dealing with other administrators regarding *Second Life*.
   c. Describe your experience dealing with faculty regarding *Second Life* (buy-in, support, use of technology).
   d. Describe your experience in dealing with students regarding *Second Life*.
   e. Describe any problems with the technology or implementing programs in *Second Life*.
   f. What is your overall take on your institution’s use of *Second Life*?

7. Current use of *Second Life*:
   a. Are you currently using *Second Life* at your institution? How is it being used? What is your budget?
   b. Has your use of *Second Life* decreased or was it discontinued altogether? Have you moved to a different 3D online immersive environment?
   c. Who made the decision to decrease or discontinue *Second Life*? How was the decision made?
   d. What factors led to the decision to decrease or discontinue a presence in *Second Life*?

8. Future of 3D Immersive Environments:
   a. If you could go back and do anything differently what would that be? Would you have made a different decision? Would you have changed anything about the implementation?
   b. What are your insights going forward? Do you think there is a future for 3D online immersive environments as far as your institution is concerned? What would be necessary for your institution to invest in 3D online immersive environments?
   c. What do you see as far as the intersection of education and 3D online immersive environments?

9. Additional information:
   a. Do you have any additional information you would like to share?
APPENDIX F

SURVEY INSTRUMENT

Growth and Decline of Second Life as an Educational Platform

Thank you very much for completing this survey for my doctoral dissertation research. Your responses will be very helpful in collecting data concerning an important topic in education design and delivery. This survey is intended for those who have taken, taught, or designed a course or courses in Second Life.

The next page contains information about this study and your participation. Please read the text carefully and then choose 'Yes' or 'No' at the bottom. Remember this survey is voluntary and you may quit at any time.

The survey is grouped into several sections. The first set of questions collects demographic information that will be very important for analyzing the data and drawing correct conclusions. The second section contains some questions concerning logistical or implementation decisions at your respective institutions. There are three sets of similar questions, based on whether you have taken, taught, or designed courses for the Second Life environment. You will only need to respond to the questions that apply to you as the survey will automatically skip the questions that do not apply, based on your responses. Finally, the last question provides space if you wish to provide additional narrative that you believe will be helpful to the researcher.

Some of the questions require responses before continuing. The first question asks you to create a unique identifier that will be used solely to allow the researcher to check for duplicate surveys and in no way traceable to the respondent. I am not collecting IP address or other tracking information; however, I would like the ability to remove duplicate data sets.

Thank you again very much for taking time from your schedule to help with this research project. Researchers depend on the willingness of people to share their data and experiences so that all areas of life can be improved, and such is the case with this study. The evidence is clear that 3D online virtual environments may be used for education delivery in some fashion and studies like this one seek to improve both the theoretical foundation and operation efficacy of this new technology.
Growth and Decline of Second Life as an Educational Platform

Disclaimer

Standard research disclaimer and consent.

*1. THE UNIVERSITY OF SOUTHERN MISSISSIPPI AUTHORIZATION TO PARTICIPATE IN RESEARCH PROJECT. Consent is hereby given to participate in the study titled:

Growth and Decline of Second Life as an Educational Delivery Platform

1. Purpose: The purpose of this research study is to explore and explain the reasons why Second Life, a 3D online immersive virtual environment, did not become the course delivery method of choice for higher education. Research predicted that Second Life would become a major course delivery method by 2013. Universities invested substantial amounts of time and resources building a presence in Second Life from 2003-2009. After 2009 most universities either discontinued their presence in Second Life or scaled back significantly. This study seeks to find what caused this phenomenon.

2. Description of the Study: In this study students, instructors, and instructional designers will be surveyed to gather information about their experiences with Second Life. Completing the survey should take 15-30 minutes. Any information you provide will be kept confidential and neither your identity nor your institution will be revealed.

3. Benefits: While there may be no immediate direct benefit to you for participating in this study it is hoped that the results of this study will provide information to higher education institutions concerning the effective use of 3D online immersive virtual environments and other technology to create learning environments that reduce isolation and increase engagement. Students and instructors will benefit from having access to technology that increases learning potential and student engagement. Instructional designers will benefit by improving the transitioning of instructional materials from a traditional learning management system to 3D online virtual environments.

4. Risks: The research poses no foreseeable risks to you. Be assured that information about you and your institution will not be revealed, so that you may answer freely about your experiences without fear of negative consequences. The researcher has taken all known precautions to ensure that information is protected and kept confidential.

5. Confidentiality: While there is no way to guarantee absolute confidentiality in the
collection of electronic data, the researcher has implemented safeguards to protect personally identifiable information using some recommended best practices in accordance to IRB guidelines for Internet-based research practices. Online survey responses will be maintained electronically through a secure, web-based system. Only the researcher will have access to the data. No personal identifying information will be recorded in the surveys.

6. Participant’s Assurance: Whereas no assurance can be made concerning results that may be obtained (since results from investigational studies cannot be predicted) the researcher will take every precaution consistent with the best scientific practice. Participation in this project is completely voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to Christine L. Mark at (601) 402.1414 or christine.mark@usm.edu. This project and this consent form have been reviewed by the Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research participant should be directed to the Chair of the Institutional Review Board, University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 34906-0001, (601) 266-6820.

Signatures: Please select your choice below. Clicking on the "agree" button below indicates that you have read the above information, you voluntarily agree to participate, and that you are at least 18 years old.

- [ ] Agree
- [ ] Disagree
2. Please select the response below which best describes you.

- [ ] I have used Second Life as a student, instructor, or instructional designer.
- [ ] I have never used Second Life as a student, instructor, or instructional designer.
Growth and Decline of <i>Second Life</i> as an Educational Platform

Small Gift Awards

In recognition of time you will spend completing this questionnaire, 30 $10 iTunes gift cards will be awarded at the completion of the research. At the end of this survey you may provide your email address which will be entered in a drawing, from which 30 emails will be randomly drawn. Please be assured that your responses will NOT be linked in any fashion to your email should you choose to participate.
### Demographics & General Information

**3. Please indicate your status. (Check all that apply regarding your use of Second Life)**

- Student
- Adjunct
- Instructor/Lecturer
- Assistant Professor
- Associate Professor
- Professor
- Instructional Designer
- Other

**4. What is your age range?**

- Less than 18
- 18 - 30
- 31 - 40
- 41 - 50
- 51 - 60
- Over 60

**5. What is your gender?**

- Male
- Female

**6. What degree have you earned or are currently working on?**

- Doctoral Degree
- Master's Degree
- Bachelor's Degree
- Associate's Degree
- High School Diploma
- Other/None
**7. Please indicate your level of comfort with using technology in general.**

<table>
<thead>
<tr>
<th>Not comfortable at all</th>
<th>Somewhat comfortable</th>
<th>Comfortable</th>
<th>Very comfortable</th>
<th>Extremely comfortable</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

**8. Please indicate your level of experience with gaming in general.**

<table>
<thead>
<tr>
<th>No experience at all</th>
<th>Seldom play games</th>
<th>Average</th>
<th>Regular gamer</th>
<th>Expert gamer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

**9. Please indicate your overall experience with Second Life.**

<table>
<thead>
<tr>
<th>No experience/Never used</th>
<th>Seldom used/used</th>
<th>Average use</th>
<th>Above average user</th>
<th>Expert user</th>
</tr>
</thead>
<tbody>
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</table>

**10. Please indicate your general experience with other 3D Online Virtual Environments (Opon Sim; OS Grid; Blue Mars; etc.)**

<table>
<thead>
<tr>
<th>No experience/Never used</th>
<th>Seldom used/used</th>
<th>Average use</th>
<th>Above average user</th>
<th>Expert user</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**11. Which of the following social media are actively used in the courses you take, teach, or design? (Check all that apply)**

- Second Life
- Other 3D online environments
- Facebook
- Twitter
- Instagram
- Google+
- Google Hangout
- Skype/zoom
- Pinterest
- Youtube
- No social media is used
- Other (please specify)
12. What is the total number of students at your home institution?
- Fewer than 3,000
- 3,001 - 8,000
- 0,001 - 12,000
- 10,001 - 15,000
- More than 15,000

13. Please describe your home institution.
- Public
- Private

14. Please indicate the highest level of degree offerings at your home institution.
- Professional Degrees (MD, JD, DVM, etc)
- Doctoral Degrees (PhD, DBA, DM, ScD, etc)
- Master's and Bachelor's Degrees
- Bachelor's Degrees primarily
- Bachelor's Degree only
- Associate's Degrees only
15. Please indicate the location of your home institution.

- Northwestern USA
- Mid-Atlantic USA
- Southeastern USA
- Midwest USA
- Southwestern USA
- Western USA
- Canada
- Mexico
- Central America
- Europe
- Asia
- Africa

Other (please specify):

16. Which of the following describes your home institution's involvement with Second Life? (Check all that apply)

- When I was active my home institution had an official installation/learning space in Second Life
- When I was active my home institution did not have an official installation/learning space in Second Life
- My home institution currently has an official installation/learning space in Second Life
- My home institution no longer has an official installation/learning space in Second Life
- My home institution never had an official installation/learning space in Second Life
- I don't really know about my home institution's involvement in Second Life

17. Does your home institution currently have an official site/learning space in another 3D Online Virtual Environment?

- Yes
- No
- I don't know
18. If your institution had its own campus or learning area for teaching in Second Life, please briefly describe it.

*19. Who made the decisions for Second Life/3D Online Virtual Environment Use (choose all that apply):

- The instructor made all of the decisions concerning class operation
- The class as a group made all of the decisions concerning class operation
- The instructor and the class made joint decisions concerning class operation
- The institution made all of the decisions concerning class operation
- I do not know who made the decisions
20. If Second Life is no longer being used at your institution or the use of Second Life has decreased in the last few years, what do you believe the reason(s) is(are)? Choose all that apply.

- Lack of interest from my institution
- Lack of interest from faculty at my institution
- Lack of interest from students at my institution
- Lack of financial resources
- Lack of technical support
- Too steep of a learning curve for students
- Students lack hardware to run Second Life efficiently
- Problems with Second Life viewer
- Administrators' concerns for exposing students to unsuitable materials outside of the course site
- Lack of support from Linden Lab
- Change in educational discount policy by Linden Lab
- Lack of instructor knowledge as to how to design learning activities
- Lack of support from instructional designers
- Second Life is not an effective means of providing education
- It takes too much time to effectively teach in Second Life
- Second Life is still being actively used at my home institution
- I don't know what the reasons are

Other (please specify)

[Text box]
21. If Second Life is no longer being used at your institution or the use of Second Life has decreased in the last few years, what do you believe to be the MOST important reason?

- Lack of interest from my institution
- Lack of interest from faculty at my institution
- Lack of interest from students at my institution
- Lack of financial resources
- Lack of technical support
- Too steep of a learning curve for students
- Students lack campus-based hardware access to run Second Life efficiently
- Students lack home-based hardware access to run Second Life efficiently
- Lack of instructor knowledge as to how to design learning activities
- Lack of support from instructional designers
- Second Life is not an effective means of providing education
- It takes too much time to effectively teach in Second Life
- Problems with Second Life viewer
- Administrators’ concerns for exposing students to unsuitable materials outside of the course site
- Lack of support from Linden Lab
- Change in educational discount policy by Linden Lab
- Second Life is still being actively used at my home institution
- I don’t know what the reasons are

Other (please specify)
22. Which of the following impacted decision-making concerning Second Life use in your academic course(es)? (Check all that apply)

- [ ] Second Life was required as an integral part of the class(es)
- [ ] Student grades were based on successful use of Second Life for class activities
- [ ] A student project required the use of Second Life
- [ ] Extra credit was awarded based on successful use of Second Life for class activities
- [ ] Second Life activities were offered as a resource for my class(es) but not required
- [ ] The instructor held office hours or met with students in Second Life
- [ ] I don’t know

23. Please describe your past level of activity using Second Life.

- [ ] I used Second Life every day and was very active
- [ ] I used Second Life several times per week
- [ ] I used Second Life several times per month
- [ ] I cannot remember the last time I used Second Life
- [ ] I used Second Life once in a workshop and do not remember my avatar’s name

24. Please describe your current level of activity using Second Life.

- [ ] I use Second Life every day and am very active
- [ ] I use Second Life several times per week
- [ ] I use Second Life several times per month
- [ ] I seldom use Second Life and am not very active
- [ ] I cannot remember the last time I used Second Life
- [ ] I used Second Life once in a workshop and do not remember my avatar’s name

25. What is the approximate month and year that you last logged into Second Life?

[ ]
26. When you are/were using or use Second Life, what is/was the most number of hours per week you spent in Second Life?
- Fewer than 2
- =2 but fewer than 5
- =5 but fewer than 7
- =7 but fewer than 9
- 9 or greater

27. How many hours do you currently spend in Second Life?
- I am no longer active in Second Life
- Fewer than 2
- =2 but fewer than 5
- =5 but fewer than 7
- =7 but fewer than 9
- 9 or greater

28. How many hours per week do you spend in other 3D Online Virtual Environments?
- I am not active in other virtual environments
- Fewer than 2
- =2 but fewer than 5
- =5 but fewer than 7
- =7 but fewer than 9
- 9 or greater

29. Did you/Do you use Second Life for purposes other than education? If “Yes” please indicate why in the comment box under the question. (e.g. Social activity, learning, role-playing, building and creating content, discovery, business, etc.)
- Yes
- No

Why did you/do you use Second Life?
30. Did you do you use another 3D Online Virtual Environment for purposes other than education? If "Yes" please indicate which one and the reason(s) in the comment box below the question. (e.g. social activity, learning, role-playing, building and creating content, discovery, business, etc.)

- [ ] Yes
- [ ] No

Other 3D Online Virtual Environment and reasons for use.
31. As a STUDENT, have you completed or participated in an academic course that use Second Life as a part of the course?

☐ Yes
☐ No
Growth and Decline of Second Life as an Educational Platform

32. If you have taken or participated in a course that used Second Life, please respond to the following. (Check all that apply)

- An entire course was completed inside of Second Life
- Second Life was used for more than half the course
- Second Life was used for some required activities
- Second Life was used for one required activity
- Second Life was used for extra credit
- Second Life was used to enhance course content
- N/A

Other (please specify)

33. Have you ever taken or participated in an academic course that used a 3D Online Virtual Environment other than Second Life? If "Yes" please indicate which one(s) in the box below.

- Yes
- No

Which one(s)?
34. If you have taken or participated in a course that used a 3D Online Virtual Environment other than Second Life, please respond to the following. (Check all that apply)

- [ ] An entire course was completed inside of the 3D online virtual environment
- [ ] The 3D online virtual environment was used for more than half the course
- [ ] The 3D online virtual environment was used for some required activities
- [ ] The 3D online virtual environment was used for one required activity
- [ ] The 3D online virtual environment was used for extra credit
- [ ] The 3D online virtual environment was used to enhance course content
- [ ] N/A

Other (please specify)

*35. If you took or participated in a class or classes in Second Life which of the following best describes the frequency of course meetings in Second Life? (Check all that apply)

- [ ] Regularly Scheduled
- [ ] Monthly
- [ ] Weekly
- [ ] Daily
- [ ] Infrequently
- [ ] Only once

Other (please specify)
36. If you took or participated in a class or classes in Second Life which of the following tools were used in the class meeting space? (Check all that apply)

- PowerPoint projector
- Media Player
- Notecards
- PDF Files
- Props/Objects
- Formal Desks/Tables
- None of these

Other (please specify)

37. If you took or participated in a class or classes in Second Life which of the following describes the course content? (Check all that apply)

- PDF files/Documents
- PowerPoint Presentations
- Stock Multimedia (e.g., YouTube)
- Custom Multimedia (produced by your instructor)
- Discussions
- Individual Projects
- Group Projects
- Building/Construction
- Scavenger Hunts
- Tours of Second Life Sites
- Role Playing
- Simulations
- Virtual Field Trips
- None of these

Other (please specify)
Growth and Decline of *Second Life* as an Educational Platform

**38. If you took or participated in a class or classes in Second Life which of the following best describes your overall experience?**

<table>
<thead>
<tr>
<th>Extremely negative</th>
<th>Very negative</th>
<th>Neutral</th>
<th>Very positive</th>
<th>Extremely Positive</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

**39. If you are/were a student did your instructor provide an orientation to Second Life?**

(Check all that apply)

- Yes, face-to-face
- Yes, virtual
- Online video demos and tutorials
- No

**40. Other than what was provided by your instructor, which of the following resources did you use to help you learn Second Life?** (Check all that apply)

- Online Tutorials (such as Google searches)
- Online videos (such as You Tube)
- Friends
- Official Second Life FAQs and Tutorials
- I did not use other resources

Other (please specify)

**41. How easy was it for you to become proficient in Second Life?**

<table>
<thead>
<tr>
<th>Extremely difficult</th>
<th>More difficult than I expected</th>
<th>Neutral</th>
<th>Easier than I expected</th>
<th>Extremely easy</th>
</tr>
</thead>
<tbody>
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</table>

**42. Which of the following best describes your learning curve improvement associated with Second Life since you began using Second Life?**

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
<th>No change</th>
<th>Noticeably improved</th>
<th>Dramatic improvement</th>
</tr>
</thead>
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</table>

**43. Are/were you a more active participant in your course(s) using Second Life than other online educational platforms?**

- Yes
- No


*44. Please indicate the frequency of issues you had with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Acceptable number of issues</th>
<th>Frequent but manageable issues</th>
<th>Continuous issues</th>
</tr>
</thead>
<tbody>
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</table>

*45. Please indicate the seriousness of issues you had with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?

<table>
<thead>
<tr>
<th>Not serious</th>
<th>Minor</th>
<th>Average</th>
<th>Somewhat serious</th>
<th>Serious</th>
</tr>
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</tbody>
</table>

*46. What specific issues do you/did you have with hardware while using Second Life? (Check all that apply)

- Internet connection speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware issues
- Uncomfortable with technology

Other (please specify)


*47. Which of the following best describes technical issue improvements with Second Life since you began using Second Life?

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
<th>No change</th>
<th>Noticeably improved</th>
<th>Dramatic improvement</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

*48. How do you believe integrating Second Life into your institution’s Learning Management System (e.g. Blackboard, Desire2Learn, Moodle) would affect you?

<table>
<thead>
<tr>
<th>Would negatively effect</th>
<th>Would somewhat negatively affect</th>
<th>Would have no effect</th>
<th>Would somewhat positively affect</th>
<th>Would positively effect</th>
<th>N/A</th>
</tr>
</thead>
</table>
49. How would you describe your impression of Second Life as a tool for learning?
(Check all that apply)
- I found Second Life to be an engaging learning tool
- I found Second Life to be a serious method for providing instructional opportunities
- I did not see the purpose of Second Life as a learning tool
- I thought the graphics were not up to what I expected
- I found Second Life to be too ‘cartoonish in nature’ to take seriously
- I thought Second Life distracted me from learning course content
- I thought using Second Life was a waste of time

Other (please specify)
Growth and Decline of Second Life as an Educational Platform

Instructor Questions

* 50. As an INSTRUCTOR, have you ever taught a course that integrated Second Life as part of the course requirements?

☐ Yes
☐ No
51. Please describe how you integrated Second Life into your course(es). (Check all that apply)

☐ An entire course was completed inside of Second Life
☐ Second Life was used for more than half the course
☐ Second Life was used for some required activities
☐ Second Life was used for one required activity
☐ Second Life was used for extra credit
☐ Second Life was used to enhance course content

Other (please specify)

☐ ☐ ☐ ☐ ☐ ☐

*52. Have you ever taught an academic course using a 3D Online Virtual Environment other than Second Life? If "Yes" please indicate which one(s) in the box below.

☐ Yes
☐ No

Which one(s)?

☐ ☐ ☐ ☐ ☐ ☐
53. If you have taught a course that used a 3D Online Virtual Environment other than Second Life, please respond to the following. (Check all that apply)

- An entire course was completed inside the 3D online virtual environment
- The 3D online virtual environment was used for more than half the course
- The 3D online virtual environment was used for some required activities
- The 3D online virtual environment was used for one required activity
- The 3D online virtual environment was used for extra credit
- The 3D online virtual environment was used to enhance course content
- NA

Other (please specify)

54. Which of the following have you created for your courses using Second Life? (Check all that apply)

- A complete in-world course
- Single learning activity completed in-world
- An open learning environment for faculty and students (e.g. amphitheater, park, floating classroom)
- Building learning spaces using Second Life building tools (e.g. self-contained classroom, lecture hall)
- A context-based learning experience (e.g. library or art gallery tour)
- A theme-based learning experience (e.g. city reproduction or literary setting reproduction)
- An entire region for my home institution
- Multiple regions for my home institution
- An accurate replica of my home institution

Other (please specify)
55. Which of the following is an accurate description of your course development efforts using Second Life?

- [ ] I completed my projects by myself
- [ ] I completed my projects with help from staff
- [ ] I completed my projects with help from student workers/graduate assistants
- [ ] I collaborated with other faculty at my institution
- [ ] I collaborated with colleagues at other institutions
- [ ] I collaborated with someone from within Second Life

Other (please specify)

56. How supportive was your Administration of your involvement in teaching and learning in Second Life?

- Not Supportive
- Somewhat Unsupportive
- Neither Supportive or Unsupportive
- Somewhat Supportive
- Supportive

57. If your administration was ‘supportive’, please describe your support below.

58. To what extent do you believe your involvement in Second Life helped or hindered your chances for promotion and tenure?

- Extremely Hindered
- Somewhat Hindered
- Had no effect
- Helped Somewhat
- Helped Greatly
Growth and Decline of Second Life as an Educational Platform

59. If you still use Second Life for teaching and learning, which of the following positively affects your decision? (Check all that apply)

- Second Life is a primary research area
- I enjoy using emerging technology such as Second Life
- My students are engaged and excited about Second Life
- I am rewarded for using new technologies in my classes
- I have excellent technical support from my institution
- I have excellent technical support from Linden Lab
- Second Life provides educational opportunities not available in real life

Other (please specify)

60. If you no longer use Second Life for teaching and learning, which of the following affected your decision to abandon Second Life? (Check all that apply)

- Too time consuming
- Too difficult to learn
- Earning tenure was more important
- Too many other demands on my time
- No acknowledgement for my efforts
- Not enough technical support from my institution
- Not enough technical support from Linden Lab
- Students were not engaged and thus unhappy
- Not enough resources to be effective

Other (please specify)

* 61. To what extent was more time required for preparing class materials, activities, experiences, and other teaching in Second Life than your traditional face-to-face courses?

<table>
<thead>
<tr>
<th>Significantly less time required</th>
<th>Somewhat less time required</th>
<th>Same amount of time required</th>
<th>Somewhat more time required</th>
<th>Significant additional time required</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>
**62. To what extent is/was more time required for preparing class materials, activities, experiences, and other teaching in Second Life than your online courses?**

<table>
<thead>
<tr>
<th>Significantly less time</th>
<th>Somewhat less time</th>
<th>Same amount of time</th>
<th>Somewhat more time</th>
<th>Significantly more time</th>
<th>N/A</th>
</tr>
</thead>
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</tr>
</tbody>
</table>

**63. Which of the following describes the frequency of course meetings in Second Life? (Check all that apply)**

- [ ] Regularly Scheduled
- [ ] Monthly
- [ ] Weekly
- [ ] Daily
- [ ] Infrequently
- [ ] Only once
- [ ] Other (please specify) [ ]

**64. Which of the following tools were used in the class meeting space within Second Life? (Check all that apply)**

- [ ] PowerPoint projector
- [ ] Media Player
- [ ] Notecards
- [ ] PDF Files
- [ ] Props/Objects
- [ ] Formal Desks/Tables
- [ ] None of these
- [ ] Other (please specify) [ ]
65. Which of the following describes the course content in your courses that used Second Life? (Check all that apply)

- PDF files/Documents
- PowerPoint Presentations
- Stock Multimedia (e.g. YouTube)
- Custom Multimedia (produced by you)
- Discussions
- Individual Projects
- Group Projects
- Building/Construction
- Scavenger Hunts
- Tours of Second Life sites
- Role Playing
- Simulations
- Virtual Field Trips
- None of these

Other (please specify)

66. Which of the following best describes your overall experience with using Second Life in your courses?

<table>
<thead>
<tr>
<th>Extremely negative</th>
<th>Very negative</th>
<th>Neutral</th>
<th>Very positive</th>
<th>Extremely Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="see-image" alt="Evaluator" /></td>
<td><img src="see-image" alt="Evaluator" /></td>
<td><img src="see-image" alt="Evaluator" /></td>
<td><img src="see-image" alt="Evaluator" /></td>
<td><img src="see-image" alt="Evaluator" /></td>
</tr>
</tbody>
</table>

67. Do you/did you provide your students an orientation to Second Life? (Check all that apply)

- Yes, face-to-face
- Yes, virtual
- Yes, online video demos and tutorials
- No

Other (please specify)
**68. Which of the following resources did you use to help you learn Second Life?** (Check all that apply)

- Online tutorials (such as Google searches)
- Online videos (such as You Tube)
- Friends/Colleagues
- Official Second Life FAQs and Tutorials
- I did not use other resources

Other (please specify)

**69. How easy was it for you to become proficient in Second Life?**

<table>
<thead>
<tr>
<th>Extremely difficult</th>
<th>More difficult than I expected</th>
<th>Neutral</th>
<th>Easier than I expected</th>
<th>Extremely easy</th>
</tr>
</thead>
<tbody>
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<td></td>
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</tbody>
</table>

**70. Which of the following best describes your learning curve improvement associated with Second Life since you began using Second Life?**

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
<th>No change</th>
<th>Noticeably improved</th>
<th>Dramatic improvement</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

**71. How easy do you believe it is/ was for students to become proficient in Second Life?**

<table>
<thead>
<tr>
<th>Extremely difficult</th>
<th>More difficult than I expected</th>
<th>Neutral</th>
<th>Easier than I expected</th>
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</tbody>
</table>

**72. Please indicate the frequency of issues with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?**

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Acceptable number of issues</th>
<th>Frequent but manageable issues</th>
<th>Continuous issues</th>
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</table>

**73. Please indicate the seriousness of issues with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?**

<table>
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<tr>
<th>Not serious</th>
<th>Minor</th>
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</tbody>
</table>
74. What specific issues do you/did you have with hardware while using Second Life? (Check all that apply)

- Internet connect speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware issues
- Uncomfortable with technology

Other (please specify)

75. Do you believe that students have/had issues with hardware while using Second Life for their courses (using the interface, Internet connection speed, graphic card capability, processing speed)?

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Neutral</th>
<th>Frequent issues</th>
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</tbody>
</table>

76. What issues do your/did your students have with hardware while using Second Life? (Check all that apply)

- Internet connect speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware issues
- Uncomfortable with technology

Other (please specify)
Growth and Decline of Second Life as an Educational Platform

77. Which of the following best describes technical issue improvements with Second Life since you began using Second Life?

- No improvement
- Somewhat improved
- No change
- Noticeably improved
- Dramatic improvement

78. Do you believe that students are/were more engaged in the class when using Second Life than other online educational platforms?

- Yes
- No

79. Which one of the following describes where the idea(s) to use Second Life for education came from? (Check all that apply)

- Myself
- A personal friend
- A colleague at my institution
- A colleague from a different institution
- An administrator at my institution
- An administrator at another institution
- I read an article/book about Second Life

Other (please specify)
80. Which one of the following BEST describes where the idea to use Second Life for education came from:
- Myself
- A personal friend
- A colleague at my institution
- A colleague from a different institution
- An administrator at my institution
- An administrator at another institution
- I read an article/book about Second Life
- Other source
- Other (please specify)

81. How do you believe integrating Second Life into your institution’s Learning Management System (e.g. Blackboard, Desire2Learn, Moodle) would affect your students?
- Would negatively effect
- Would somewhat negatively effect
- Would have no effect
- Would somewhat positively effect
- Would positively effect
- N/A

82. What is/was your overall opinion of Linden Lab as far as providing support for teaching and learning in Second Life?
- Very unfavorable
- Somewhat unfavorable
- Neither favorable or unfavorable
- Somewhat favorable
- Very favorable

83. Please provide any comments you wish to leave concerning your experience with Linden Lab regarding your use of Second Life in your classes.
### Growth and Decline of Second Life as an Educational Platform

**84. Are you aware of any legal concerns your institution had with the use of Second Life for teaching and learning? (Check all that apply)**

- Copyright/Intellectual property concerns
- Trademark concerns
- Safety concerns
- Privacy concerns
- Contract concerns
- Institutional liability concerns
- Institutional image concerns
- I am not aware of any legal concerns

**Other (please specify)**

---

**85. How would you describe your impression of Second Life as a tool of learning? (Check all that apply)**

- I found Second Life to be an engaging learning tool
- I found Second Life to be a serious method for providing instructional opportunities
- I did not see the purpose of Second Life as a learning tool
- I thought the graphics were not up to what I expected
- I found Second Life to be too ‘cartoony in nature’ to take seriously
- I thought Second Life distracted me from teaching course content
- I thought using Second Life was a waste of time

**Other (please specify)**
### Growth and Decline of Second Life as an Educational Platform

#### Instructional Designer Questions

*86. As an INSTRUCTIONAL DESIGNER, have you ever designed a course or a learning activity which integrated the use of Second Life?*

- [ ] Yes
- [ ] No
Growth and Decline of *Second Life* as an Educational Platform

87. Please describe how you integrated Second Life into your course(es). (Check all that apply)

- [ ] An entire course was completed inside of Second Life
- [ ] Second Life was used for more than half the course
- [ ] Second Life was used for some required activities
- [ ] Second Life was used for one required activity
- [ ] Second Life was used for extra credit
- [ ] Second Life was used to enhance course content

Other (please specify)

88. Have you ever designed an academic course using a 3D Online Virtual Environment other than Second Life? If “Yes” please indicate which one(s) in the box below.

- [ ] Yes
- [ ] No

Which one(s)
Growth and Decline of *Second Life* as an Educational Platform

89. If you have designed a course or course learning activity that used a 3D Online Virtual Environment other than Second Life, please respond to the following. (Check all that apply)

- An entire course was completed inside of the 3D online virtual environment
- The 3D online virtual environment was used for more than half the course
- The 3D online virtual environment was used for some required activities
- The 3D online virtual environment was used for one required activity
- The 3D online virtual environment was used for extra credit
- The 3D online virtual environment was used to enhance course content
- N/A

Other (please specify)

90. Which of the following have you created or designed using Second Life? (Check all that apply)

- A complete in-world course
- Single learning activity completed in-world
- A open learning environment for faculty and students (e.g. amphitheater, park, floating classroom)
- Building learning spaces using Second Life building tools (e.g. self-contained classroom, lecture hall)
- A context-based learning experience (e.g. library or art gallery tour)
- A theme-based learning experience (e.g. city reproduction or literary setting reproduction)
- An entire region for my home institution
- Multiple regions for my home institution
- An accurate replica of my home institution
Growth and Decline of <i>Second Life</i> as an Educational Platform<br>

**91. Which of the following is an accurate description of your design efforts using Second Life?**

- [ ] I completed my projects by myself
- [ ] I completed my projects with help from other staff
- [ ] I completed my projects with help from student workers/graduate assistants
- [ ] I collaborated with the course instructor
- [ ] I collaborated with colleagues at other institutions
- [ ] I collaborated with someone from within Second Life

**92. How supportive was your Administration of your involvement in designing courses and learning activities in Second Life?**

<table>
<thead>
<tr>
<th>Not Supportive</th>
<th>Somewhat Unsupportive</th>
<th>Neither Supportive or Unsupportive</th>
<th>Somewhat Supportive</th>
<th>Supportive</th>
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</table>

93. If your administration was 'supportive', please describe your support below.

94. If you still use Second Life for designing courses and learning activities, which of the following positively affects your decision? (Check all that apply)

- [ ] Second Life is a primary learning platform at my institution
- [ ] I enjoy using emerging technology such as Second Life
- [ ] Students are engaged and excited about Second Life
- [ ] Faculty are engaged and excited about Second Life
- [ ] I am rewarded for using new technologies in my course designs
- [ ] I have excellent technical support from my institution
- [ ] I have excellent technical support from Linden Lab
- [ ] Second Life provides educational opportunities not available in real life

Other (please specify)

- [ ]
- [ ]
95. If you no longer use Second Life for courses and learning activities, which of the following affected your decision to abandon Second Life? (Check all that apply)

- [ ] Too time consuming
- [ ] Too difficult to learn
- [ ] Other course and learning activity design is more important
- [ ] Too many other demands on my time
- [ ] No acknowledgement for my efforts
- [ ] Not enough technical support from my institution
- [ ] Not enough technical support from Linden Lab
- [ ] Students were not engaged and thus unhappy
- [ ] Faculty were not engaged and thus unhappy
- [ ] Not enough resources to be effective
- [ ] Legal and administrative issues

Other (please specify)

---

96. To what extent was more time required for preparing class materials, activities, experiences, and other design activities in Second Life than your traditional face-to-face courses?

<table>
<thead>
<tr>
<th>Significantly less time required</th>
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<th>Somewhat more time required</th>
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</tr>
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</table>

97. To what extent was more time required for preparing class materials, activities, experiences, and other design activities in Second Life than your other online courses?

<table>
<thead>
<tr>
<th>Significantly less time required</th>
<th>Somewhat less time required</th>
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</tbody>
</table>
Growth and Decline of *Second Life* as an Educational Platform

**88. Which of the following describes the frequency of course meetings in Second Life?** (Check all that apply)

- Regularly Scheduled
- Monthly
- Weekly
- Daily
- Infrequently
- Only once

Other (please specify)

**89. Which of the following tools were used in the class meeting space within Second Life?** (Check all that apply)

- PowerPoint projector
- Media Player
- Note cards
- PDF Files
- Props/Objects
- Formal Desks/Tables
- None of these

Other (please specify)
**100. Which of the following describes the course content in your courses that used Second Life? (Check all that apply)**

- [ ] PDF files/Documents
- [ ] PowerPoint Presentations
- [ ] Stock Multimedia (e.g. YouTube)
- [ ] Custom Multimedia (produced by you)
- [ ] Discussions
- [ ] Individual Projects
- [ ] Group Projects
- [ ] Building/Construction
- [ ] Scavenger Hunts
- [ ] Tours of Second Life sites
- [ ] Role Playing
- [ ] Simulations
- [ ] Virtual Field Trips
- [ ] None of these

Other (please specify):

**101. Which of the following best describes your overall experience with using Second Life in your courses or learning activities?**

<table>
<thead>
<tr>
<th>Extremely negative</th>
<th>very negative</th>
<th>Neutral</th>
<th>Very positive</th>
<th>Extremely Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

**102. Did you provide an orientation to Second Life for users? (Check all that apply)**

- [ ] Yes, face-to-face
- [ ] Yes, virtual
- [ ] Yes, online video demos and tutorials
- [ ] No

Other (please specify):

Other (please specify):
**103. Which of the following resources did you provide to help users learn Second Life?**
(Check all that apply)

- Online tutorials (such as Google searches, Captasia demos, etc.)
- Online videos (such as You Tube, Captasia, etc.)
- Printed documents and/or manuals
- Official Second Life FAQs and Tutorials
- I did not provide other resources

Other (please specify)

---

**104. How easy do you believe it is/was for users to become proficient in Second Life?**

<table>
<thead>
<tr>
<th>Difficult</th>
<th>More difficult than I expected</th>
<th>Neutral</th>
<th>Easier than I expected</th>
<th>Easy</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

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**105. Which of the following best describes your users’ learning curve improvement associated with Second Life since you began using Second Life?**

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
<th>No change</th>
<th>Noticeably improved</th>
<th>Dramatic improvement</th>
</tr>
</thead>
<tbody>
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**106. How easy was it for you to become proficient in Second Life?**

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</tr>
</tbody>
</table>

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**107. Which of the following resources did you use to help you learn Second Life?**
(Check all that apply)

- Online tutorials (such as Google searches)
- Online videos (such as You Tube)
- Friends/Colleagues
- Official Second Life FAQs and Tutorials
- I did not use other resources

Other (please specify)
**108. Which of the following best describes your learning curve improvement associated with Second Life since you began using Second Life?**

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
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<th>Dramatic improvement</th>
</tr>
</thead>
</table>

**109. Please indicate the frequency of issues with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?**

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Acceptable number of issues</th>
<th>Frequent but manageable issues</th>
<th>Continuous issues</th>
</tr>
</thead>
</table>

**110. Please indicate the seriousness of issues with computer hardware when using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?**

<table>
<thead>
<tr>
<th>Not serious</th>
<th>Minor</th>
<th>Average</th>
<th>Somewhat serious</th>
<th>Serious</th>
</tr>
</thead>
</table>

**111. What issues do you/did you have with hardware while using Second Life? (Check all that apply)**

- Internet connect speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware issues
- Uncomfortable with technology

Other (please specify):

**112. Do you believe that students have/had issues with hardware while using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?**

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Neutral</th>
<th>Frequent issues</th>
<th>Serious issues</th>
</tr>
</thead>
</table>

113. What specific issues did users have with hardware while using Second Life? (Check all that apply)
- Internet connection speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware
- Uncomfortable with technology

Other (please specify)

114. Do you believe that instructors have had issues with hardware while using Second Life (using the interface, Internet connection speed, graphic card capability, processing speed)?

<table>
<thead>
<tr>
<th>No issues</th>
<th>Infrequent issues</th>
<th>Neutral</th>
<th>Frequent issues</th>
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</tbody>
</table>

115. What specific issues did instructors have with hardware while using Second Life? (Check all that apply)
- Internet connection speed
- Processor speed
- Graphics card capabilities
- Access to technology
- Second Life interface
- Unfamiliarity with hardware
- Uncomfortable with technology

Other (please specify)
**116. Which of the following best describes technical issue improvements with Second Life since you began using Second Life?**

<table>
<thead>
<tr>
<th>No improvement</th>
<th>Somewhat improved</th>
<th>No change</th>
<th>Noticeably improved</th>
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</tbody>
</table>

**117. Do you believe that students are/were more engaged using Second Life than other online educational platforms?**

- [ ] Yes
- [ ] No

**118. Do you believe that faculty/instructors are/were more engaged using Second Life than other online educational platforms?**

- [ ] Yes
- [ ] No

**119. Which one of the following describes where the idea(s) to use Second Life for education came from? (Check all that apply)**

- [ ] Myself
- [ ] A personal friend
- [ ] A colleague at my institution
- [ ] A colleague from a different institution
- [ ] An administrator at my institution
- [ ] An administrator at another institution
- [ ] I read an article/book about Second Life

Other (please specify) 

...
120. Which one of the following BEST describes where the idea to use Second Life for education came from:

- Myself
- A personal friend
- A colleague at my institution
- A colleague from a different institution
- An administrator at my institution
- An administrator at another institution
- I read an article/book about Second Life
- Other resource

Other (please specify)

121. How do you believe integrating Second Life into your institution's Learning Management System (e.g. Blackboard, Desire2Learn, Moodle) would effect your students?

<table>
<thead>
<tr>
<th>Would negatively effect</th>
<th>Would somewhat negatively effect</th>
<th>Would have no effect</th>
<th>Would somewhat positively effect</th>
<th>Would positively effect</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

122. How do you believe integrating Second Life into your institution's Learning Management System (e.g. Blackboard, Desire2Learn, Moodle) would effect your faculty?

<table>
<thead>
<tr>
<th>Would negatively effect</th>
<th>Would somewhat negatively effect</th>
<th>Would have no effect</th>
<th>Would somewhat positively effect</th>
<th>Would positively effect</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

123. What is/was your overall opinion of Linden Lab as far as providing support for teaching and learning in Second Life?

<table>
<thead>
<tr>
<th>Very unfavorable</th>
<th>Somewhat unfavorable</th>
<th>Neither favorable nor unfavorable</th>
<th>Somewhat favorable</th>
<th>Very favorable</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

124. Please provide any comments you wish to leave concerning your experience with Linden Lab regarding your use of Second Life in designing courses or learning activities.
Growth and Decline of Second Life as an Educational Platform

125. Are you aware of any legal concerns your institution had with the use of Second Life for teaching and learning? (Check all that apply)

- Copyright/Intellectual property concerns
- Trademark concerns
- Safety concerns
- Privacy concerns
- Contract concerns
- Institutional liability concerns
- Institutional image concerns
- I am not aware of any legal concerns
- Other (please specify)

126. How would you describe your impression of Second Life as a tool for learning? (Check all that apply)

- I found Second Life to be an engaging learning tool
- I found Second Life to be a serious method for providing instructional opportunities
- I found Second Life better for individual learning activities than large classes
- I did not see the purpose of Second Life as a learning tool.
- I thought the graphics were not up to what I expected
- I found Second Life to be too 'cartoonish in nature' to take seriously
- I thought Second Life distracted me from designing course/learning activity content
- I thought using Second Life was a waste of time
- Other (please specify)
**General Comments**

127. Please leave any additional comments you believe will be helpful to this project.

128. If you would like to be included in the drawing for one of the 30 $10 iTunes gift cards, please enter your email address below so the researcher can contact you after the drawing. Please be assured that your responses will NOT be linked in any fashion to your email should you choose to participate.
Thank you for participating in my research on Second Life. Participants such as yourself who give some of their time to helping others are what makes successful research possible. Research often leads to improvements which will make life easier for others as well as perhaps yourself.
APPENDIX G

IRB APPROVAL LETTER, PHASE ONE

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 13042904
PROJECT TITLE: Growth and Decline of Second Life as an Educational Delivery Platform
PROJECT TYPE: Dissertation
RESEARCHER(S): Christine Mark
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Curriculum, Instruction, & Special Education
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 04/29/2013 to 04/28/2014

Lawrence A. Hosman, Ph.D.
Institutional Review Board
APPENDIX H

IRB APPROVAL LETTER, PHASE TWO

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
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- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
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- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months.
- Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 13100403
PROJECT TITLE: Growth and Decline of Second Life as an Educational Delivery Platform
PROJECT TYPE: New Project
RESEARCHER(S): Christine Mark
COLLEGE/DIVISION: College of Education
DEPARTMENT: Curriculum, Instruction and Special Education
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF APPROVAL: 10/22/2013 to 10/21/2014

Lawrence A. Hosman, Ph.D.
Institutional Review Board
APPENDIX I

WEBSITES FOR EMERGING VIRTUAL WORLDS

Home Portal for *OS Grid* (C. Mark).

Home Portal for *Utherverse* (C. Mark).
Home Portal for Open Simulator (Open Sim) (C. Mark).

Home Portal for Blue Mars (C. Mark).
REFERENCES


others succeed in a global environment. Internet and Higher Education, 13, 141-147.


http://slenz.files.wordpress.com/2008/12/slliteraturereviewa1.pdf


