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DESIGNS FOR LEARNING #2/09

Designing Transient Learning Spaces in Second Life - a case study based on the Kamimo experience

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Through the grant “Virtual Campus for Life Long Learning” (NUV, 2007), we have gained experience in the design and building of a virtual island or “sim” in Second Life for the purpose of education. This paper discusses the virtual representations, tools, context and spaces used in course activities conducted under the project. While SL can replicate the classroom lecture, it gives further opportunities for interactive and active teaching as learning activities can take place in dispersed and diversified virtual spaces. These can be defined as transient spaces insofar as participants, activities and representations change over time. Designing transient learning spaces raises different challenges and opportunities from designing learning in the traditional physical classroom. Challenges include enabling new users to orient themselves in these spaces and how to behave in the new environments, for example. Transient learning spaces also offer new opportunities, such as the ability to design and develop a specific space for each course. The aim of this article is thus to help the teacher and “sim” designers to recognize the potential of transient learning spaces and the factors that influence their effective design.

INTRODUCTION

Virtual worlds, which were initially found popular for gaming, are also supportive of rich and social interactions and are therefore simultaneously suitable for learning (Nardi, 2007). Second Life®, a massive multi-user online virtual environment developed by Linden Lab, is of particular interest. Through its open access, it offers participants spontaneous opportunities to meet and learn. While a global concept of the “virtual classroom” or “virtual campus” is still loosely defined, the essence of these concepts include that learning environments be constructed in software for the purpose of offering services to either distributed students and/or teachers, or to bring multiple content together for use (Dillenbourg, 2000). These learning spaces are also referred to as virtual learning environments (VLEs), and there have been several attempts to define the visual design criteria for such spaces (Prasolova-Førland and Sourina, 2006). Here, we postulate that the visual design must be integrated with proposed use of the VLE, and we are supported by the work of the New Media Consortium (Horizon Report, 2007), which focuses on use or potential use as criteria for design. They define virtual worlds as spaces that not only diverge from the real world significantly but also “present the chance to collaborate, explore, role-play, and experience other situations in a safe but compelling way” (Horizon Report, 2007, p. 18). In addition, we speculate

that virtual classrooms have potential to offer targeted support of any area of study through the use of in-world artefacts of realistic and detailed design that can contribute to immersive settings. This article contributes to educational practice by illustrating the design process for virtual learning spaces created for language courses under the Kamimo Project.

FORMER WORK AND THE APPLIED FRAMEWORK FOR DESIGN

As reported by the New Media Consortia, many academic institutions are beginning to use virtual worlds for learning activities (Horizon Report, 2007). One such example is Mason (2007), who presents a case project for learning activities which applies models of experiential learning in the area of fashion design. A challenge here is represented by the fact that aspiring fashion designers typically lack resources to learn from real life-like scenarios what it entails to open and operate a boutique in a shopping mall. However, in virtual environments such as SL, there are opportunities for students to expand and address such problems, in that it offers a low barrier-to-entry for content creation.

More broadly, virtual worlds are identified as gaming environments where both formal and informal learning can take place (Nardi, Ly, & Harris, 2007; Carr & Burn, in press 2010). For example, Carr and Burn (2010) have examined learning practices in the virtual gaming world called World of Warcraft and have later applied the observed pedagogic models to teaching practises in Second Life. More specifically, they use an action learning framework to investigate informal learning practises of members of online gaming communities in new encounters and in the negotiation of participation in the gaming world. Their study has given insight into how such teaching practises can be applied to more formal teaching activities in virtual worlds such as Second Life.

One of the great strengths of virtual environments are the built-in affordances for socialising. Further, virtual environments are highly adaptable to individual needs and are being used for a variety of activities such as cooperative building, playing games, running a business, creating or displaying art and the performing arts. The list of applications can be left to the imagination. As such, these environments can be highly immersive and when used in educational contexts this can lead to more motivated and self-directed student learning. In this way environments typically support persistent socialisation even after the actual designed learning event, leading to the building of learning communities. To make full use of such potentials, however, learning has to be designed with the affordances of the tools in mind.

Arguably, the frameworks that have been applied to the selection and use of games in education can also be applied to the design of virtual learning environments. One such framework, based on former work by Mayes and de Freitas (2004, 2006), is the Four Dimensional Framework (de Freitas & Oliver, 2006; de Freitas, 2006: 23), which is represented in Figure 1. The framework can be used to identify gaps in existing designs and to identify parameters that

should be included in future educational design.

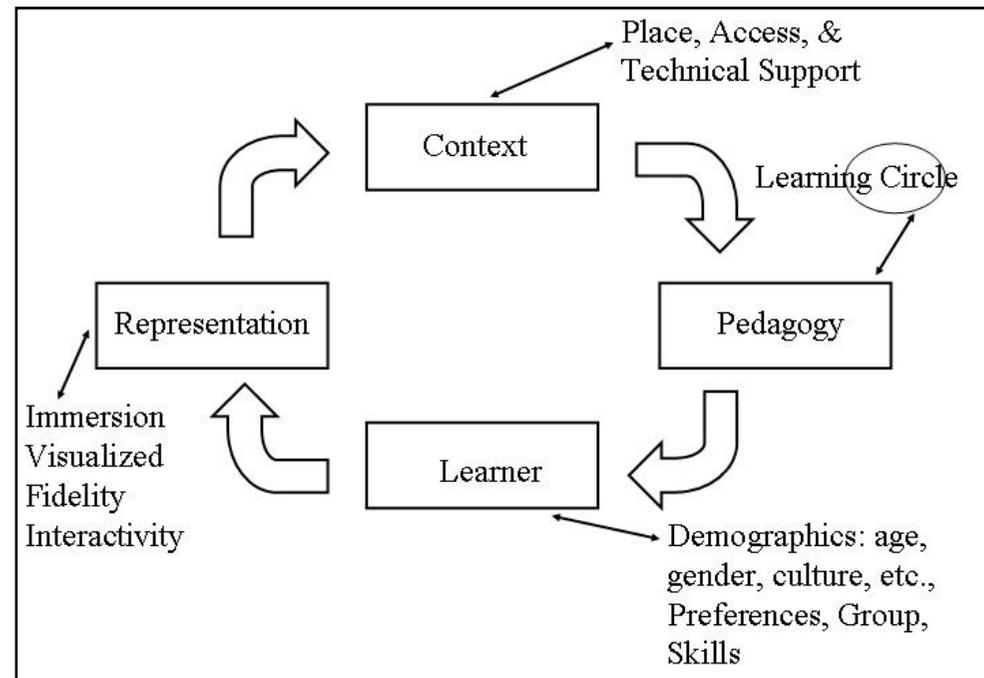


Figure 1. The Four Dimension Framework emphasizes the factors that need to be considered in using games for learning.

The four factors of Figure 1 for the learning activity are:

- pedagogic theory, model or approach used
- learner profile
- representation of the IT system
- learning context

Recent research conducted under the Kamimo project (see Molka-Danielsen, Carter, Richardson, & Jæger, 2009; Deutschmann, Panichi & Molka-Danielsen, 2009) indicates that SL is supportive of the social constructivist theory of learning (Vygotsky, 1978; Kolb, 1984), and as such indicates that SL is conducive to collaborative learning, experiential learning and role-play scenarios). All of these learning scenarios have been tried and tested in various courses run under the project. The results in this article are based primarily on two English language proficiency courses aimed at doctoral students, which were conducted 2007-2008. For further details about specifics related to these courses see Molka-Danielsen, Carter, Richardson & Jæger (2009); Deutschmann, Panichi & Molka-Danielsen (2009); Deutschmann & Panichi (2009).

Representation of the IT system

Representation is the third factor mentioned in the above framework. Representation is the application of the Information Technology (IT) system itself. For example, how does the virtual classroom appear to each student? In representation there is an issue of fidelity, i.e. of how well the visual representation conforms to reality. Or, in other words, is the virtual space believable? There are indications that users who are familiar with virtual gaming worlds will have higher expectations for other applications as well and that the demand on fidelity thus can vary based on prior experience. De Freitas and Oliver (2006) suggest that greater fidelity or conformity to reality of the whole space is not necessarily associated with a greater sense of immersion (becoming absorbed or engrossed in the surrounding virtual environment). They suggest, as we do later on, that a few familiar artefacts are sufficient to create an association with a real world schema:

Barton and Maharg (2006) suggest a notion of the 'depth of field' as a way of assisting designers of complex simulations, this 'depth of field' (similar to the photographer or cinematographer's use) and similar to the notion of diegesis (that is the internal space within of the game, see: de Freitas and Oliver, 2006) allows designers to place 'realia' and objects within the simulation to allow learners to have a freer opportunity to explore the simulation. This includes intended objects as well as incidental ones. As in the notion of diegesis, the realism of this allows the learner to become more immersed within the space, a factor that is non-dependent upon the fidelity or verisimilitude of the simulation – that is the realism of the look of the space, but more dependent upon the realism of the experiences within the space. (de Freitas, 2006: 47)

Learning Context

The last factor of the Four Dimension Framework is context. It includes the place of access for the main users of the IT system, and concerns issues such as what type of support is present for students at the location where they intend to access the system. Course information in the form of documents that are available outside of the virtual world is also part of the context of user support. Examples of issues that fall under this category include the type of PC used, available bandwidth, access availability, firewall restrictions and operational factors such as training people how to activate voice chat.

DESIGNING TRANSIENT LEARNING SPACES

Here we offer a descriptive analysis of our design of transient learning spaces on Kamimo Island. As stated earlier, educators can choose their learning space in Second Life and do not have to settle for a static representation or a single stationary space. In SL, course leaders do not have the same physical restrictions as the physical classroom. They can change the classroom representation themselves, and they can easily choose between different

locations. In addition, the course leader can teach within the closed set of group members, they can allow for outsiders to visit them, or they can take the students to a location where they can meet others. This means that students and teachers can experience and perform learning activities in dispersed and diversified virtual spaces. Because different spaces can be used for different parts of the learning process such as initiation, development and reflection, we have thus identified the spaces of Second Life as transient learning spaces. Transient spaces can be designed to be suitable for a single type of activity and do not have to be created for all the activities of one course. Having said this, we recommend that a variety of learning spaces be utilized so that different parts of the learning process can be supported.

Below, we introduce several learning spaces that have been created on Kamimo Education Island in Second Life in a series of figures. We describe the purpose of each of these settings in terms of the factors of pedagogy, learner specifications, virtual representation and support of context. Figure 2 is the welcome area of Kamimo Island. It contains a 3D-map of the island with teleport links to “classroom” locations on the island. Alternatively, avatars can simply walk or fly to the classroom locations. In the distant background of the image, two of the island’s classrooms can be seen. As the welcome area is the default entry point for first time visitors to the island, it is a good place to tell course participants to meet for the first time. In general, the open nature of the space allows for an easy overview of who is present.



Figure 2. Kamimo Island welcome area.

Figure 3 is a collection of four figures which show different types of classrooms on Kamimo. The classroom in the top-left box is just a circular seating

arrangement and is located in a skybox several hundred virtual meters about the ground of Kamimo Island. To get inside the skybox it is necessary to find the Teleport sign that is located on the ground. This type of meeting place requires some experience on behalf of the participants just to get there. The classroom in the top-right box is a more traditional in design. It has seating that faces a screen where power-point slides can be displayed. It has a traditional seating arrangement so the presenter can stand in front of the audience which faces both the presenter and screen. This is a familiar teaching schema and many inexperienced visitors to SL are comforted by this familiar setting. The fact that the participant’s avatar has a seat to sit in means they do not have to focus on moving and talking at the same time. That all participants can view the same materials on the same screen we think contributes to the sense of participation in and sharing of the experience. However, even this is not exactly as it would be in real life because in SL everyone sees the screen from their own client application. Consequently, if the class is to look at a video on the screen, each user must start it on their own computer, and each user will be at a different point in the video depending on when they started it and the efficiency of their hardware connection.



Figure 3. Several classrooms on Kamimo Island.

The classroom on the bottom-right is the same classroom as the one on the top-right. However, the tool to present slides has been moved to the side, and

another tool that can display streaming or live video has been placed in the center. It is possible for anyone in SL to move their camera view to zoom in on any object. This means that the video screen may fill up one's entire client window. In the figure, two teachers are talking to each other: one is speaking over voice in SL and the other is speaking and being seen "Live" through the video application.

The final classroom in Figure 3 at the bottom-left is a seating arrangement for group meetings. The meeting area has several scales and functions. A group may simply sit around a table and talk together although the purpose of the space is to allow several groups to work simultaneously. This function is controlled from the facilitator's seat which is separate and located at the centre of the group tables. These group tables in fact constitute separate platforms, and the facilitator can move them to different heights in the sky. This function enables each group to talk privately, out of hearing range of the other groups. They can communicate with the facilitator through note cards and can indicate when they wish to be brought back down to land level. This classroom, although built on a very accommodating concept, has not been used much. It seems that it requires a slightly advanced level of expertise in SL in order to be operated and this may have discouraged use.



Figure 4. Kamimo Island was designed with Scandinavian nature in mind.



Figure 5. Artefacts can create a sense of realism.

Figure 4 shows that initial designs of Kamimo were made with the intention of making it look like somewhere in Scandinavia. Many of the features, objects and artefacts are common to Norway and Sweden in particular. The island was designed to give the participant the feeling that they are close to nature, and to our local students, a feeling of being "close to home". It is even possible to walk up the mountain on Kamimo as shown in the top left corner of Figure 4. The traditional cabin shown in the bottom left corner contains the teleport that goes up to the sky-box classroom that was shown in Figure 3. If the participant explores the island, they may even discover the secret cave that is located behind the waterfall. The cave is shown the bottom right corner of Figure 4. Hidden surprises like the cave can make the island exciting and may make visitors want to come back to discover more. In addition, they can be relaxing spots to just talk with one or two friends.

Other locations on Kamimo are in open view, such as the campfire in the top right corner of Figure 4. This campfire has been used for many classroom discussions. Again, because it is so easy to see, it is a good place for a first meeting. It is also possible for everyone sitting around the campfire to see each other's avatars. This is essential for early meetings where you are trying to see which avatar is talking, and activity which is indicated by green bars emitting from above the head of the avatar. During early course meetings, before you recognize the voice of the speakers present, one wants to see which avatar is

speaking. We have found that, even when all participants of a class know who the others are in real life, they may still not be able to match the avatar that is speaking to the real identity. It takes time to recognize these representations.

Figure 5 demonstrates some of the details that exist within the general spaces of Kamimo. As noted in Section 2, some artefacts are directly intended for assisting learning while other artefacts can be incidental but still add to the sense of immersion. The artefacts also contribute to a greater sense of fidelity. In the top-left image is a classroom that was used for one meeting of the Social English course. The objects in the room have different functions. For example the chairs can be sat on and the display board can be changed by the teacher. Some items such as the back-pack or the drawings on the table are incidental; they are just there to add to the “classroom” feeling. The image on the top-right represents part of the open space on Kamimo. It shows a lantern for signalling boats and a boathouse, inside which there is a traditional rowing boat. All of the artefacts are very characteristic of a Scandinavian coastline setting, and designed to encourage visitors to just sit and relax and spend time in the place. For example, it may be a place for unplanned conversations. The image on the bottom left shows two climber’s ropes hanging on a wall and an old photograph of a climber. These artefacts are located inside the shown cabin. The challenge is to discover the entrance to the cabin. It is located on another place on Kamimo. The inside of this building has a different purpose from the outside of the building. From the outside the appearance the building is that of a “stabbu” in Norwegian. This was a place where both animals and people could live in the middle ages. The outside door will, however, bring one up to the classroom shown in the top left hand frame. The inside of the stabbu contains artefacts often found in a “climber’s cabin” from the late 1800s and early 1900s. Climbers would use cabins in the mountains as places to rest although not necessarily a stabbu. So, it is again one of those exciting places to discover. Finally, the bottom-right frame of Figure 5 shows an area that has been used for meetings between students from different cultures. Two groups, one in Sweden and the other in China, have been contributing to the design of Kamimo by adding the photographs that are displayed there. The photos were a focal point for discussion during the course and had remained on Kamimo for a period of time as a reminder of the group meeting.

The rationale behind the application of the framework we have discussed is that it will allow for a more inclusive design process. The island of Kamimo was designed with intended functionality in mind. But in general, the spaces can be adapted for a variety of purposes that were not envisaged at the start of the design process. As such, the spaces can include new user groups and new applications over time.

Furthermore, it is often the case that an academic institution has not identified all user groups at the initial stages of adoption of the virtual technology. The key issue here is the creation of a community which can later develop more formalised activities. One example of such approach was

taken by the University of Greenwich. They had the idea of building “Homing points” in SL. They developed “offices” for staff who had expressed interests in using the environment and this both helped people to feel ‘at home’ on the island, and gave visitors an idea of the personality of the people there (Kirriemuir, 2008). In another example, the Norwegian University of Science and Technology (NTNU) have developed a virtual campus (Located at <http://slurl.com/secondlife/NTNU/130/130/29/>) where all major faculties have represented office space.

SUMMARY

We have stated that the design of a virtual learning environment must consider factors such as pedagogy, learner specifications, virtual representation and context of support. Our descriptive analysis illustrates our experiences in relation to design on Kamimo Island. This is only a small set of experiences and certainly does not convey all the options of design outcomes.

The issue of learning theoretical models should influence the general design, and also be born in mind for each course. This implies that both teachers and the island maintainers should discuss the pedagogic models that will be applied on the island. The anticipated uses should be addressed in an initial flexible design, and there also must be a mechanism that allows the teacher to contribute over time to the environment with artefacts and content. This can be done by creating groups and giving teacher rights to add objects to the island, to add text, and by allowing and assisting them in using tools such as displays.

The above section has focused primarily on the virtual representation and on learner specifications in Second Life. Some of the classroom spaces should allow for associations with known schema, so that it is easy to get started. Other spaces can be something completely new so that it encourages exploration and discovery. Further, we have experienced that all learners are different and one design cannot fit everyone. Nevertheless, environments can be built to be more inclusive. The learners will have varying amounts of experience with virtual worlds and will thus have different expectations. Some settings should be designed with few objects and wide open spaces so that minimal experience is required to move around or to use the classroom space. At the same time, a level of authenticity with a real world place may be required to give other students a sense of immersion. A few key artefacts can bring about the right level of fidelity.

In this article, we have not said much about the general supportive context. We feel that this is largely an institutional matter. The institution that is responsible for the courses should have a policy regarding how student and teacher may access Second Life. It should be clear if SL is to be used as part of the normal academic program, and if so, the technical support should be as it is for other IT used in the classroom. Most commonly, student labs are provided with installed client applications that have been tested. Teachers and students

should be given time to get used to SL, to learn the basics such as moving and talking and managing inventory. The university should provide support documentation, and a note card can be given to new users at course start to explain frequently asked questions such as how to activate voice. A sufficient and supportive context must exist along with the other three factors of design for the best outcome. If this is the case, well designed transient learning spaces that meet the needs of learners and educators become possible.

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