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CHALLENGES FOR LECTURERS IN VIRTUAL WORLDS

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CHALLENGES FOR LECTURERS IN VIRTUAL WORLDS

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Abstract

Current research shows that three-dimensional (3D) virtual worlds can be effectively used in distance learning. Their immersive environment as well as the extensive repertoire of communication and collaboration means such as voice over IP, 3D representations, and instant text messaging are central characteristics of virtual worlds. These features, characteristics, and their playful character make virtual worlds interesting for imparting and sharing knowledge in distance learning settings.

Research results reveal that, in general, teaching in distance learning requires a flexible usage of various didactical concepts and moderation strategies which makes this mode of teaching more complex and challenging for teachers than imparting knowledge in face-to-face settings or via traditional e-learning platforms.

This paper aims at analyzing and understanding teachers’ roles and functions in distance learning, which base on the virtual world Second Life, by conduction comparative case study analyses with existing didactical concepts.

As teachers’ and students’ representation as avatars result in a high degree of social presence in virtual worlds experiential learning can be facilitated. However, for imparting experiential knowledge in virtual worlds teachers are confronted by various teaching situations. Teachers’ main task is motivating and moderating discussions among students rather than presenting content. As our study shows that this kind of “e-moderation” is complex and demanding. Didactical and technical skills are required to apply different teaching methods.

Keywords: Virtual Worlds, Second Life, Gaming, E-Moderation.
1 Introduction

Virtual worlds are Internet-based platforms enabling users to navigate, communicate, and interact in three-dimensional (3D) environments by the representation of avatars (Davis et al., 2009; Pannicke & Zarnekow, 2009; Fetscherin & Lattemann, 2008). The immersive environments as well as the extensive repertoire of communication and collaboration applications such as VoIP, 3D representations, and instant messaging are central characteristics. These features as well as virtual world’s game-like character make these environments a promising mean for imparting and sharing knowledge in distance learning settings.

Despite the decreasing media interest of virtual worlds since 2007, several virtual worlds host a growing number of users (even considering that a large number of accounts is not active). E.g. the virtual world Habbo hosts over 220 million users and Second Life has now 27 million registered accounts (as of October 2011). Institutions in the educational sector are constantly generating new concepts to use virtual worlds for imparting knowledge. Platform operators (i.e. LindenLab, Sulake Corporation) are recognizing this trend and are adopting their products and services. Second Life, for example, provides an open interface to the learning management system Moodle (Bloomfield & Livingston, 2009).

Virtual worlds provide a broad range of functions which can be used for Internet-based collaboration and communication (Stieglitz & Brockmann, 2012). The vast possibilities and modes of interaction and co-working make these platforms unique for distance learning purposes and distinguish them from other types of social media (i.e. blogs, wikis, and social networking sites (SNS)). The opportunity to combine various communication and collaboration functions in virtual worlds, such as 3D-animation and VoIP makes these platforms appropriate for an effective transfer of tacit knowledge (De Lucia et al., 2008; Huang et al., 2009, Stieglitz & Lattemann 2011).

However, an effective distance education based on virtual worlds needs highly skilled lecturers. Involved staff should be able to apply various teaching methods, which are usually not applied in traditional face-to-face teaching settings. Teachers must simultaneously impart knowledge, moderate discussions, pro-actively motivate students, and organize group work. Bett & Gaiser (2004) terms this task-spectrum “e-moderation”. Research on e-moderation indicates that teachers have to be familiar with and apply a broad range of different didactical strategies to guarantee an effective training of individuals and groups (Breuer, 2006).

So far, there exist no studies exploring the needed skills and knowledge of e-moderators in virtual world-based learning scenarios. To identify the needed skills of e-moderators in distance learning arrangements in virtual worlds we developed a Second Life-based scenario. Three student teams passed a given set of learning modules in entrepreneurship, supervised and guided by e-moderators. Overall, 28 students and six e-moderators were involved and interviewed in this case study.¹

The article is structured as follows: The next section describes the State-of-the-Art in distance learning and virtual worlds, experiential learning and e-moderation. Section 3 describes the conducted case studies and the research methodology. The fourth section will present the study results and findings, followed by a discussion of the findings by comparing different distance learning concepts. The article ends with a conclusion and a resume.

¹ This paper is an extended version of our article “Lattemann & Stieglitz, 2012” published in German language.
2 Background and State of the Art in Research

2.1 Distance Learning and Virtual Worlds

Following Verduin & Clark (1991) “Distance learning (DL) is an innovative method that uses technology to enhance learning. It is usually being used remotely where the learner and the instructor are not present at the same place”. According to Grisham & Smith (2009), distance learning is “a formal approach to learning during which the majority of instruction occurs while the learner and the educator are at a physical distance or time difference from each other”. The term distance learning comprises a broad spectrum of various teaching methods, which range from web-based teaching, hypertext classes (e.g. with multimedia elements, animations and online exercises), video-based classes, to audio-based classes with the usage of podcasts. Information sharing and communication are regularly realized by the means of chat rooms, discussion forums, voice mail or e-mail (Wu & Fang, 2009).

Next to distance learning arrangements which provide well-guided and structured courses where students have a low-level of autonomy in decision making and in the configuration of content, there exist community-based concepts where the participants are to a large extend autonomous in the pace of learning and in the selection and ordering of content. Virtual worlds represent a new platform for this kind of community-based distance learning. Bartle (2003) describes virtual worlds as “spatially based depiction of a persistent virtual environment, which can be experienced by numerous participants at once, who are represented within the space by avatars”. In contrast to common learning management systems such as Blackboard or Moodle or social media such as blogs, wikis, podcasts, social network sites, virtual worlds are immersive and highly interactive (Magnenat-Thalmann et al., 2005). According to Csikszentmihalyi (1998) the immersive characteristics of virtual worlds reduces the perceived physical distance of virtually related individuals and enhances the perceived quality of communication.

Immersion occurs when users identify themselves strongly with their avatars and when they feel as being an element of the virtual environment. These characteristics can be utilized for distance learning, by increase the involvement of learners, and by enhancing their motivation to actively participate in group-work. For example, game-based teaching can be practiced in environments where learners jointly experience situations and learn how to solve problem (e.g., sailing, fire drills, etc.). These game-based learning approaches can lead to a high efficient learning (Gee 2009). However, teachers using Internet applications in distance learning must be aware of the shortcomings of an Internet-mediated communication. Even with the employment of rich media (Daft & Lengel, 1986), computer-based communication leads to a loss of information since users’ contexts or body language are not transmitted (e.g. Davis et al., 2009).

Presumably the described shortcomings also affect the interaction in virtual worlds, as similar communication tools are in place. So far, it is not analyzed if virtual worlds can help to overcome the communication gap (Baker et al., 2009). But even if virtual worlds guarantee a somewhat richer communication, teachers and students need to know the limitation of these tools and the rules for an effective communication. Rules have to be taken into account when designing and operating distance learning programs. "Moderators must know appropriate communication and teaching strategies; they have to be continuously practiced and further developed." (Collison et al., 2000, p. 13). Learners must be able to work in a self-determined way in respect to space and time. They must learn to manage their learning processes to fully utilize the potentials of group-based distance learning. One of the main challenges in this context is to avoid teachers’ and learners’ cognitive overload (Sweller, 2005). Presumably this is also the case for virtual worlds, as the operation and interaction on these platforms require intense trainings and experiences (Tu & McIssac, 2002).
2.2 Experiential Learning

Research of the last three decades proves that an active and self-reflected experiential learning is a promising approach to impart knowledge and to effectively support the success of learning processes (Alavi, 1994). Under a constructivism lens, learning is not a mere transfer of knowledge directed from teachers to students, but a continuous construction and reconstruction of knowledge based on real life experiences and problem solving (Beard & Wilson, 2002). These findings are reflected in innovative teaching concepts (Luo & Chen, 2011), such as in the “critical thinking model” (Garrison et al., 2001; Garrison & Anderson, 2003). "Based on an active and interactive learning a deeper understanding of content can be realized, which increases the collective knowledge, promotes the development of individual knowledge, and supports the development of self-management skills and personal responsibility" (De Witt et al., 2007, p. 10). The basic idea of this approach is that students and teachers are partners who are equally involved in learning situations.

"Cognitive presence" (Garrison et al., 2001) is one of three key concepts (described below) of the critical thinking model and means that learners should be able to generate knowledge while discussing and collaborating with other learners. "Social presence" (Rourke et al., 1999) reflects the extent to which the participating individuals are able to be involved in the learning activities as "real persons". This can be understood as a precondition for "cognitive presence" since real discourses cannot take place without sufficient social presence. Since social presence is usually not strongly supported in distance learning. Methods that specifically address the mentioned problems have to be developed. The "teaching presence" (Anderson et al., 2001; Garrison & Anderson, 2003) highlights the role of the teacher in supporting learners and collaborative learning in work groups. Studies show that cognitive or critical thinking skills can only be acquired when an appropriate teaching presence and a conductive social presence of the teacher (Anderson et al., 2001) is given.

Stieglitz & Lattemann (2011) show the usefulness of virtual worlds for distance learning. The high level of interaction and immersion in virtual worlds supports active and experiential learning, in particular the imparting of contextual, visual and auditory, conceptualized, procedural, and experience-based knowledge (e.g. Alavi, 1994; Kayes, 2002; Kolb, 1984).

2.3 E-Moderation

Berge & Collins (2000) consider the moderator’s role as a key element in distance learning. The tasks of so-called e-moderators are “...to initiate, support, and structure web-based communication and interaction in learning groups. Furthermore, they should ensure that members of the learning group communicate and work efficiently and socially competent among each other” (Bett & Gaiser, 2004, p. 1). Authors developed various guidelines for e-moderators (e.g. Feenberg, 1989; McCreary, 1990).

The roles and tasks of e-moderators in general and in particular for virtual worlds can be defined along stages and/or along technical and didactical levels (Salmon, 2000; Anderson et al., 2001). Roles and tasks are derived from the theories of computer-mediated communication and findings from research on computer-based cooperative learning. The didactical level comprises various roles for e-moderation. Following the approaches of Berge & Collins (2000) and Anderson et al. (2001) roles can be derived from the "cognitive, social and teaching presence". Undoubtedly, all three levels are of importance for distance learning with virtual worlds. However the technical assistance by moderators, which plays another pivotal role in virtual worlds, is missing. Expanding the three-role model from Anderson et al. (2001) Friedrich et al. (2004) presented a four-roles model for e-moderators. This approach is more appropriate for teaching in virtual worlds as it includes: (1) Organizers, (2) motivators / animators, (3) content experts, and (4) information broker. Especially the organizers’ role seems to be essential for learning arrangements in virtual worlds. It includes the following tasks: provide course overview, provide linkages & interfaces between different media and modes of learning, define learning goals, and support grouping of learners. Additionally, the lecturers’ role as a motivator is impor-
tant. In this role a moderator has to support social presence, create a discussion-animating environment, provide feedback, create intimacy, and stimulate curiosity and cognitive discourses.

Furthermore, according to Rohde (2003) the lecturers’ and the learners’ role are determined by the learning concept. He distinguishes five scenarios, which affect the relationship between lecturer and learners in computer-supported learning (table 1).

<table>
<thead>
<tr>
<th>System-controlled settings</th>
<th>Lecturer-controlled settings</th>
<th>Supported settings</th>
<th>Collaboration-based settings</th>
<th>Self-directed settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>System defines learning content and processes. The lecturer requires only little interaction and involvement.</td>
<td>Lecturers define the processes, the degree of interaction, and the environmental design. They provide course material at predefined stages in the pre-determined learning process.</td>
<td>The lecturers’ role is that of a coach supporting the learners. Learners are enabled to ask for advice and content on their own will.</td>
<td>The learning group itself defines learning goals and processes. This situation may cause peer pressure. Lecturers are moderating.</td>
<td>Learners become lecturers.</td>
</tr>
<tr>
<td>Learners and learning groups are restricted to activities encouraged by the system.</td>
<td>Learners and learning groups follow the given structure and processes of the lecturers. Incentives and sanctions influence learner’s motivation to impart knowledge.</td>
<td>Learners actively control the learning process. They initiate interaction with lecturers and other learners.</td>
<td>Learners are group members and participate in decision-making.</td>
<td>Individual learners design the learning process on their own. They organize access to relevant content and decide about learning goals and scheduling.</td>
</tr>
</tbody>
</table>

Table 1. Lecturers’ and Learners’ Roles in various Educational Settings (similar: Rohde 2003)

3 Case Study: E-Moderation in Second Life

Our case studies base on a research project, conducted between 2008 and 2010. Its main objective is the development of an experienced-based entrepreneurial training on the basis of Second Life for students. With this entrepreneurial training program on Second Life, students have the opportunity to plan and market products or services in a quasi-real world environment. Through the development and application of business models in virtual worlds, core competencies such as presenting, researching, and customer interviews are trained in a quasi-realistic environment (Castranova, 2005).

3.1 Second Life as a Learning and Teaching Environment

Second Life was chosen as the platform for the project because (a) more than 70,000 residents (potential consumers of virtual products) are regularly and simultaneously online (Linden Lab, 2010), (b) SL charges no user fees from students, (c) users can create their own avatar and virtual objects, and (d) SL provides a quasi-real economy whose mechanisms are similar to the real economy (Fetscherin & Lattemann, 2008). During the project we evaluated the demands on e-moderators in respect to technical and didactical knowledge. The results are presented in the following sections.

The project comprises several modules for an entrepreneurial training based on a standard start-up process (Freiling, 2006) which students are supposed to pass in the online course. In the first step of the educational training, students had to develop a strategy to sell virtual products. Each team could choose from a pre-defined portfolio of virtual products that are marketable in Second Life. In a second step, the teams had to create a short business plan to document their marketing strategy wherein other Second Life users are considered as potential customers.

To build an immersive environment for the students, a business park was designed where students could access buildings with conference rooms, virtual libraries, video rooms, a banking terminal etc.
3.2 Methodology and Analysis

Our analyses is based on three case studies in which groups of students passed various steps of the entrepreneurial training in a sequential way. Before starting trial runs with students, we ran an initial trial with three instructors and students with the aim of testing the experimental design and of having an initial training for instructors. The test run proved the feasibility of the educational training in general.

Three moderators supervised each of the successive experimental groups at the same time. A total of six e-moderators were involved. In order to guarantee continuity, one e-moderator (No. 1) supervised all three experimental groups and guided the other participating two e-moderators. General tasks of the e-moderators were to (1) explain the program and its goals to the students, (2) support students to navigate and communicate in Second Life, (3) help students to develop a business concept, and (4) support group dynamics, team work and the learning process. The learning concept includes all of the described approaches for knowledge transfer (e.g. lecturer-controlled stages as well as collaboration-based learning) (table 2).

<table>
<thead>
<tr>
<th>Setting</th>
<th>Learning Scenario in Second Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>System-controlled setting</td>
<td>Second Life in general as well as the conceptualization of the entrepreneurial training provides a high degree of freedom of scope. E.g. students are enabled to plan their own activities, timelines or processes. However, some restrictions are predefined by the platform and therefore limit the area of operation.</td>
</tr>
<tr>
<td>Lecturer-controlled setting</td>
<td>Learners and learning groups follow the instructions of the lecturer within the first stage (provision of theoretical knowledge of entrepreneurship) and second stage (usage of Second Life) of the program.</td>
</tr>
<tr>
<td>Supported Learning</td>
<td>In the following stages learners decide on their own about strategies to impart knowledge and to interact with lecturers and other students. These stages of experiential learning are based on the immersive nature of virtual worlds.</td>
</tr>
<tr>
<td>Collaboration-based learning</td>
<td>Students are encouraged to create content (such as virtual products, marketing concepts) on their own. Individuals follow the decisions of their team. These decisions are based on negotiation among the participants. By integrating this approach students get trained in solving social challenges with their peers.</td>
</tr>
<tr>
<td>Self-directed learning</td>
<td>Besides the collaboration-based learning students are empowered to develop individual strategies (e.g. interviewing Second Life inhabitants) and report their findings to the team.</td>
</tr>
</tbody>
</table>

Table 2. Educational Settings in Second Life

Overall 28 students were involved in the case studies. Additionally, three teachers were assigned to each group and were involved in each trial. The students were divided into twelve teams with a maximum of three members. All twelve teams completed the program in a 15-weeks seminar (two hours per week) or in a two-day workshop (10 hours). A first group with two teams (two participants per group) passed the training between April and August 2009. A second group completed the training in September 2009, consisting of five teams and 14 participants. The third group (10 students, five teams) went through the training in January 2010 (see table 3).

Before entering the virtual world, students from group 3 (biology) had to pass a six-hour introductory course in fundamentals of management (e.g. basics in finance) as well as how to navigate and interact in Second Life. Members of group No. 2 (management studies) had to pass only a three hours course to get trained in the navigation and interact in Second Life. It was assumed that basic management knowledge existed.

<table>
<thead>
<tr>
<th>Study Subject</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Participants</td>
<td>4 Participants; 2 Teams</td>
<td>10 Participants; 5 Teams; 2 Participants</td>
<td>14 Participants; 5 Teams; 2-3 Participants</td>
</tr>
</tbody>
</table>

Table 3. Composition of Test Groups
After the completion of all three trail runs (1-3) each e-moderator completed a 36 item-questionnaire and participated in a semi-structured interview. The 36 items assessed the subjectively perceived requirements from e-moderators in respect to didactics and methodology, and technological expertise. The perceived requirements were surveyed on the basis of interval-scaled 5-point Likert scales ("-2 fully disagree", "-1 disagree ", "0-undecided", "1-disagree ", "2-fully disagree").

The interviews aimed at evaluating perceptions of e-moderators about (a) the suitability of virtual worlds as platforms for knowledge transfer, (b) the cost-benefit ratio of this kind of training, and (c) the requirements (level of knowledge in respect to didactics, methodology and technological expertise) of the e-moderators. The researcher who conducted the survey was not enrolled in the teaching team and didn’t participate in the program.

### 3.3 Survey Results

Two out of the six e-moderators were female and four were male. Two senior scholar and four junior scholars were involved in the experiment. Four out of the six coaches had previous experiences in teaching in traditional classroom settings, interactive seminars, distance learning seminars, and the usage of learning management systems, such as Blackboard or Moodle. 50% of the involved scholars previously had experiences with wikis as learning tools. Blogs and chat rooms were used by two e-moderators in previous teaching.

The e-moderators were asked about their perception of how virtual worlds engage students in joint communication in comparison to other teaching settings and media such as wikis, blogs, social networking sites, discussion forums, and traditional lectures, seminars.

The results show that virtual worlds encourage student’s communication to a higher degree than other media and teaching environments (mean value of +0.404 - see table 4). According to the survey, only Internet-based discussion forums are perceived as more encouraging environments for class internal discussions as virtual worlds (mean: -0.167). All other media such as wikis, blogs, social networking sites as well as traditional lectures and even seminars are perceived as less encouraging for student’s communication among each other. The interviewed lectures mentioned that they perceive the platform as more encouraging for communication because of the diverse opportunities for communication. However, the educational setting determines mainly the intensity (system-controlled: low; self-directed: very high).

<table>
<thead>
<tr>
<th>Perceived degree of motivation for students to actively communicate in Virtual Worlds in comparison to…</th>
<th>Much lesser</th>
<th>-1</th>
<th>Undecided</th>
<th>1</th>
<th>Much stronger</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiki</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0.67</td>
</tr>
<tr>
<td>Blog</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Social Network Site</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0.167</td>
</tr>
<tr>
<td>Discussion Forum</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>-0.167</td>
</tr>
<tr>
<td>LMS</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Traditional Lecture</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0.67</td>
</tr>
<tr>
<td>Traditional Seminar</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>SUM</td>
<td>1</td>
<td>6</td>
<td>15</td>
<td>15</td>
<td>5</td>
<td>0.404</td>
</tr>
</tbody>
</table>

*Table 4. Student’s Communication by the Usage of Virtual Worlds in Comparison to other Teaching Settings and Media*

The statements of the e-moderators in the interviews support these results. One e-moderator stated: "...Virtual worlds offer a useful complement to existing traditional courses and in particular provide the opportunity to integrate interactive and exploratory learning in teaching. A pre-requisite for an effective learning is that the benefits of virtual worlds are properly employed and various educational settings are offered. A mere conversion of traditional teaching settings (such as lectures and seminars)
is not effective. [...] virtual worlds are particularly appropriate for teaching smaller groups in a seminar-like but virtual environment."

Five out of the six e-moderators perceive the virtual representation of students and teachers as avatars as an important (or very important) mean to increase the “social presence” (Anderson et al., 2001) in virtual world-based distance learning environments and hence to transfer knowledge in an effective way. Only one e-moderator perceives the „social presence” as not important for teaching. In the interviews, this was illustrated as follows: “E-moderation in virtual worlds is challenging, because new technologies must be learned and new didactical concepts must be tested as there exist various different educational setting but no didactical concepts for virtual worlds. The only use of concepts from teaching in virtual classrooms, means lecture-controlled settings, are not appropriate for the use in virtual worlds because the social representation and presence is much stronger. E-moderators are able to respond directly, immediately and in a quasi face-to-face situation.”

Different educational settings require different level of technological knowledge (table 5). In principle, the interviewed e-moderators see no necessity for a sophisticated technological knowledge for teaching in traditional seminars and lectures. However, to integrate blogs and wikis in distance learning programs the lecturer needs to know how to technically set up and maintain these systems. According to the survey results, virtual worlds demands for the highest level of technological knowledge. Technological knowledge is understood as the ability to operate ICT-tools in a given learning setting (e.g. publish a text contribution, communicate with other users). One of the interviewee stated: “I think a basic understanding of computers, audio equipment, and programming scripts is required to teach in 3D worlds. The moderator must be able to navigate and collaborate in 3D worlds [...] in almost all different educational settings [...] and must know how to create artifacts. The moderators must be able to act as trouble shooters for various technical problems as there still exist software problem.”

<table>
<thead>
<tr>
<th></th>
<th>Not Necessary</th>
<th>Necessary</th>
<th>Very Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiki</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Blog</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Social Network Site</td>
<td>5</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Traditional Lecture</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Traditional Seminar</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Virtual World</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 5. Necessity of Technological Knowledge in Various Distance Learning Programs

Likewise, there are perceived differences in the demand for knowledge and the ability to operate with different didactical concepts when teaching in different educational settings and with different media. Teaching in virtual worlds seems to require a broader spectrum in the application of didactical concepts than in traditional lectures and seminars (table 6).

<table>
<thead>
<tr>
<th></th>
<th>Not Necessary</th>
<th>Necessary</th>
<th>Very Necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wiki</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Blog</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Social Network Site</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Traditional Lecture</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Traditional Seminar</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Virtual World</td>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 6. Necessity of Didactical Knowledge in Various Distance Learning Programs

E-moderators also took over organizational duties during their teaching in Second Life (see table 7).
Table 7.  E-Moderator’s Duties in the Organization of the Course

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convey a course overview</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Provide interfaces to other media</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Determine learning objectives</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Support learning groups</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Start / terminate learning phases</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Four out of six e-moderators (agree and strongly agree) provided the classes with instructions and explained the syllabi in a lecturer-controlled kind of setting. The same number of e-moderators implemented and maintained interfaces to other media such as learning management systems, blogs, wikis, and SNS. Three out of six lecturers clearly stated that they were actively involved in the definition of learning objectives for the whole course as well for single tutorials. Only one instructor started/terminated the learning phases in a pro-active way.

The survey results show that e-moderators primarily were involved in animating students to participate actively and moderating among the students (see table 8). Five of the six e-moderators supported the social presence, for example by helping students to set up their avatar in an adequate way, supported an open forum for discussion, provided feedback, created curiosity, and initiated cognitive conflicts to increase discussions and communications. The interviewees mentioned that this kind of e-moderation occurred in setting where the lecturer gave support and in collaborative settings. Interestingly this was not the case in self-directed settings. Presumably, this was because the students were already experienced with the collaboration via Second Life because of learning experiences in the previous phases.

Table 8.  E-Moderator’s Duties in Counseling, Coaching, and Motivating

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support social presence</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Provide friendly environment</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Provide feedback</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Create Intimacy</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Stimulate curiosity</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Didactical functions in respect to impart knowledge were not taken over by all of the e-moderators. In fact, five teachers uploaded content and learning material to Second Life but only one e-moderator actively monitored the changes in the content and of the materials. Only 50% of the participating teachers mediated between topics and learning groups and provided conceptual relationships between topics and groups. Only two out of the six e-moderators ensured that the available material was used sufficiently. Five of the six teachers provide introductory information and asked comprehensive questions. Four instructors promoted actively the discussion about complex issues and supported co-operations between students.

4 Discussion

The results from the survey show that the spectrum of responsibilities of instructors in our distance learning arrangements is large and could be therefore defined as e-moderators in the understanding of the definition of Bett & Gaiser (2004). Our observations prove the statement from Berge & Collins (2000) that e-moderators must be flexible and open to learn new teaching strategies because various educational settings to imparting knowledge exist and different didactical concepts have to be constantly applied. Lecturers have to take over different task in different educational settings. To guarantee effective group learning, e-moderators have to employ a broad spectrum of didactical concepts by providing encompassing strategies for an active mentoring, motivation, and moderation (Breuer,
Furthermore, these strategies must be applied in a more intensive and active way than in teaching scenarios which base on traditional settings or other social media.

Friedrich’s framework as well as the proposed learning approaches (table 2) may help to split and assign roles to e-moderators to increase the efficiency in teaching. According to the individual expertise of teachers, roles can be assigned. For example, teachers who are more process-oriented may take over organizational and content providing roles. Relation-oriented teachers could take over motivational roles and tasks of an information broker.

Our study results confirm Berge & Collins’ (2000) findings that one of the main tasks of teaching in distance learning arrangements is to moderate between students. However, our results show that the motivation and animation of students to actively participate, communicate and collaborate is even of greater importance. This finding confirms the statement from Bett & Gaiser (2004) that the major objective of e-moderation is the “goal-oriented and social competent communication and collaboration”.

The results indicate that teaching in and with virtual worlds demands a high degree of didactical and technical skills from the e-moderator. This is not the case for the teaching with other social media. Traditional teaching in lectures and seminars demands for well-trained teachers in respect to didactical abilities. Technical knowledge is, however, not of major importance. Hence, e-moderation in virtual worlds demands for well-trained people in terms of technical knowledge and didactics in comparison to teaching in traditional classroom settings, and in distance learning teaching with learning management systems, wikis, blogs and social network sites.

To sum-up, teaching in and with virtual worlds is complex and demands for highly skilled teachers in various dimensions. This finding brings a new variable into the equation when discussing new educational settings in distance learning with virtual worlds. Past research shows that imparting knowledge, in particular experiential learning, could be very effective by means of virtual worlds. However, the teaching is – so far – quite complex and inefficient in terms of preparation time and teachers involvement. Teaching in virtual worlds requires on the one hand intensive preparation to establish the 3D environment and the underlying teaching concept. On the other hand, well-trained teaching staff is needed, which are experienced in various didactical concepts and teachings and are well trained in different technologies.

5 Conclusion

The immersive character and the wide range of functionalities and tools for communication and cooperation, such as 3D environments, quasi-real economies, VoIP communication, and the linkages to other social media turns virtual worlds to effective platforms for distance learning. Past research shows that these 3D environments enable the effective imparting of (in particular) experience-based, procedural, and contextual knowledge.

Because of the exploratory research design, our findings must be interpreted with great cautions. Our analysis has the following limitations: (1) Only six e-moderators were interviewed. (2) The research bases on one single case study. (3) The surveyed e-moderators have different teaching experiences in terms of employed technology and in terms of settings (classroom vs. virtual etc.). (4) Our study was based exclusively on German students from management and from biology. The findings of this case study can’t be generalized in any means. This is due to the exploratory and qualitative nature, and partly to the small number of interviewed e-moderators.

With this contribution we made one step forward in this field as we analyzed the usability of virtual worlds for distance learning from a teachers’ perspective since so far there is no scientific article on this study subject. To assess the demand for skills and knowledge of teachers (so called e-moderators) in such a setting, we asked the participating six e-moderators in the project (after their involvement in courses) about their perception on required skills to enable an effective teaching with virtual worlds.
We found that teaching in and with Second Life is complex and demanding and needs well-trained e-
moderators. Because of the various tools, various opportunities for teaching settings and the immer-
sive characteristics of virtual worlds, teachers must be experienced with different didactical concepts,
and with different platforms and technologies (e.g. script languages). Overall, teaching in and with
virtual worlds is perceived as more demanding than teaching in traditional settings or with other social
media. Hence, the imparting of knowledge by means of virtual worlds is not efficient in terms of re-
sources employment. It can be assumed that a lack of usability of virtual worlds is responsible for that
deficit. Furthermore, there exist no frameworks and concepts for efficient knowledge transfers.

To conclude: virtual worlds offer the technologies for an effective learning, in particular in the fields
of experience-based, procedural, and contextual knowledge. However, from a teaching perspective,
virtual worlds offer a multitude of tools for collaborate work and for knowledge sharing, but the usage
of these tools and the active involvement of students require a broad spectrum of expertise in various
fields (didactics and technology) and consumes a lot of teaching capacity which hampers the efficient
imparting of knowledge at the moment. E.g., two e-moderator comments in an interview: “Teaching in
virtual worlds is still too cumbersome; there is an unbalanced cost-benefit relation” and “The outcome
of the learner’s side does not justify the teacher’s work-load”.

Appropriate concepts for teaching, such as activity-based or game-based concepts, in and with virtual
worlds must be developed in the future.

References
18 (3), 159-174.
Educational Tool. Technology and Teaching, 36, 59-64.
moderating electronic mailing lists. Distance Education: An International Journal, 21 (1), 81 - 100.
Bloomfield, P.R. and Livingstone, D. (2009). Games and Virtual Worlds for Serious Applications. Pro-
ceedings of the VS-GAMES ’09.
Strategies for Moderators. Madison, WI, USA: Atwood Publishing.
Daft, R. L. and Lengel, R. H. (1986). Organizational Information Requirements, Media Richness and
campus on Second Life: The case of Second DMI, Computers & Education.
Mason R. and Kaye, A. (Eds.). Mindweave: Communication, Computers and Distance Education.


