

The Feasibility of Second Life as an Educational Platform: University of Michigan-Dearborn Case Study

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SUITABILITY OF SECOND LIFE ENVIRONMENT FOR IT EDUCATION

When examining the facilities that Second Life (SL) has to offer The University of Michigan–Dearborn with regards to information technology education, it helps to put things in a context in which we can compare the existing learning environment offered by the University to that of the virtual world of SL. SL, as a tool to engage students in learning topics related to information technology, must provide something in excess of that offered by more conventional means. That is to say, that SL must not just be another fad and can act as a viable alternative as a medium for delivering a good education.

Currently, UM–Dearborn students have the option of taking classes on campus or online via a centralized website. Using these means, students are capable of carrying on conversations with their instructor and with their peers, participate in group projects and submit assignments, and otherwise absorb lectures and readings. While the means of the interactions are different, the underlying concepts are the same between the two media.

In many ways, it seems that SL gives students (and instructors) a hybrid version of on-campus and online learning tools. While group activities of bricks and mortar institutions involve face-to-face interaction and UM–Dearborn’s online courses provide the means of meeting via a chat session on Blackboard, SL one-ups both media. SL provides a visual representation of the student’s and instructor’s personalities via an avatar which classroom participants can customize, providing an even more personal aspect to a SL learning environment. At the same time, ideas and projects can be shared instantaneously to provide an even more interactive environment.

This can be a double-edged sword, however. On one hand, SL classroom participants may be able to express themselves by editing their character’s appearance or by inserting multimedia or other digital art. On the other, students may take note of the level of anonymity provided by virtual world of SL. If this is the case, it is possible that some students use this to their advantage to act in ways they would not otherwise act in any other environment. On the positive side, it may segue into conversations or ideas which students and instructors can relate to each other on a more personal level. There is still a visual representation of all entities involved, a degree of anonymity that can dissolve barriers to communication, and tools necessary to conduct lectures and hand out notes or tests.

The act of participating in SL lends itself to some introductory programming, which even the least experienced person can learn. Students can learn to create objects using the built-in tools

provided by SL. Additionally, students can create code to control the behavior of the objects they create. This would either have to be taught by the instructor or students would have to learn this on their own. Before conducting a class, the instructor should decide what functionality students would be required to learn.

The object-oriented, virtual university would exist on an “island” which must be purchased and developed by UM–Dearborn. This island can be secured such that only student “residents” whom are granted access to the island may interact with the objects and people inside that area. This level of security helps ensure that only classroom-related activities occur.

The online, “techie” nature of SL lends itself to an environment with an atmosphere steeped in information technology that could be incorporated into other areas. Business students could also take advantage of classes offered in SL. Many individuals, organizations, and corporations have taken up offering the objects they create in SL for sale. The sale of these objects and the exchange of Linden dollars for US dollars has led to an economy within the virtual realm of SL. Students could be assigned roles according to their majors. Perhaps the accounting, finance, and marketing students work together to come up with ideas for objects the University-owned organization creates and sells to the “general public”. Individuals enrolled in the MIS program would be charged with creating those objects and perhaps any systems, databases, or other tracking mechanisms the organization may require to record or report on the transactions.

The working economy within SL is proof that small-scale and even medium-scale operations can run efficiently with products ranging from art to t-shirts to automobiles. Nissan is selling Sentras out of a giant vending machine for SL residents (Graham, 2006). The Red-Cross sells t-shirts for donations to their organization with their logo with which residents can outfit their avatars.

Currently there are several educational organizations and universities participating in some way, shape, or form in SL. Ivy League schools such as Harvard University and Columbia University and Big Ten schools such as Ohio State University, Indiana State University, and Pennsylvania State University already have a presence in SL. These institutions have found SL to be very conducive to holding classroom sessions. The distinct and fundamental difference between all of these institutions is the specific way in which they use the SL environment.

THE MARKETABILITY OF INFORMATION TECHNOLOGY EDUCATION WITHIN SECOND LIFE AT UM-DEARBORN

In ascertaining the marketability of a new information technology education program, the University must consider the market-driving forces of supply and demand. Some business types may argue that, sometimes, the existence of a supply, to a degree, creates its own demand. Providing that UM – Dearborn was creating the supply necessary to fulfill a certain level of demand, what factors would lead to the actual creation of that demand?

We’ve already discussed how Second Life offers a unique learning environment that encompasses aspects of both traditional bricks and mortar learning institutions and current online

program offerings along with their respective strengths and weaknesses. Now, in order to properly measure demand we must consider additional factors.

First of all, given permission, a survey could be conducted in order to ascertain student's general feelings towards this type of program. The results of the survey would, at the very least, indicate the level of familiarity with Second Life. The survey would encompass a variety of topics that would touch on several or all of the topics mentioned throughout this paper.

Among the information groomed from such a survey would be the potential amount (if any) students would be willing to pay if such a course were to result in higher technology fees. The fees would most likely go to cover the cost of purchasing and maintaining real estate in SL, constructing virtual buildings, training instructors to use the tools, registering users and creating documentation.

If there is not sufficient demand, the program would be at risk almost immediately since there are up front costs associated with the setup of the program. This in itself may contribute to a snowball effect. That is to say that some students may shy away from programs they already know might not be around in the near future.

Enrollment statistics obtained from the registrar's office may shed some light on the demand for IT education as well. By examining how many programs require a technology class at UM–Dearborn and the rates at which students are enrolling in distance learning classes we may be able to identify trends that further justify the financial and human investment in a SL program.

Furthermore, the students' preference for class format may drive demand. While SL gives students the ability to see their virtual instructor, many may still feel that they want to have a warm body at the front of the room. This might allow for the student to become more comfortable with the fact that they are learning from individuals who are subject matter experts in the field in which they choose to study and not someone trying to teach them through a medium through which the instructors have no real experience. If this is the case, then students may feel that SL is only getting in the way of their education. For example, perhaps an accounting student is left pondering, "What does this have to do with accounting"?

In addition to those concerns that shape student demand for SL-based courses, there are supply considerations that require scrutiny on the part of the University. First of all, current instructors must be willing to utilize this type of environment. Adverse affects may occur if the instructor is forced to use this type of teaching medium against their will. Even if professors are willing to employ the online tool, they must spend time learning how to use the tool themselves as well as design ways to teach others in the virtual space effectively.

The University must be willing to put up the necessary capital to fund the initial startup of the SL environment as well as the ongoing maintenance costs. The specific costs will be discussed in another section, but it should be noted that the cost of providing the course must be outweighed by the incremental benefit associated with interested students opting to take those courses.

Given that all of the above work out in favor for providing the course, there is still at least one more consideration. Like the specific costs, the specific hardware and software requirements for

the University, instructors, and students will be discussed separately. However, even if the University is willing to provide space in the form of computer lab equipped with PCs bolstering the required hardware and software, students and instructors alike will need at least the minimum system requirements as stated by SL staff.

If assignments or time required of students is to be spent during hours other than what may be scheduled during regular class times, the University will have to develop policies that accommodate those students. If these types of classes are replacing required classes, should the University require that time spent in SL for these classes take place during regularly scheduled class time?

Furthermore, if the above is the case, should the University supply students in those programs with the necessary hardware and software so that students can perform the work required by their instructors at a time that is convenient to them? There are several logistics questions that need to be answered by the University before it commits to a program such as this.

The program's ultimate success or failure depends on several factors coming together in a way that does not leave an adverse impression on students, faculty, or UM–Dearborn administrative staff. In order for a class or program of this nature to be successful, it must enhance a student's educational experience at UM–Dearborn, not hinder it. There will be a balance between the supply and demand that will ultimately determine the marketability of a SL educational program. This balance will be influenced by factors based on the decisions made by students and the reaction of the University to the results of those decisions.

After some more consideration and brainstorming, the University should narrow the scope of what it wishes to accomplish with this type of class. Harvard University's SL presence is directed toward law while Ball State's program is directed toward culture, and Ohio State University's to women's studies. Only after the University knows exactly what it wants to do can it then go to the students with market research tools and extract an estimate for demand. Only after all of these questions are answered will the University know if it has something that provides value, creates demand, or is otherwise marketable.

END USER ACCEPTANCE OF SECOND LIFE

Of all the factors that influence the success or failure of any new teaching/learning method such as Second Life is user acceptance. The degree to which students and faculty are able to effectively convey their thoughts and ideas affects the effectiveness of a program's ability to do its job. In this case, the job is to provide the tools that help both the teacher and student teach the class and apply knowledge in such a way as to promote learning, respectively. Results are directly linked to the acceptability of the new application and the tools that allow information, thoughts, and ideas to flow between the student, teacher and other students as well.

Student Acceptance

In the context of user acceptance from the standpoint of the student, researchers have repeatedly found several critical factors that lead to the likelihood that the program at hand will have a

higher degree of acceptance. Alavi concluded that when students take on a passive role in a lecture-based environment, they are not actively engaged in the learning process (1994). As such, overall learning is low and distractions are numerous. When students are not actively engaged, there is a lapse in the learning process. If this is the case in SL, the students may tend to blame the software application and will ultimately reject it.

Alavi also found that as technology has progressed, so has the use of computer-aided learning methods such as Group Decision Support Systems (1994). This makes sense because of the benefits offered by tools such as WebCT, whose interface allows students to chat, carry on discussions, transmit files for group projects and take exams, can reach greater audiences.

With applications such as Second Life, distance is not an issue at all when it comes to creating an environment for learning and teaching. The three-dimensional virtual environment also helps bring in some of the aspects from being in a physical class room. The advantage to this type of environment is that knowledge can be instantly applied to the task, project, or problem at hand.

Authors Lu, Yu, and Liu noted that interactive multimedia in learning environments has been suggested as early as 1990 (2003). SL offers this type of functionality so that even student presentations can be conducted within the virtual environment. With this kind of sexy technology, interest may be created among the student body. Greater interest in the learning method may lead to a greater chance that the user will approve of the software. As Alavi concluded, the more interactive the system, the less chance of distractions there will be (1994).

Masemola and De Villiers noted that usability tests before a full-scale rollout of a new learning software application (2006) aid greatly in predicting ultimate user acceptance. These tests would allow students to experiment in SL before being required to use the tool during the semester in which their grades (performance evaluations) are determined. Student's concerns raised during the testing can be addressed by changes in the way ideas are presented or in ways in which the logistic aspects (handing in files, sharing ideas, etc.) in order to mitigate those concerns from arising again when/if the application is used in a production environment. The downside to usability testing is that it can be prohibitively expensive (Masemola & De Villiers, 2006). On the positive, it may be able to prevent the University from making an investment doomed to failure.

Staff/Faculty Acceptance

From the standpoint of the faculty, many of the concerns are the same. Professors are concerned about getting ideas across to students, sharing files, and presenting topics. Therefore, in order for the faculty member to perform these actions with minimal friction, adequate training would have to be offered. A well-designed training program may mean the difference between the successful acceptance of a new online education program through Second Life and its ultimate failure. The fundamentals of a successful training plan will be discussed in a later section.

A study conducted by Wai-kit Ma, Andersson & Streith indicated that lack of computer competence ranked as the 3rd largest barrier to acceptance of technology by student teachers (2005). The authors argued that faculty must have intrinsic basic knowledge regarding how to

manipulate online software teaching tools prior to learning how to use new technology. The case would be the same for the Second Life teaching tools.

Teachers must perceive the software to be useful and must be easy to use. The more useful teachers think the software is, and the easier it is to use, the more likely teachers will be accepting of the software and the learning environment.

DESIGNING A SECOND LIFE TRAINING PROGRAM FOR STUDENTS AND FACULTY

As mentioned in the section regarding user acceptance, training plays a vital role in the ultimate success or failure of new online educational programs. Because of their technical nature, such programs increasingly demand users to be technologically knowledgeable. In order for users (both faculty and students) to gain technical knowledge, adequate training exercises will have to be put in place in order to achieve a somewhat level playing field. If the playing field is uneven, those individuals with prior technical knowledge have an advantage over those who do not, and may achieve better scores than their non-technical counterparts. This situation could lead to negative discourse, lower enrollment in these types of programs or classes, and thus, the ultimate failure of these types of programs. This paper attempts to highlight those practices which help ensure a training program's effectiveness.

Behavioral Considerations to Training Methodologies

In an article by David Crouse, the author proposes a set of truths he describes as “rules” that should be considered when developing a training program (1997). Although these “rules” are geared toward the administrators making technology decisions for secondary schools, they still have meaning at the undergraduate and even the graduate level. For illustration purposes, Crouse's rules are below:

1. *“I've mastered it; don't change it!”*
No matter how bad the old software is and how good the new software is, people will resist changing. With good reason. (See the rest of the rules).
2. *Learning new software is a pain.*
There is no easy way to learn how to use a new software program except to use it, make mistakes with it, and say bad things about it. Furthermore, it takes a lot of time.
3. *People only learn when they have to.*
(See rule 2.) Very few people learn any programs on their own. They must have a reason to learn. The only way to ensure that everyone receives computer training in an organization is to computerize something important that everyone has to do. If this sounds unreasonable, read rule 4.
4. *Learn one program to become computer literate.*
Many different kinds of software have the same functions and many of the same key strokes, so what you learn in one program applies to many others. Every time you grapple with and solve a software problem, you will be able to apply it to another problem you encounter later. This is good, because there will always be new software problems.

5. *The best teacher is a user.*
The only way to get effective help with software is to talk to someone who is using the software. Make a list of steps needed to accomplish a task and follow them until you are ready to take on more frustration.
6. *No one ever learns anything from the manual* except the phone number for technical support.

While not all of Crouse's rules apply to the potential implementation of a Second Life classroom, there are a couple that do. The author's points that learning new software is tedious and cumbersome, that users make the best teachers, and that manuals are not nearly as effective as hands-on learning, ring true for any type of new software whether it is at work or in the virtual classroom.

That being said, it makes sense to focus much of the training efforts on the faculty, as they will be the person in charge of making sure that students have all the tools necessary to fulfill the tasks to which they have been assigned. Also, the more they are familiar with the Second Life environment and its tools, the easier it will be to teach the students how to perform actions needed in order to successfully negotiate the course.

The "manual" per se of the SL environment consists of some "how-to" sections and, after you've created your character, an orientation island. While the orientation island is much better than a manual, it still pales in comparison to active hands-on learning with an instructor who has been through the process. Providing this setup will help ensure that learning SL is less of a "pain" for the students.

Train the Trainer

Depending on the scope of the Second Life class program, a number of professors will have to be trained how to manipulate the Second Life environment in ways that facilitate the functions they would have to perform. Focus should be placed on the faculty to make sure that can be subject matter experts of sorts in the application in addition to the material they are teaching. In general, subject matter experts thoroughly understand the material at hand which gives them the ability to better relate with users, and allows it so that they are able to decrease the amount of time necessary to train others (Wall-Williams, 2001).

The caveat to this approach, however, is that not all instructors are at the same technical skill level. In order to prevent large deviations in performance, the University would have to devise a way in which to ascertain that the faculty that would be involved in teaching a SL class has a proficiency in the tools that will be used throughout the semester for facilitating those tasks associated with conveying ideas, assigning homework, submitting and grading homework, etc. Deviation in proficiency will cost the program in terms of students' perceived reliability.

Once it can be agreed upon that faculty has the required proficiency, the faculty can then be ready for training their class. They will run into many of the snags encountered by several of their own peers when they were completing the initial training process. With this knowledge, teachers will be able to address any issues quickly and train their students to use the key functions that will make up the workflow of such a class.

Additionally, by having prior experience in the SL environment, instructors can tailor their classroom training sessions to include the most essential elements of SL. This will further help reduce the time to provide training to their classes. In doing so, they open up the floor to deal with more training issues on an individual basis.

A Final Word on Training

Among other factors determine the overall success of the implementation of a Second Life educational program, training stands out at the forefront. It is especially important because there is more than one first impression involved; and first impressions are very important. The first SL training contact with instructors must be a positive experience. If it is not, they may transfer some of their negative feelings into their training of the software to their students. Subsequently, if the students suffer the same type of experience, the program will receive bad marks and will ultimately be rejected by those it was designed to benefit.

The most encouraging force in the student's experience with SL will be with that of the trainer. A well-trained instructor can help resolve students' issues and worries and can work to make the student's experience a positive one. The easier SL is to navigate for the students and the more well-versed they are in its applications, the greater likelihood that the program will be able to achieve and sustain success.

RESOURCE COMMITMENT FROM THE UNIVERSITY

One major factor remains in determining the feasibility of a Second Life online educational program. This factor can be quantified as the necessary resource commitment that would be required not only to start the program, but to maintain and sustain the program as well. These resources will consist of financial as well as human capital. Determining financial requisites is fairly straight-forward but the human component in this type of program is difficult to quantify and will vary greatly depending on the scope and intended purpose of the program under consideration.

Financial Resources: Costs of purchasing and maintaining land within Second Life

The good people at Second Life know that their technological environment is young and resides in relatively uncharted waters when it comes to education. For this reason, they offer one free semester to educators so that they may test those waters to see if SL offers a viable medium for conducting educational classes and programs. This "temporary land grant" of one acre is offered through Campus: Second Life and is repossessed after the duration of a semester. To qualify for the land grant, the University or the educator must provide a syllabus, class schedule, a description of the intent of the use of SL in a educational program and whether or not research will be conducted that may lead to a published work.

If after a semester a teacher wants to conduct additional classes in SL, the University will have to purchase land. Land is available for sale by entering the appropriate area of the website ("Land Sales") and finding an existing plot that is on the market. Alternatively, educational discounts on 16 acre "private islands" are available. The current price of an educator private island is \$980.

The final decision would be made based on how much land is needed and, of course, the final price.

Other land is available at \$1,675 per region. In order to buy land, the teacher of the class would have to be called what is a concierge user, or someone who pays over \$125 per month in land use fees.

In addition to the up-front cost of the land purchase, there is a monthly land maintenance fee (discounted, of course) of \$150. This is similar to hardware or software maintenance fees that businesses pay to vendors for use of their licensed products. When purchasing an island, the University would be required to pay six months of fees in advance.

Cost of user accounts

Even though land for the first semester is free, there is a potential cost of bringing students and faculty into SL if the educator wants to assign names to the users. Standard accounts are free of charge and offer limited basic functionality. The downside to this is that the teacher will have to obtain the user names of everyone in the class. The cost of being able to assign names to students and teachers is \$125 per 25 accounts. So, if you want to register 23 people, it would cost \$125. Twenty-six people would cost \$250.

Technical Resources

The below chart, provided by Gail Ross, the University’s IT Academic/Administrative Divisions Intermediate Director, shows the current configuration of the computer lab and faculty computers.

	Faculty Desktop Computer Date of Purchase: 12/23/2005	Computer Lab/Classroom Desktop Computers Date of Purchase: 12/03/2003
Brand:	Dell	Dell
Model:	Optiplex GX620	Optiplex GX270
Processor:	Intel Pentium 4 3.2GHz,	Intel Pentium 4 2.6GHz, 800MHz FSB
Memory:	800MHz FSB	512MB
Hard Drive:	512MB	80GB 7200RPM
Floppy Drive:	80GB 7200RPM	3.5” 1.44MB
Additional	3.5” 1.44MB	16x DVD, 250 Zip
Drives:	CDRW/DVD Combo	USB 2-button Optical with scroll
Mouse:	USB 2-button Optical with	17” 1703 FPT Flat Panel
Monitor:	scroll	nVidia GeForce 64MB
Video Card:	17” 1704 FPT Flat Panel	Integrated Audio
Audio:	ATI Radeon PCI 128MB	- - -
Speakers:	Integrated Audio A215	

The bullet points below detail the minimum and recommended system requirements and comes directly from the Campus: Second Life.com website:

PC Minimum System Requirements:

- Internet Connection*: **Cable** or **DSL**
- Operating System: Windows XP (Service Pack 2)
 - **OR** Windows 2000 (Service Pack 4)**NOTE: Second Life does NOT currently support Windows Vista**
- Computer Processor: 800MHz Pentium III or Athlon, or better
- Computer Memory: 256MB or better
- Video/Graphics Card**:
 - nVidia GeForce 2, GeForce 4mx, or better **OR** ATI Radeon 8500, 9250, or better

PC Minimum System Recommendations:

- Internet Connection*: **Cable** or **DSL**
- Computer Memory: 512MB or better
- Computer Processor: 1.6GHz Pentium 4 or Athlon 2000+ or better
- Video/Graphics Card**:
 - nVidia GeForce FX 5600, GeForce 6600, or better **OR** ATI Radeon 9600, X600, or better

As indicated by the system requirements, the faculty and computer lab PCs would need to be upgraded in order to handle the processing requirements for SL. The upgrade would have to entail both a memory upgrade and a graphics card upgrade. The FSB and processor speeds are currently adequate to meet the requirements of the SL application.

Hardware is especially important since trying to run SL on a system barely meeting requirements results in a lot of lag and poor performance. By addressing these issues up front, students and faculty will be able to engage in classroom activities with minimal negative occurrence. The better the application performs for everyone, the more likely they are to have a positive experience. However, the cost of the upgrade must not outweigh the overall benefit to the University's high-quality educational programs.

The Human Resource

As mentioned in a previous section, training will play a major role in determining the overall success in a SL educational program. For this reason, the University must ensure that funds/training are available to professors wishing to take part in a Second Life educational program. Those instructors who are already technically savvy will have the best chance of running a successful class since they are used to exploring new technologies. The combination of training and experience will ultimately determine how able UM–Dearborn instructors are to teach both a new educational application and their underlying subject matter. This is why it is so important to provide the necessary training resources to those individuals.

Cost will play an important role in determining whether or not the University moves forward with the program. The move requires somewhat of a commitment into a new frontier. The potential benefits can help revolutionize other educational programs at the University of Michigan–Dearborn. However, if planned and implemented poorly, the program will meet the

same fate as those projects that are planned and executed in the same manner in the business world. Perhaps before heading full speed into a program that doesn't have real focus, UM–Dearborn Administration and faculty should examine the trial period SL is offering educators. Since no market analysis has been conducted at the University, this alternative will provide insight into the real potential of such a program at UM–Dearborn before the University commits permanent resources into a project with a negative present value.

CONCLUSION

After reviewing several sources, there is sufficient evidence to conclude that the University of Michigan–Dearborn could implement an information technology educational program. However, there are many considerations to take into account before moving forward with such a program. The University must examine market conditions in order to determine the demand for their program, and how such classes will be facilitated. Even before examining the market, the University should focus the program to perform specific functions, much like other universities. Once this is done, the University can begin to plan to implement the program. At this point, the University should have an idea what kinds of students will be interested in the program, what hardware or software, if any, must be upgraded. Finally, the University will be able to have a clear idea of how much the program would cost. This cost will also include expenditures for the necessary training for the individuals who will be training students how to utilize the software. By taking a holistic approach to planning the implementation of the Second Life program at UM–Dearborn, administrators and faculty can help ensure that their roles they play during the program can lead to a successful outcome.

Below is a summarized list of considerations UM–Dearborn should address before moving forward with a Second Life – based educational program.

- Focus the program. The more definite the objective of the program, the easier the program will be to implement and facilitate.
- Determine the demand for the program. This will ensure UM–Dearborn dedicates the correct amount of resources for a successful project.
- Provide excellent training. UM–Dearborn should not concentrate on providing only *adequate* training. Well-trained instructors make the program run more smoothly.
- Make the program easy to learn. This goes hand-in-hand with training. However, this is more targeted towards the students. The easier it is for students to learn the application, the more likely they are to have a positive experience, and therefore more likely to recommend the program to other students.

Just taking these four suggestions under consideration will help increase the likelihood that the Second Life program will be successful. At the time of this review, there was no real focus or objective to the program. The most important aspect to this study was the need for purpose. Once there is purpose, it will be easier to plan for contingencies and there will be less waste in terms of time spent problem solving and out-of-pocket costs.

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