The tools and components of virtual world

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Abstract: This article discusses the tools and components of a virtual entity. At the same time, the emergence of virtual existence and the formation of the term "virtual" were also mentioned.

Keywords: virtual communication, virtual memory, virtual disk, "Virtual existence", simulation, interactive, Immersiveness, "Virtual world", individual, avatar, Edusim

Nowadays, virtual existence is improving day by day. In people's lives, virtual reality is used in industry, sports, medicine, design, and many other similar fields. Virtual existence also creates very convenient opportunities mainly in the field of education, it helps schoolchildren and students studying in higher education institutions to visualize difficult concepts and master knowledge in classes. The virtual system is also used in industrial production. In addition, the VR system is used virtually in many operations in medicine. More to the point,scientists use the VR system in scientific work and laboratory training. At the same time, it creates an opportunity for sportsmen to work on their faults.

In the field of education the term of "virtuality" is being widely used. For example: virtual machine, virtual memory, virtual disk, virtual communication, virtual travel, virtual classroom. Only in this field, the concept of virtual is used in different forms and meanings and it has different concepts. For example, in multimedia systems, the concept of virtual means virtual existence.

The concept of virtual (Latin Virtualis - possible, i.e., which happens or can happen under certain conditions) is the realization of objects and events that do not exist in time and space, but are the realization of objective things or subjective images that refer to a process that has a probability.

The term "virtual presence" was coined by Jaron Lanier at the Massachusetts Institute of Technology in the late 1970s. He founded the world's first virtual reality firm in 1984. This term expresses the idea of human presence in a computer- generated environment. The term "virtual existence" was introduced by American cinematographers. They released a film with the same name about the artificial realization of imaginary possibilities that cannot be realized in a natural way due to certain reasons. Virtual reality is an interactive technology that allows you to create the illusion of a person moving in real life on a computer. In this case, the perception of

objective existence with the help of natural senses is replaced by artificially created computer information with the help of a special interface, computer graphics and sound. Nevertheless, it exists, and a person enters this imaginary world, not only observes and experiences it, but also has the opportunity to influence it, act independently in this world or to change it. The virtual world is a unique form of human existence and a special cultural expression of the spiritual connection of people. But a virtual entity cannot create the same environment as a real physical entity, because the emotions that arise under the influence of this entity are largely determined not by itself, but by how we perceive it. We can swim in a virtual sea, but the feelings that arise in it depend on how we perceive this sea. A virtual watermelon is not sweeter than a real watermelon, and there are several examples of this.

Today, virtual existence is used in various spheres of human's cultural activity. Virtual existence is primarily used in the field where it was created, in science, including modeling of fluid and gas dynamics in physics, modeling of chemical reactions in chemistry, geology and geography.

Virtual presence is widely used in the field of engineering, especially in dangerous conditions: in open space, in the depths of seas and oceans, in nuclear engineering, in remote control of robots. Computer design and its inseparable companion - computer manufacturing - have been combined into a single process in the testing of rockets and airplanes, automobiles and large building structures. Virtual reality technology is also widely used by the military.

For example, in virtual libraries, the user can navigate through the visual image of the bookshelves using a computer, find and browse the important literature, and, if necessary, copy them. The concept of a virtual museum is somewhat different. The virtual museum allows users to see any exhibit in the collection in its natural, three-dimensional view. But this requires displays with a much higher resolution. Thus, virtual existence has turned from theoretical research into a component of modern culture, in which mass media and telecommunications are an integral part.

Virtual existence is an artificially created information environment, which is aimed at replacing the environment in the usual way with the information created on the basis of various technological means. Creating information visualization tools aimed at developing virtual reality tools for educational purposes can provide a pedagogical effect that cannot be achieved using other technical tools. Virtual existence is related to the concepts of immersion and interactivity. Immersiveness means that a person imagines himself in a virtual existence. Interactivity allows the user to interact with objects in a virtual reality in real time.

The term "virtual entity" was built up in the late 1980s and means *an artificial entity.* A virtual entity simulates exposure and response to exposure. Objects of virtual existence usually resemble the movements of similar objects in material reality. The

user can manipulate these objects according to real laws of physics, such as gravity or collisions between objects. The term "virtuality" is derived from the Latin word "Virtualis" which means that it can happen or come into existence under certain conditions. Since the term "virtual" is used in so many fields, there are good reasons to bring this word into the education system. We can give many examples to explain the concepts of different subjects. In particular, in physics, particles that exist only in the interaction of other particles are called *virtual particles*. Due to virtual particles, interaction of real elementary particles takes place, and in this, mutual exchange of virtual particles occurs. The concept of virtual is also used in the field of meteorology. In this field, the dry air index of the air temperature with a certain humidity corresponding to the same pressure is called the virtual temperature.

The concept of "virtual world" includes:

• "A virtual world is something that has the following characteristics: It works using a basic set of automated rules - its physics; Each player represents an "individual" in the virtual world - that player's character; Interaction with the world happens in real time - if you do something, it happens when you do; the world is shared - other people can play at the same time as you; the world is persistent - it's not the real world" by Richard Bartle in 2015

• "A simulated environment in which many agents can virtually interact with each other, affect and react to objects, events, and the environment; agents can be zero or many people, each called *a virtual self* represented by many objects(*avatar)* or many software agents; all action/reaction/interaction must take place in a real-time non-interruptible virtual environment; the environment may consist of many data spaces, but a set of data spaces should form a single persistent shard," by Nevelstein in 2018.

There is no universally accepted definition of a virtual world, but they require the world to be permanent; in other words, the world must persist after the user leaves the world, and the changes made by users to the world must be preserved. Although interaction with other participants takes place in real time, time consistency is not always maintained in online virtual worlds. For example, EverQuest's time passes faster than real time, despite using the same calendar and time units to display game time. As "virtual world" is a general term, virtual environment supports different levels of play or games. Some uses of this term include:

• In massively multiplayer online games (MMOGs), a large number of players interact in a virtual world. The MMO concept has spread to other game genres such as sports, real-time strategy, and more. Persistence is the only criterion that distinguishes virtual worlds from video games, meaning that some MMO versions of RTS and FPS games resemble virtual worlds; Destiny is a video game and it's a pseudo-virtual world. Developing concepts include basing the terrain of such games on real satellite photos, such as those available through the Google Maps API or simple virtual geocaching

"[[easter egg (media)|easter eggs]".]" WikiMapia or similar mash-ups, where permitted; these concepts are virtual worlds using mixed reality.

- Collaborative Virtual Environment (CVE) is designed for collaborative work in a virtual environment (CVE).

- Massively multiplayer online real-life games (MMORLGs), also known as virtual social worlds, are where the user can edit and change their avatar at will, allowing them to play a more dynamic role or multiple roles.

Virtual worlds are a powerful new tool for teaching and learning, offering many opportunities but also some challenges. Persistence allows for ongoing and growing social interactions, which in turn can serve as a foundation for collaborative learning. The use of virtual worlds allows teachers to increase the active participation of students. It also allows users to perform tasks that may be difficult in the real world due to constraints such as cost, scheduling, or location.

Virtual worlds have the ability to adapt and grow to meet the different needs of users, for example, classroom teachers can use virtual worlds in their classrooms with the help of open source interactive whiteboards or project Edusim. While they can be a good source for the feedback of users, traditional paper-based resources have limitations that virtual worlds can overcome. Multi-user virtual worlds with easy-to-build capabilities are useful for project-based learning. For example, Active World is used to support classroom teachers in the Virginia Beach City Public Schools, the extracurricular NASA RealWorld-InWorld Engineering Design Challenge, and the after-school and school programs at EDUni-NY. Projects range from reflective spaces surrounded by rigid scaffolding to an open building based on student-centered design. New York museums AMNH and NYSci used the tool to support STEM learning experiences for their program participants.

Virtual worlds can also be used with virtual learning environments, Virtual worlds allow users with unique needs and requirements to access and use the same learning materials from home if they are physically available. Virtual worlds help users stay informed about relevant information and needs, while making them feel engaged. Being able to attend a presentation through a virtual world from home or work makes it more convenient for the user. Although virtual worlds are used as an alternative way to communicate and interact with students and teachers, there can be a feeling of isolation, such as the loss of some body language cues and other personal aspects that would be achieved if they were face-to-face.

In conclusion, virtual education is not only a unique aspect of remote telecommunications, but also manifests itself in the interaction of teachers, students, and objects of study in all forms of education, including day-time forms. Distance technologies serve to ensure the expansion of full-time educational opportunities based on virtual education. The main goal of virtual education is to understand the essence of

the role of a person in real life - to ensure the harmony of his virtual and other opportunities.

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