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The Role of Virtual Worlds in Teaching and Learning¹

Abstract: The paper describes current trends in online learning and virtual learning communities. It presents critical overview of current theoretical background and research. Challenges which emerge from pedagogical, social, and technological aspects of the active online learning are presented based on the review of tools, roles and techniques. Presentation summarizes the most important challenges and recommendations.

Key words: Online learning, active learning, social constructivism, virtual communities, virtual worlds, collaboration, higher education, education theory.

Intro

Today life requires that individuals and work teams create, learn, work and even exist without constraints of time and place. These needs emerge together with technological advancements, most probably with those which allow for real-time communication and collaboration among peers and co-workers, data sharing and collective creation of documents (Beldarrain, 2006). Audio(visual) conferencing, whiteboards, live presentation tools, application sharing, chats, and email are just a few of the variety of tools available for interaction and collaboration. Blogging, tagging, podcasting, and wikis as well as social software are technologies which are mostly discussed in today surveys and theories on active learning in online environments. As concerns the information and communication technologies (ICT), it serves as an infrastructure for learning and working in various on-line environments and simulated virtual worlds, however, it creates enormous pressure on teachers and instructors to keep a pace with the technological development in order to keep quality in their facilitation and supervision of learning process. Teachers' traditional authority is challenged by the fact, that they are dealing with more technology savvy generation, however, it is just part of the nowadays challenges to the traditional teaching and instruction services.

New communication and information tools promise to bring more quality into teaching, learning, and working by providing access to colossal portion of information sources, and to facilities for active learning and problem solving. Although we share general view of the ICT as a platform, not a goal itself, technologies actually influenced the education theory, in particular anchored instruction and situated cognition. These learning theories recognize that technology impacts social interaction, which in turn, affects the learning process. Situated learning theory proposes that real-life problem solving should be a collaborative task, empowering learners to become part

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of learning community. Anchored instruction seeks to build problem-solving skills by anchoring instruction around a real-life situation or tangible problem (Beldarrain, 2006, p. 147). It seems that most of the online learning applications stipulate these two theoretical starting points.

This article presents critical overview of current research and experience from various settings: on-line teaching in tertiary education sector, international research projects, professional development virtual community, distance e-learning, online learning tutoring classes, educative online computer games, and virtual worlds such as the SecondLife. Since we combine both synchronous and asynchronous teaching experience, distance learning, combined learning, both long-term and short-term virtual communities, we refer to that embedded experience in general as to “online learning” or “virtual worlds”. Only in case of some specific issue we make corresponding note.

Active learning

Widely shared opinion cross various researches and theoretical papers indicates that active learning is proper facilitator for higher quality in teaching and learning (Hutchinson, 2007; Ikpeze, 2007; Vonderell and Turner, 2005). Online environment increases problem-oriented, experience-based aspects of learning, therefore is it mostly appreciated for its potential to better match learning requirements emerging from the current career curves of individuals.

Behind this believe in universal effectiveness of active learning stays social constructivist theory which basically stipulates that learning is never context free, on the contrary it must integrate the association to real life experiences so that the learner finds him/herself in situations analogous to professional practice (Hutchinson, 2007). Constructive theory views learners as actively involved in the construction of knowledge, which includes analysis, synthesis, transformation, and assessment of information. Social constructivism posits that knowledge is constructed by people, in context, based upon interpretation of experience and knowledge (Palinsar, 1998; Vygotsky, 1978; Ikpeze, 2007, p. 385). Constructivism is currently the most accepted epistemological position associated with online learning (Stacey, 1999 cited according to Hutchinson, 2007, p. 358). It is supported by sociocognitive learning perspective, specifically Vygotsky’s zone of proximal development which is the difference between what a learner can do without help and what he or she can do with help, in his words it represents the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers (Vygotsky, 1978, p. 86). This justifies the utilization of collaborative learning and working in online environments. As concerns online environments, collaboration means to learn through group interaction, reaching consensus, discussion, chatting, negotiation, team work, peer review, and receiving feedback. However, we must keep in mind the fact, that this presents only a part of possible collaboration techniques, partly thanks to the constraints of information sources and communication tools that are currently available.

Although we do not deal with digital divide in this paper, we must keep in mind limits, barriers and different starting positions of those involved in online learning. Usage of online environment also presumes adequate level of ICT skills or “media literacy” as defined f.e. by UNESCO (Catts and Lau, 2008). Without ability to master such an environment it is almost impossible to reach “flow experience” as a crucial moment which enables an individual to omit interface barrier, became a part of virtuality and fully participate with a little distinction between self and environment (M. Csikszentmihalyi, p.20).

Tools and Techniques

Since the interaction is core to the successful active learning, it is necessary to utilize some icebreaker activity at the beginning of the course/online activity. To this purpose usually serves some way of self-introduction; this means “static” setting of personal profile, photo/s, shared folders, avatar, nickname, icon (or other abbreviated forms of expression), role assignment etc., in general “setting of self”, and also “dynamic” aspects interconnected with usage and volume of using environment functionalities itself, f.e. (written) language behavior, response time, appearance etc. However, the methods of introducing oneself into an online environment are well accompanied by methods of tracking of an individual’s progress during the learning activities, and also after they are officially finished. For instance participants can use weblogs or e-journals to make personal notes and comments on learning progress, share digital repository or bookmarks in order to develop supporting library and information storage, develop on-line portfolio (usually includes interactive CV, supporting documents, and links to other people), or use social networking systems (sharing profiles and networking, clustering, tagging).

The key to success in online learning is to increase responsibility of each participant in terms of overall outcome of given online learning activity/ies. This means that each member of the group shall feel that s/he is responsible not only for her/his performance (fulfillment of tasks, quality of work, and gained knowledge and experience), but also for the performance of the others. This includes students as well as teachers. It requires development of such an environment and atmosphere within which participants perceive that they are bounded to the other members of the group in such a way that success will not be achieved unless the other members succeed (Hutchinson, 2007, p. 361). Moreover, participants shall understand that their finished product will add to the knowledge base of the group, not just their own, that it can be further developed and shared, and that the group outcomes shall become a persistent repository of knowledge for its descendents (Beldarrain, 2006, p. 148) – and not only for them when; outcomes can be published world-wide f.e. by using existing wiki-based collaborative environment like Wikipedia.org where anyone can add, change and delete encyclopaedia entries.

Such a kind of motivation can usually be strengthened by role assignment, i.e. by setting different roles and related responsibilities in order to create a dual system in which the individual needs to make sure that not only s/he is learning herself/himself, but that others are learning too; more generally, make sure learning process work with all participants as with authors and users of information and knowledge (Bruns, 2007). Roles which come into consideration could be: prove reader, reviewer, checker, encourager, tutor, mentor (roles specifications are elaborated in chapter

below); possible tools for increasing responsibility could be: group goals, group contests, collective quizzes and tests, feed back, peer review, and collective evaluation. The last two are considered in several studies as the most effective ones (Hutchinson, 2007); while the first facilitates the cognitive development of an individual, the other helps to comprehend the fundamentals of collective learning and collaboration effects.

Mentioning collaboration, it is adored and hated within online learning at the same time. It seems it has the same role as the fire in the house, it heats and cooks, but at the same time it can burn the house in a few minutes. Teachers are mostly dreaming of having smoothly organized collaboration which only aims at achieving the goals of the course, i.e. learning something by doing something (also) collaboratively. However, the online environments are living organisms, not sets of pre-programmed robots, collaboration takes place when it has conditions to grow; it needs some time, atmosphere, and motivation to develop, it can not be forced, and on contrary in growing phase it can not be atomized. On the other hand in most common cases contact among participants is not limited to online interaction; there are continuous interactions and relations that can never be fully described and/or logged. From this point of view collaboration exceeds diversity of environments and become an universal tool, more principal than method. Numerous researches repeatedly indicate that collaboration helps to increase engagement in learning, quality of its outputs and achievements, and produces positive byproducts. There are tens of tools which can help to start collaboration within online learning, from the mailing lists and e-conferencing to the instant messaging, (video)chats, wikis, shared documents, simulated worlds, and on-line educative games. But it is up to a teacher to keep it heating and cooking, not burning the entire project; basically it requires teachers to actively involve in the collaborative activities in order to make sure that the general objectives are not missed, that roles are balanced, and that possible blocks are cured (information overload, peer-valuation apprehension, exclusion or discrimination, dominating individuals, speed compromises the quality, social loafing, work redistribution etc.). So called “Web 2.0” tools that promise to take interactivity to the next level (Beldarrain, 2006, p.140) will hopefully bring stronger instruments into teacher’s hands, such as monitoring tools, tracking features and discussion threads analyzers, advanced search tools, automated alerts and bots, and analytical tools working with versioned documents. Second generation web can then be seen as more effective, easier to set, simply meshed-up, scalable and – last but not least – more intuitive usage of (not only) web-based tools.

But collaboration is definitely not the only way how to fulfill time spent in online environment; interaction can be categorized to three groups as person-person, person-object and object-object (Antonacci & Modares, 2005). When we speak about web-based online environment we can substitute “object” to any application or its functionality we are using for learning purposes – from email and instant messaging through blog, podcast and shared calendar to video conferencing and programming applications. In a very special case of 3D environments it covers interaction with virtual object and creating persistent interactive objects such as models and virtual copies as it is possible f.e. in SecondLife.com. All these examples of tools can become key elements of online virtual environment we set and interconnect for a special learning purpose as a collaborative platform. Not only personal ICT skills (media literacy) are trained during a process

of interaction, also time, resource and information management (information literacy) became an important issue. Object-object interactions can be used as a passive technology-based automated processes (email resending via mailing-list) or as a sophisticated way of simulation; in 3D virtual world we can f.e. build models and simulate its physical behavior. 3D worlds have its huge advantage that they provide an environment and gives to users (some) possibility to change and modify it – actively by using avatars as an virtual extensions of user and passively via objects.

Challenges

Challenges emerge from pedagogical, social, and technological aspects of the active online learning; in next paragraphs we list those which are most relevant to our topic.

Although we read about learning in various research and theoretical papers on the topic, do we actually know exactly, what we are talking about? Learning is always at the heart of any teaching and training enterprise, however, we must understand how people actually learn and what is the role of teacher, learning participants, outside experts, and ICT tools when it comes to online environments. Do we learn more from reading the entries in Wikipedia or chatting with an expert? Shall we prefer reading and writing skills to ability to find and use information, contact, or electronic hints? Do we rather memorize pictures, sounds, texts, or something else? Obviously, the answer is not simple binary, since the fundamental question is not “book or film”, “text or picture” and likewise, but what are the requirements coming from the real life situations, and motivations that stay behind our learning.

From the case studies and our own teaching/learning experience which we have at our disposal, there are various methods and their combinations which can help us better understand our students.

First of all we need to know students motivations in taking the course, coming from the forced necessity to get credits (and diploma at the end), through the curiosity and e-learning euphoria, to the needs to acquire some practical skills (ability to work in virtual environments and use sophisticated ICT tools, ability to operate specific software, need to learn strategies to maintain social networks, skills in information retrieval, training in project management or research methods, etc.). All these attitudes and motivations can appear and none of them can be simply marked as “better” or “worse” – they only predefine behavior or group, it’s homogeneity and cohesion, powers and factors that will influence group as a whole and each member during learning process etc.

Secondly, we shall ask students to introduce themselves into the online environment by choosing their specific avatar and/or nickname as mentioned before. Later, we can ask as to how they would characterize their online personae, simply by explaining their interests, motivation, concerns, preferences, learning background, (professional) experience, hobbies and expectations; we can use their avatar’s development throughout given online learning experience as a background “story”. We also understand more about our students thanks to the various interactions during the online course, and the picture gets more clear at the end of the course, when we usually use combination of some evaluation techniques, such as questionnaire, feed

back analysis, and interviews, in order to trace what exactly our students learned and how did this happen (in what way and what were the most effective ways).

The learner is our focal point in educational theory and practice in general. However, as concerns online learning environments, we need to involve specific methods to understand who our learner actually is and what he/she wants. We might operate with more diverse group of participants within less diverse environment; i.e. our participants might be recruited from different nations, cultures, social backgrounds, education levels (and systems), and professional experience. Since ICT allows us to interact without constraints of time and place and we are able to put people together into a simulated environment (which is for sure much less complicated than putting them together in the real world) actually do not solve problem of difference itself.

Moreover, we as training providers are asked to simulate real situations in order to maintain problem-oriented active learning. In fact, this creates demand for high level ICT skills of the training personnel in order to be able to develop and maintain such an online environment which would meet above mentioned requirements. It also includes demand for regular update in ICT knowledge (media literacy) as well as ability to consider the best learning strategies to be accommodated within given online environment. Some authors call today teachers as information managers (Hutchinson, 2007).

Notwithstanding, the software and hardware tools available are usually in some respect limited, i.e. they are either already given since they are installed within the institution (school) and/or there are limited financial sources if it comes to the question of acquiring new SW and HW equipment. Moreover, ICT used for online environments are limited by their own nature, they allow only limited number of interactions, variety of functions, and transfer capacities. It is not meant to say that ICT limit us in our teaching and learning, the opposite is probably the true, we just need to consider current technologies and their limits as a framework within which we develop our virtual worlds, generate knowledge and experience. It also means that new and for learning more suitable tools and environments will for sure appear continuously; what more, tools adapted and accepted by learning community will be few steps behind the most recent widely available high-tech tools. ICT itself and its usage can be no longer presented as a kind of advantage, it became standard. This can be seen when more strongly when we get in touch with digital-born generation learners – youths used to network, immediately solve their information and communication needs in “zero time” and constantly investigate new platforms and new emerging technologies.

In previous chapter we touched the responsibility issue regarding anyone participating in teaching/learning process. In other perspective it also means to move from passive to active learning, and to increase student engagement with learning (Hutchinson, 2007). This is not that smooth as to be said. This task creates new challenges for pedagogical work, such as demand for supportive, motivational, encouraging, mentoring, peace making, facilitating and managing activities from the side of the teacher and/or others in relevant role/s (tutors, mentors, group leaders etc.) within the environment which utilizes many-to-many mode of communication

(Crosbie, 2006). The teacher is supposed to monitor course activities, communication, and individual achievements continuously, and immediately react (provide feedback, mentor, write an answer, explain, pacify conflicts). This means two changes in pedagogical work: 1) it shifts energy spent by reading materials and preparation of presentations to energy invested in communication and organization of the course, and 2) it demands flexible rhythm of the instructional activities – less is made according to a time plan and in given regular time intervals, activities are spread out in time and provided on demand. To put it in other words, expertise in the subject, which was traditionally the domain of the teacher is now (also) available externally, while the teacher is required to become good navigator, manager, facilitator, mentor, and tutor. It doesn't mean that teachers are becoming less experts, on the contrary, it means that their memory, knowledge, experience, contacts, and skills are extended, balanced, and challenged by internet sources. Moreover, part of their traditional tasks, i.e. authorship of a study materials and lecturing, become a distributed task assigned to anyone involved in teaching/learning process. While the traditional distinction between teacher and student is melted, the emerging challenge for the instructor is to provide accurate, high quality, updated, pertinent and tailor-made content and activities.

Since the virtual learning is mostly organized by a physical institution, it creates a tension between the notion of virtual learning community and traditional educational discourse. The challenge to (among others) higher education institutions is obvious: they are organized around the classes, departments and colleges, fixed roles of teachers, managers, tutors, teaching assistants, hierarchy of sciences and credits, while at the same time they do their best to keep pace with new technologies, methods and labor market requirements driven by flexibility, continuous life-long learning, participation and interaction. In the current state-of-arts it is almost impossible to go ahead without any changes of the rules required within these social institutions and at the same time maintain true collaborative learning community. Some scholars even argue that a true socially inclusive “community of learners” can only be achieved through the “complete deconstruction of present institutions of higher education” (March and Richards, 2001, p. 447 cited according to Goodfellow, 2005, p. 115). This might sound like prognosticating voices, which few decades ago forecasted the end of the cinema thanks to VCR, or later the end of the book since the new media emerged. Although we do not think that virtual learning communities will usher in the end of higher education institutions, the rising of virtual learning communities and arbitrary forces of globalization (Goodfellow, 2005, p. 115) represent significant challenge which has to be seriously taken into account.

Who is who? Changing roles in the online environments

The essential for any research and application of online learning is the challenge coming from the changing roles of those involved in teaching and learning. The roles are changing not only if compared to the traditional teaching and learning, but at the same time during the genesis of a virtual learning community itself. In other words, the traditional dichotomy between teacher and student is suppressed while at the same time the roles are no more physically bounded with the concrete person. However, for the quality assurance of the course it is crucial to manage the roles and assign them in order to facilitate active learning. We list the most often roles with their

cornerstone description, keeping in mind that while the role of the course leader, instructor (formally teacher) remains stable, the rest is dynamic and relative to the concrete person/s. It is also important to mention, that each learning setting requires different set of the roles, i.e. not all roles listed has to appear in every course.

Instructor designs and leads the course. It is widely argued that instructor's involvement in designing the course and setting ICT platform is the secondary factor, while her/his role is critical in creating the environment that supports and a course that encourages active learning (Havard, Du and Xu, 2008).

We should also take into account that ICT platform, it's technical architecture, user interface design, available functions and scalability – more widely described as a “code” (Lessig, 1999) – predefines virtual online environment itself. Challenging instructor's skills on a one hand, on the other hand Code became an important “role” also; it become a part of social processes and interactions, can strengthen or weaken (or even completely degrade) group identification and collaboration processes etc. The situation will not change even if we involve IT expert as a special role because in most cases IT expert is not an educator at the same time, therefore s/he can not be pro-active in a field of code setting.

The role of the tutor is to facilitate and moderate group discussions, provide assistance and be a mentor for the group. Setting up of smaller groups, 7-9 (Hutchinson, 2007) is recommended.

Discussion leader's job is to present weekly topic, pose relevant question, and provide a synthesis of discussion. (Ikpeze, 2007, p. 387)

Discussion moderator is here to promote discussion, lead the discussion in terms of its topics and goals, make sure that everyone is equally involved, bridge inequalities, pacify conflicts.

Reviewer, editor, prove reader, discussant are roles assigned to concrete tasks, such as outcomes presentations, delivery of papers, reviewing of interim outcomes, meetings and discussions etc. Primary goal is to facilitate active learning, ensure high quality of outcomes, and reach the objectives of the course. Secondary role is to assist instructor in her/his communication with course participants.

External experts provide assistance to simulated real tasks, expertise, commentary, and sometimes also assessment of the individual concrete output.

As already mentioned above learning groups are more like organisms, living networks that can grow and enrich individuals cover by them or stand still, disintegrate and fall to pieces. Roles we quickly introduced in here should be assigned not because of establishing universal hierarchy of power and control as a traditional model student – teacher. All of them follow social network processes that can appear in online environment with the aim of clustering initial setup and (later)

group workflow. Without such an environment moderation online group members need to start interacting without its virtual identity – and with virtual noones. Role assignment can lead to shorter introductory phase, shorten or even skip primer virtual homogeneity and strengthen personal feeling of responsibility and group involvement.

Research

Few years ago any research in this field was totally missing or negligible. Nowadays we can draw the support from social networks of those involved in online teaching, blogs and scholarly articles. Current research aims at getting more exact and upstanding grounds for what was originally individual experience or observations. Therefore researches are focusing on collecting evidence from the concrete online courses, on technological, organizational, and educational grounds, provision of typology (types of online courses, virtual communities, roles or tools) and discussing of pedagogical methods. Researches are most often those, who are directly involved in online teaching and/or learning, plus their research studies are in all cases we had at our disposal based on quite small sample, such as two teachers only, one course, few students, one year experience and likewise. Quite a number of research studies are focusing on technology and ICT tools employed in online learning. Their conclusions usually summarize the best practices, practical recommendations, and lessons learnt.

It seems that current research aims at helping those who are directly involved in online teaching, thanks to own position of the authors, the recommendations are addressing the teachers, not that much the HEI managers, students, faculty, library, and others who might concern. It doesn't say much about electronic sources and pedagogical methods, probably because authors believe in unshakable position of the teacher; this is understandable, since those who are teaching online and are open to share their experience and research are usually most enlightened teachers at given institution.

The scope of research and evaluation methods has to significantly develop; better sampling, more evidence, comparisons as well as statistical methods, analytical approaches, and sophisticated evaluation methods have to be employed in future research on virtual communities and online learning. There is a lack of comparisons and evaluations done in the field since the current research is relatively novel to the educational discourse; therefore the third party is not considered and involved in the survey or in evaluation.

Even if we are critic to methods and outcomes of current researches there is an enormous challenge in a field of analyzing these fragments of gathered knowledge about learning processes in online environments. What more, through phenomenon like virtual communities, collaboration (mass) effects and marketing-driven online game environments researches in a field of online environment learning become more visible, recognized as valuable and become far more attractive – for sure for a new generation of young PhD. students and there thesis.

Conclusions

The question behind this text is “what can new media and virtual worlds bring new into the (life long) learning process”? What is added value of online teaching and learning within the learning discourse? Let us formulate possible answers.

1. Online learning experience brings up personalities which take responsibility for their learning, it teaches how to learn, not what has to be memorized.
2. Collaborative tools allow for certain types of engagement and interactions which would otherwise not be possible. Virtual worlds can simulate not only the real-life situations, but also virtual-life situations, or situations which are not currently possible (cultural diversity, democracy, moments from our history, projections of future, simulation of different outcomes from the same situation, etc.). Notwithstanding, people can make more contacts and interactions in virtual life than in real life in given time interval.
3. The core of the quality assurance of online learning is to manage roles of those involved in the teaching and learning process, on the other hand we can conclude that we actually can experience various roles than in the real life.
4. Using online environment in learning process also requires from all participants appropriate level of media (and information) literacy; without knowledge of participant, their skills and attitudes goals can be hardly reached and not all possible tools will be utilized. This means that virtual learning communities naturally contribute to the information and media literacy, while using new media and ICT as a learning platform.
5. Research in the field is open to develop and involve new research methods, while it could also get inspired by the variety of evaluation methods and tools already available.

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