

LOWE

Local Knowledge and Education Centres for Adults Education

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Virtual 3D worlds in education and training

A vibrant 3D virtual world featuring a glowing blue and red spiral structure, a purple platform, and a modern building with a red door, set against a sunset sky over a body of water.

Borislav Stoyanov, e-Training Solutions

Introduction

“Virtual World” term is used to describe digital spaces that can be explored from within, where users can navigate through, interact with objects, other users and AI bots. Users can exchange information via text, audio, still images, animation and video. Usually the user’s presence takes is facilitated by an “avatar” - a digital 3D object that is used to represent the user. This representation is chosen by the user who may choose if his virtual identity has any real-world resemblance.



Real life in virtual life

Many activities taking place in a 3-D environment replicate real-life experiences but without real-life constraints and with some degree of anonymity:

Move by walking, running, flying to explore the open spaces and three-dimensional objects (e.g. buildings, etc.)

Interact with objects and perform virtual operations (open doors, access computer terminals, watch movies, etc.)

Interact and communicate with other world residents (e.g. write to, talk, play, attend events, etc.)

Take part in activities (e.g. training sessions, presentations, seminars, etc.)

Thematic design of space

The sense of three dimensional space and the feeling of being sharing it in real time with other people is one of the major differentiators between 3D virtual worlds and webpage-based environments. Virtual worlds designed and implemented in ways that suggest presence within a recognizable space are supposed to support more intense and timely communication among participants within those spaces.



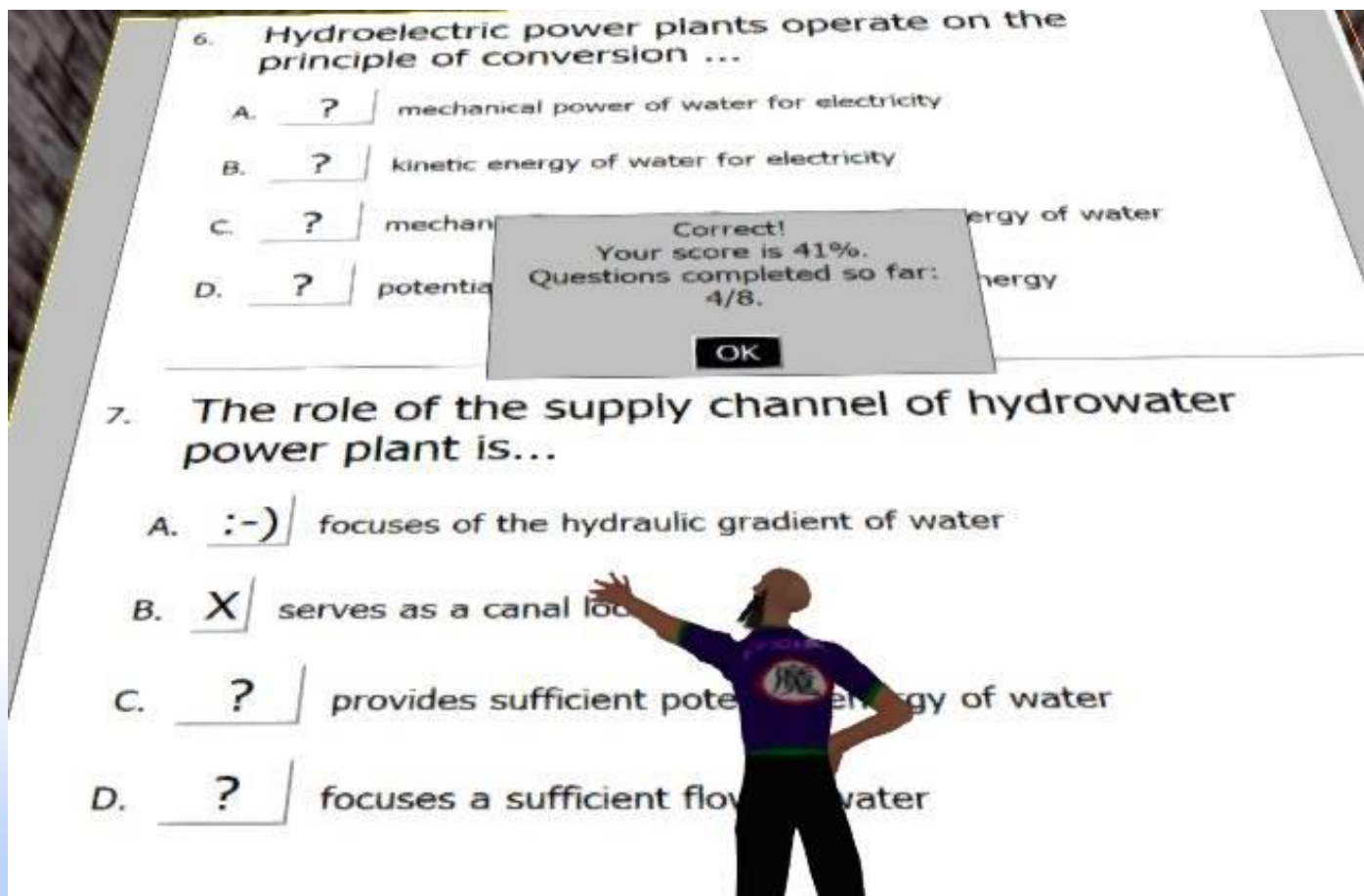
Promotion of presence

The sense of sharing the 3D space with other users is an important factor to create a useful communication medium out of a virtual world. The sense of presence should be considered as a crucial component of virtual world design. It is a sense that tells the users if they are in the immediate vicinity of others and as it would be in real life it would be difficult to establish a successful interaction if it's missing. No interaction among users and information will flow smoothly if it's not present. In a 3D virtual environment the awareness of others originates from being emotionally and cognitively immersed in a shared space and the feeling of "being there."

The environmental presence is defined by the level of presence of participants and participants' interaction. In this aspect the virtual worlds are similar to the other web-based environments. They all offer means of facilitating the users' communication. Discussion boards, forums, chat logs, and blogs are tools that are shared in most types of environment.

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Human behavior

Unlike the traditional online environments which do not require that the learner is present in a visualized shape the virtual worlds can be accessed only using such shape called avatar. However, despite that the avatars are important prerequisite their presence alone can't make the virtual worlds effective environments for communication. Another important factor is the real time connection, without it no effective communication can occur and this differentiates 3D virtual environments from other online technologies. Additionally, each user must act in order to establish fluid and meaningful communication.

Users' interactions in 3-D virtual worlds

An avatar is a 3-D digital representation of the user. Some virtual world platforms such as Second Life and OpenSim allow the users to customize their avatars. Users can select the appearance of their avatars, initially starting from a male or female human form. Next, the skin color, head and face form, hair type, body style and clothing can be adjusted. Additional clothing and accessories can be later on acquired in-world. Residents can always update or completely “redesign” their appearance, even choose non-human forms such as animals, plants, fiction characters or non-living objects.

Real-world physical limits do not necessarily apply to the avatars. In Second Life virtual world avatars can walk across the virtual landscape however they can also jump over very large distances, fly or just float in the air observing the goings-on below, or when in a hurry simply teleport themselves to a selected location. Users can also or detach their view from the avatar and fly around thus gaining an additional point of view, including on themselves.

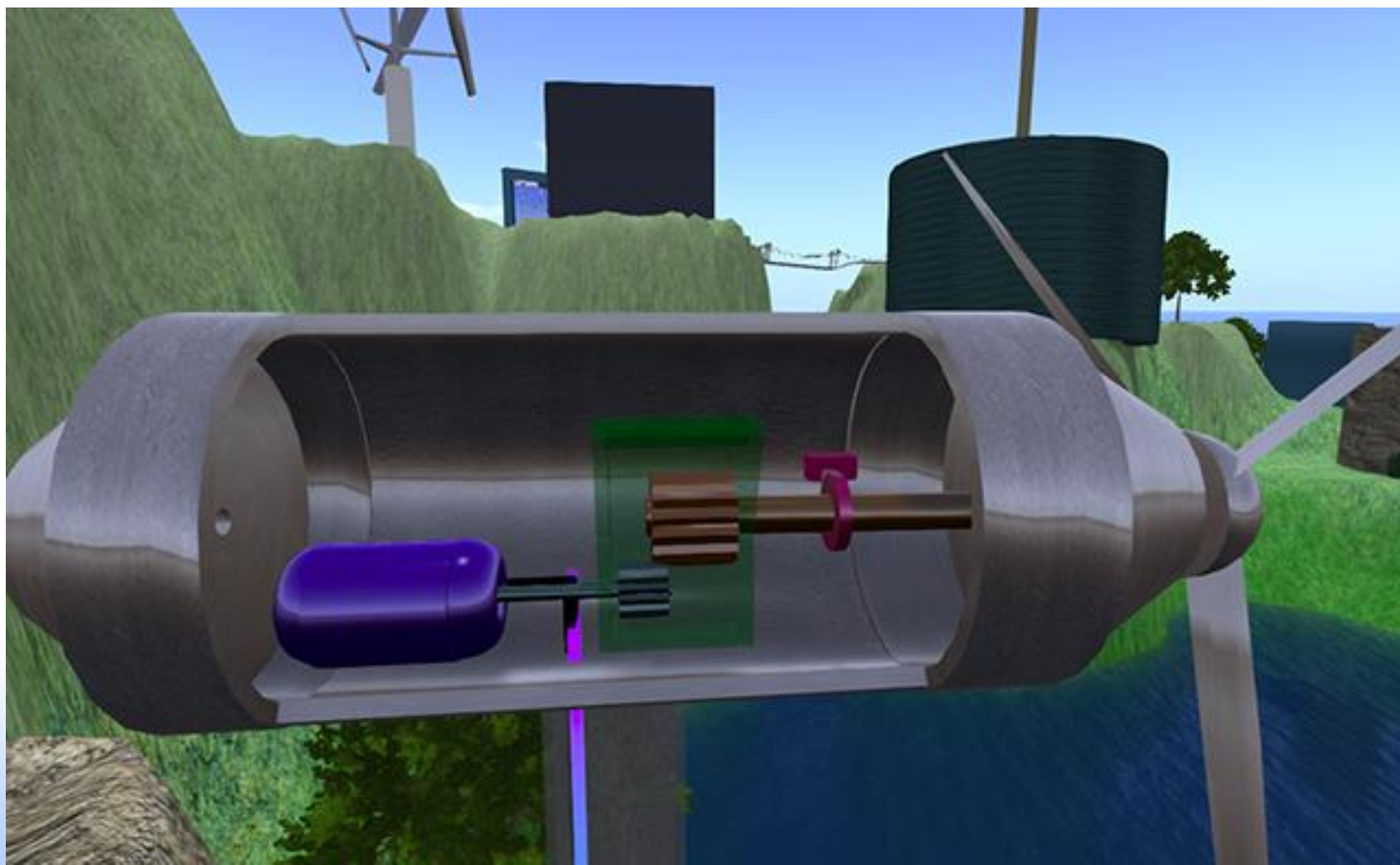
Once logged inside the users can join groups and clubs. There are different types of groups - some provide services in-world, others specialize in a particular area like study subject or cause. The group membership can be displayed in the users' profiles, an easy way to communicate to each other areas of interest and expertise.

There are users that explore every option available when configuring their avatar with enthusiasm. They continuously update their avatars, try out new outfits and to see what they are most comfortable with. Typically these users establish a relationship with their avatars, and the more they share experiences the more these relations strengthen. Sometimes the owner may go even further and starts to perceive him/her as being at one with the avatar, moving through the virtual environment as a single entity.

On the other end of the spectrum there are users that regard the avatar as just a technical requirement to use a virtual world. They often consider the avatars as an unnecessary hurdle when implementing their objectives in the virtual world. These users might get annoyed or irritated observing how other users get involved with their avatars, often customize it and spend extra time and efforts on their digital representation, rather than focusing on a specific in-world task.

To summarize, people react differently to “diving” in a virtual world. There are people, who when encounter a virtual world, instantly feel at home and start to “live” there. Others are interested in the tasks and outcomes, minimizing the “virtual life” when possible. And there are people that don’t want to use a virtual world at all. These environments are not for beginners or technophobes. There cases when 3-D virtual worlds bring more and greater rewards than other “conventional” computer technologies. However these rewards to be achieved an initial extra efforts are required such as acquiring the basic skills, keeping effective communication and socializing effectively.

Educational potential of 3-D virtual worlds



In the recent decade the 3-D virtual worlds started to attract attention as platforms for learning. They offer new learning delivery channels through which training organizations can provide experiential or simulated learning and group activities in a shared space.

A virtual world can provide a perfect multi-dimensional/sensory environment and a host of tools for **informal learning, coaching, brainstorming sessions** allowing **real time sharing** and exchange and also **recording and capturing the ongoing activities**.

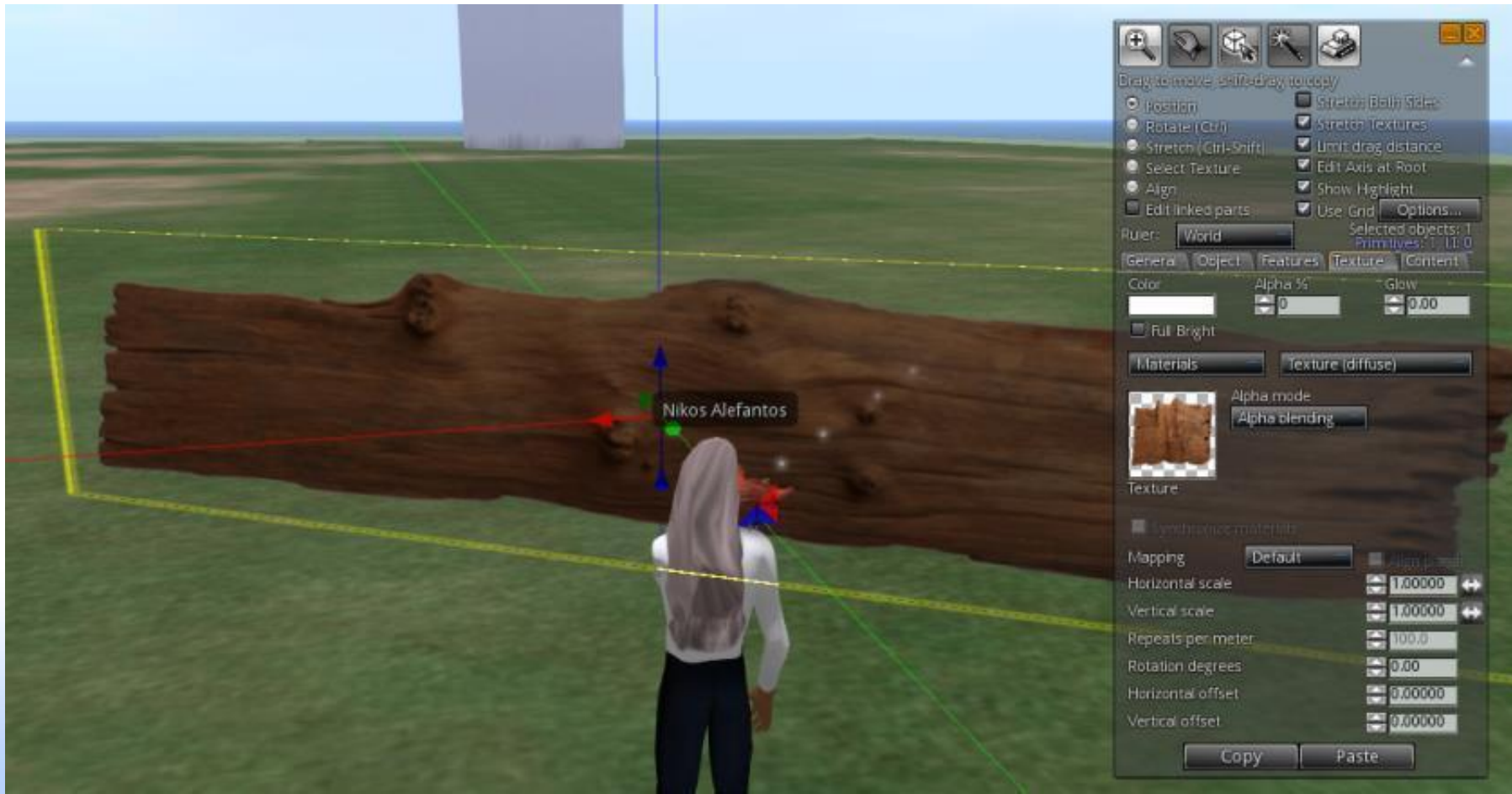
Nowadays the existing 3-D virtual worlds provide immersive learning delivery platform that can be adapted to different training scenarios:

- **Discovery learning** by clicking on objects with associated information
- **Reinforcement learning** by offering a knowledge repository, tools, etc., associated with objects in 3-D
- **Collaborative workspaces**, such as 3-D classrooms and informal sites for discussion, encouraging school-style study and research
- Traditional **instructor-led** learning through a distance delivery method
- **Simulated learning** by modeling a process or interaction that closely resembles the real world in terms of fidelity and outcomes.

3-D virtual environments possess several significant advantages over other training approaches:

- The experience can be much **more engaging** than a typical page-turning course
- The learner can **learn by doing**
- Expensive videoconferencing is not required for real-time online activity
- A user's learning experience can be designed to **fit specific task needs** with a flexibility and immediacy that is impossible in real life
- **Exploration and discovery** are encouraged
- **Fantasy and imagination** can be unleashed
- Virtual 3-D spaces often allow **full recording of any activity**, interaction, or exchange, enabling past events to be re-experienced or re-used
- Creed, skin color, look, and status within the organization do not count much in virtual spaces. Further, people with major physical handicaps appear as capable and as beautiful as anyone else, **reducing discrimination**

The ability to inhabit any type of body and to customize one's own look gives many people the opportunity to express themselves as they truly feel and not as society forces them to be.



Conclusion

There are many ways users can participate in virtual worlds. There are research findings that highlight that not the actual visualization is important, but the flow of information within the virtual space. In this sense the notion of virtuality begins in the body of one person and is mediated through the others who witness the unfolding dialogue and the final environment is constructed through multiple strains of interlocking interactions, where all users contribute to the final collective product. In some social networking websites (which are not virtual worlds in the traditional understanding) we can observe that the users are engaging with the environment much in the mentioned way. There is an online environment, which enables users to connect and communicate with their social network, build up a digital representation of themselves and participate in what is today described as a “network society”.

Thank you for your attention!

If you are interested in further information and collaboration please write to:

boris.stoyan@gmail.com

This presentation is based on **Virtual Reality / Technologies and applications in education Guide** developed for project AVARES

Images origin:

Antiviolence Campus at Second Life Project

AVARES – Enhance attractiveness of renewable energy training by virtual reality

VR4STEM – Virtual reality for STEM entrepreneurship training