VIRTUAL ENVIRONMENTS AS AN EDUCATION TOOL FOR DIGITAL NATIVES

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***Abstract**: The paper focuses on the development of an educational concept of virtual environments for Digital Natives. The project, a collaboration between NBU Sofia (Bulgaria) and UWS Sydney (Australia), concentrated on the development of a didactic solution for attracting the so called Digital Natives into a virtual environment where they could develop their own learning scenarios accessing knowledge within a Second Life environment or comparable interface. The goal of the project was to provide an engaging and participatory virtual environment which would encourage students to become more intimately involved in the learning process around ancient and in some cases extinct Balkan languages. The results provided visual immediacy within a learning environment and allowed the UWS computing students to sharpen their professional IT skills working for NBU as a client.*

***Key words**: Virtual Environment, Education Tool, Digital Natives, Visual Immediacy, Blended Learning, Participatory Learning*

1. Educational Concept

This paper will discuss the mastering of a new concept of participatory learning with an education tool that uses virtual environments focused on the habits of the so called 'Digital Natives' (Palfrey/Gasser 2008, Tapscott 2008) which essentially differ from those of the 'Digital Immigrants' (Prensky 2001, Tapscott 2009). In the late 2000, esp. in the days of the post-financial crisis (2009) there were signs of changing social reflexes following radical evaluation of life dynamics concerning the development of mobile communications and globalizing markets. Several aspects of everyday life appear hereby to 'flag' the switch for the new generation, such as *continuous uncertainty*, *less emphasis on materialism and ownership*, *smart frugality* (Erickson 2012) that the conservative education system should follow integrating new resources and *participatory learning strategies* in schools and universities.

Facing the main contradiction within traditional education that playing new 'educational games' with old tools and methods could no longer promise a prospective professional development in a globalizing world, the NBU team (Ludmil Duridanov, Stanislav Ivanov) is fostering together with the UWS project team (led by Joanne Curry) an alternative multigenerational educational solution to access in-depth knowledge without insisting on abstract reading and reflections from the very same beginning. Instead of 'teacher-centered' traditional learning students start a

‘second life’ with an avatar in an immersive virtual environment. This means not only access using an already digitized know-how and historical cues of knowledge; but also active participation and development of further simulated visual immediacy with new dynamic scenarios between various locations and periods of South Eastern European history. In this way the virtual reality already constructed will meet the actual requirements of the day as a client-oriented space attracting ‘Digital Immigrants’ and ‘Digital Natives’ in face-to-face interaction and social networking. Acquiring visual access to linguistic, historical, geographic and religious knowledge data means that visualizing things will bring the participants to feel emotionally involved in the ‘time frame’ within which they could alternate the enhanced dialogues building new virtual paths to their sense of reality. The key point here is that the visualized 3D scenarios will be closest to the real world, as simple as possible, accessible online to everyone (without restrictions), and not only for the happy few that already possess a specific knowledge about languages, literatures, history, religion and rituals, mobile technologies and computer science. The tendency is to make all the participants as much as possible to feel at home in a web based animation. The concept doesn’t rely on the popular advertising strategy of MS Windows: “What you see is what you get”. Behind the curtain, after having faced other realities these young students (the Digital Natives) could be introduced to the skills required to read the sources in archaic Balkan languages or to have the opportunity to build technologically new virtual environments to meet each other in the way they need to. The solution is a *disruptive innovation* for accessing knowledge (Christensen/Horn 2008, Bass 2012), because knowledge here is made *affordable* and *customizable* for a wide audience using *open source* software where everyone can enter the ‘second life’ room and be involved in a ‘participatory learning game’.

2. The project – context and development

The project, which commenced in mid-2011, focused on the construction of a *multilayer application* simulating the ambiance of a digital library. The vision of a digital library was inspired by two specific sequences from the movie *Disclosure* (1994).

The first sequence simulates a virtual library and provides access options. The user then accesses a virtual environment with a Head-Mounted-Display or a PC. In the first case the computer takes the information from a database and constructs a virtual environment which is projected as a 3D library in the user’s headset; or in the second case the virtual environment is projected on a PC screen. The ‘looker’ walks on a pad which simulates motion through a *virtual corridor* where a virtual helper is also available on demand (an angel that answers questions). The user is walking beside walls with virtual drawers and can stop at any moment and access via soft touch any file in the drawer.

In the second sequence a ‘live’ situation in an IT company is shown, where two colleagues (Tom Sanders and Meredith Johnson) are using both options of access and demonstrating how the angel is helping to find pieces of required information Ref.

The NBU team was the ‘client’ for the UWS Computing Student team as part of a project-based professional training unit and the task was to develop a solution closely related to the presented ‘Disclosure’ vision above.

The method applied is an interdisciplinary one and falls under the competencies of an area called Digital Humanities. To date three UWS student teams have contributed as part the UWS – NBU academic partnership. Prior to the commencement of the collaboration only a few conceptual ideas on how to apply innovative *participative learning approaches* in “real-time” project-based collaborative working environments existed (Tippelt/Amóros 2003, 2011; Webb/Smith/Worsfold 2011), but these were mostly on paper, depicted as a “business plan”. To investigate the *methodological concerns,* an academic partnership agreement between UWS – NBU was established in 2011. This provided an opportunity for a long-term collaborative atmosphere where the project teams worked on the *conceptual* and *didactic basis* of Digital Humanities. It also provided an environment where IT specialists could work together with researchers of the Arts and the Humanities.

The goal was to create a virtual ambient environment that could be navigated in an informal way with the aim to provide various scenarios that would improve visual access to a *multilingual historical reality* containing *archaic Balkan languages*, mediated by the analysis of the late Prof Ivan Duridanov in several languages. The long-term project was divided into several phases, where different UWS student teams followed the perspective to create an *open source digital library* as a dynamic center of *participatory learning*.

The first methodological step was to create an experimental basis of the *core competencies* of participatory learning. So, developing a project-based professional experience means here to test *participatory learning* on various levels of communication between the two teams: synchronizing intercultural, technological and religious differences and building efficient educational patterns on how to develop learning and teaching competencies *for the visual surface* (disrupting a reality in *easy to learn* visual basics) and *in-depth knowledge* presentation (by reading detailed issues for research fellows looking for further essentials). The project development enhances continuous *monitoring* and *creation* of a description of *participatory learning patterns* to run, because of various levels of metaphoric thinking that recurs in intercultural, religious and technological backgrounds between the Arts and the Humanities on the one side and Information Technologies on the other. This means there is a need to find the ‘*appropriate code’ (or language)* to communicate for the purposes of describing the modeling of a virtual environment in

convenient key words that each side understands and to build correspondences at the level of culture, religion and technology whereas historical background is included and should be accessed as a visualized reality.

Looking for an *open source solution* to build an *educational tool* for a long-term period also poses a ‘market problem’, because of the dynamic development of global trends in IT markets. The decision offered by the UWS team is to make a noncommercial open-sim application within a Second Life environment. The building symbolizes a universally accessible place of knowledge (without dominant political or religious accents). Some architectural elements are inspired from Versailles such as the marble floor and the columns designing the inside ambiance of the virtual room (see *Figure 1)*.

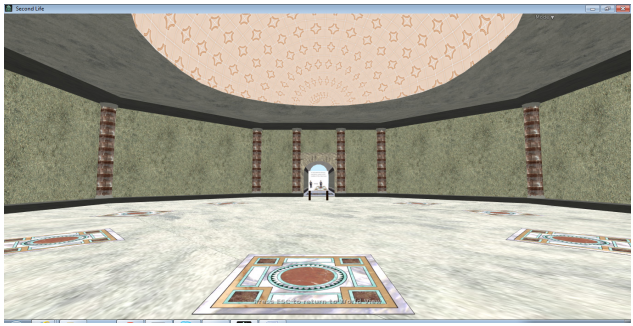

Figure 1.

The outside form is influenced by the Shah Mosque in Isfahan (see *Figure 2*):

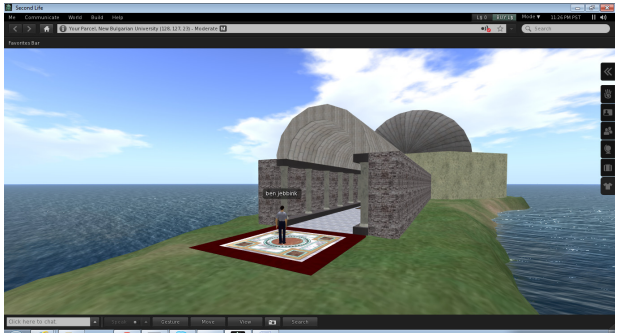

Figure 2.

The VR modeling simplifies the Hollywood vision from the movie *Disclosure* concerning an avatar as a laser projection of a human body of the user. There was a strong preference for a *simple avatar* that would enable support of a nonproprietary solution, i.e. to make it *affordable* for everyone and *easy to access* from any computer terminal or mobile device. The solution sees an avatar enter an octagonal

room and approach a large mosaic tile in front of a wall. Putting both feet on the tile opens a website displaying a linguistically ordered catalog.

A methodological pre-selection of *four interrelated semantic attributes* (Linguistic, Historical, Geographical, Religion/Ritual) was conceived as appropriate to secure access to SE European knowledge (3000 BCE – 1000 AD). Based on the linguistic works of the late Prof Ivan Duridanov the historic reality of archaic Balkan languages is to be reconstructed if we follow interrelated links between a *geographic location* or *area*, *historically associated* connections and interdependencies *in religion and everyday ritual* of the inhabitants that could be evidenced on the basis of linguistic data and etymologically reconstructed roots. Therefore the *four ways to access* knowledge chosen by the NBU team is not a deliberate one, but is only mastering comparative linguistic methods followed and developed by Ivan Duridanov and other Neo-grammarians (Duridanov 1975, 1995), which are *to be completed* and *updated* in a new educational framework.

During the first phase of the project the developed website provided access to specific *linguistic domains* (opened on a wall of the virtual library). The nonproprietary approach secures online availability for all users (see *Figure 3.* and *4.*):

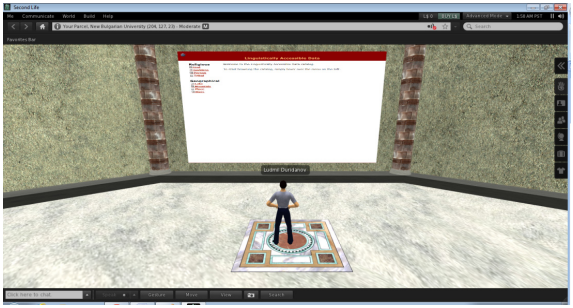

Figure 3. The avatar steps on the tile to open the website

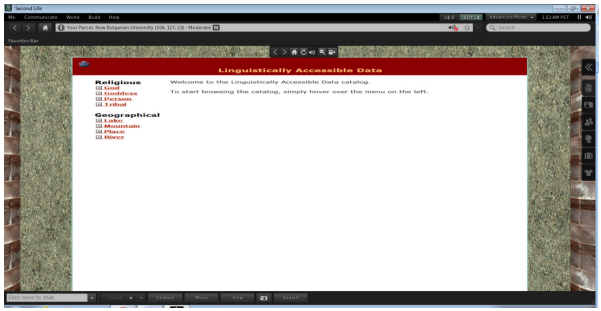

Figure 4. User zooms the website after opening

This could be called a '*surface' solution* of an education tool when the user clicks a name and has a choice of documents to open as one or more inline quotations in a text document. The other *educational solution ('in-depth')* is provided when the user selects to read one or more text paragraphs in a published PDF-document (a book or an article).

The NBU and UWS teams worked together to find a solution to a *multilingual dilemma*. The names of archaic Balkan languages have various forms which are sometimes reconstructed only as roots and not directly evidenced and written in different alphabetical systems (Greek, Latin, Cyrillic). This requires a "Unicode", i.e. a language mediator (a Latin transcription of all the names) to be used so that anyone could access the inline quotations in the PDF-scanned text documents. This poses a new problem: how to infuse the 'language mediator' into the text documents. If this was done as 'sticky notes' a significant delay of up to 3-4 minutes for web access could be intriduced, i.e. opening the PDF-documents, because the code is longer than 32 signs. To make this *easy to access* the first UWS team introduced a link to the so called 'favorite' in the PDF-document which opens the document at the same page. The second UWS team (November 2012) brought a slight diversification of the *surface solution* to initially open those document titles that had an inline quotation (*.jpeg). For an *in-depth solution* the full document would then be opened using the *favorite* marking.

The second UWS team (2012) also optimized the linguistic access and faced some problems making a second website that included a geographic linking to the names selected within the linguistic access site. Below is the zoomable map of SE Europe that includes a zoomable timeline where the historic period should also activate a group of names on the map or refer to the linguistic access (religion/ritual access is to be constructed during the fourth phase coming next). The avatar has to turn to the other wall (website) which dims the linguistic access and turns on the second website (map/timeline).

A voice communication or a chat dialogue between participants finding each other in the virtual library is also available via open sim app of Second Life. The *participatory learning* in the "Duridanov Center" (which will be extended to the works of other research fellows after finishing the fourth phase of modeling a virtual library) is applying a *blended learning* methodology (Staker / Horn 2012, Friesen 2012). A relational database which is about to be elaborated during the third phase of the project between UWS and NBU teams (March – June 2013) will preserve a possibility for 100 visitors to access the center. If there are more participants entering the virtual room, it should be simulated several times as a *networked campus* depending on the public traffic (on demand).

3. Conclusion

To master an alternative educational tool oriented on the active perception of the Net Generation means not to replace all previous traditional 'teacher-centered' learning, but to compliment it with a 'student-centered' participatory learning environment which matches the actual needs of the global markets. The participatory learning tool developed by the NBU – UWS project teams could be regarded as *twofold pattern*: as a pilot project of a 'student-centered' teaching and as a personalized model of accessing knowledge by researchers and students learning from each other.

At this stage of the development we could not evaluate how the two solutions of participatory learning described above are interacting with each other, because we have to complete first the assembly of the virtual library during August – November 2013 and then a *blended learning procedure* could be tested as an integral part of our minor program *Digital Humanities* to be started by October 2013. Hereby we can only evaluate the synchronizing of the intercultural and professional (encoding – decoding) skills within our *collaborative professional training* between NBU Sofia and UWS Sydney. After creating a "synchronized vocabulary" in the first two semester weeks we have to emotionally fix three basic 'semantic components': the *vision* of the project, the *requirements* of the ideas to be implemented during the semester given and the *'time frames'* giving the tempo of execution of the negotiated details. Usually during week 10 some crucial questions appear how to structure some integral parts of the whole model to the end, because of diversifying the *ideal model* of the center. Then we focus on overwhelming difficulties in putting a final point to the parallel process of developing ideas further how to continue in the next stage. A demonstration via G+ hangout is to be recorded and the project is peer reviewed by the UWS jury and by the client (NBU team). Evaluation on the technological procedure level as well as at the methodological level is concluded to see "system errors" in the continuous approach to building a participatory learning center and how to moderate standard measures and procedures.

On the methodological level there are two solutions of *user interaction* that are crystallized in the last three semesters. A *surface solution* for 'absolute beginners' is envisioned where 'Digital Natives' access visual environments and simulate further encounters on the one side; on the other side they interact with researchers who are about to work on the fundamentals of knowledge enriching the *in-depth solution* with specialized pieces of information. So, if the first solution is nearer to what could be called a 'game mastery', the second one is focused on the *scientific paths* of "serious knowledge"; both complimenting each other by the way education meets the requirements of life to have new virtual rooms and future scientific discoveries. The *disruptive innovation* applied in the "Duridanov center" is in the sustaining of a continuous interaction of both levels which will lead to a mixed educational framework of blended learning where "serious efforts" and "serious results" are

accompanied by an emotional proceeding; *serendipity* (Toms 2000, Renduchintala et al. 2006) is here involved as a basic educational component and a final product of competitive intelligence.

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