

# “The Art of suggestions” in VR and AR Technology

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**Abstract:** *With this article, I want to present examples of suggestions in a slightly different way. It is crucial that we recognize suggestions, be aware of them, and understand what impact they have on the individual and his or her life. We can also look at all this from the point of view of the artistic concept, that is, from the content of the work and the approach to this issue. The works of conceptual art deal with our everyday life and the problems we face. They study and clarify the issues of human relations, the functioning of the individual and society, communication, etc. Precisely because of this, the issue of the psychological impact of suggestions can also be linked to conceptual video art. The article presents examples that clearly indicate how these contents can be gained in terms of appropriate visualization and, of course, how certain contents can be linked to the field of self-help in terms of some therapy in education and other areas of life.*

**Keywords—** suggestion, video, therapy, conceptual art, additional professional help, virtual reality, school system, motivation.

## 1. INTRODUCTION

### 1.1. Virtual reality

Virtual reality (VR) uses computer technology to create a simulated environment. Unlike traditional digital approaches, VR technology puts the user in a virtual world experience. Instead of watching the digital world on the screen, the user seemingly finds himself in this 3D world (Figure 1). By simulating the senses (as much as possible), such as hearing, sight, touch, and even smell, VR technology is an interface between the user and this virtual world [7].



Fig. 1. Example of virtual reality

### 1.2. Use of VR technology

Virtual technology is widely used in the world of computer games, increasingly, however, for other purposes. The connection between VR technology and the therapeutic field is on the rise. VR technology takes the user into a simulated environment where he can be exposed to various situations through which cognitive-behavioural therapy can be performed (e.g. flight simulation and thus overcoming fear of heights, reconstruction of events that caused post-

traumatic syndrome and coping with them through VR technology, simulating spiders and overcoming negative feelings when confronting them, etc.). Even elderly people with dementia can train their intellectual abilities through simulations, as well as other patients who need to maintain and develop both mental and physical condition. However, simulation within VR technology can only be used for relaxation, meditation, etc. The fact is that the field of application for such purposes is evolving and expanding from year to year, and VR technology is thus gaining in its validity.

### 1.3. VR equipment

VR equipment consists of VR glasses, which we put on our face. Of course, these glasses are of different types and qualities. Simpler VR glasses are glasses that are used with the help of a smartphone (Figure 2). These glasses are intended for slightly less demanding users, but the experience of the virtual world is quite high quality. On the other hand, we have glasses that are for more demanding users and that can be connected to a computer or stand alone. The latter already have a processor built into the case itself (Figure 3). Both offer a better virtual experience than smartphones and are used for more demanding computer games, as well as for the rest of the virtual experience. Most glasses also have some kind of remote control or control controller and the possibility of connecting other similar accessories.



Fig. 2. Example of VR glasses for a smartphone



Fig. 3. Example of VR glasses with their own processor

It is important to emphasize that computer games and other video content, which are played through VR glasses, contain a certain quality of recording (resolution). In order to have the best possible experience with viewing glasses, the glasses themselves must also support this resolution.

The following are some comparisons of the glasses and their resolution and other characteristics (Figure 4).

Image	Manufacturer - Model	Resolution per eye	Max screen refresh rate / Hz	Field of view / degrees
	Acer Windows Mixed Reality	1440 x 1440	90	95
	ANTVR	1080 x 1200	90	110
	ASUS Windows Mixed Reality	1440 x 1440	90	95
	Dell Visor	1440 x 1440	90	110
	FOVE	1280 x 1440	70	100
	GALAX VISION	960 x 1080	60	100
	GameFace	1280 x 1440	90	120
	HP Reverb - Pro Edition	2160 x 2160	90	114
	HP Windows Mixed Reality	1440 x 1440	90	95
	HTC Vive	1080 x 1200	90	110
	HTC Vive Focus	1440 x 1600	75	110
	HTC Vive Pro	1440 x 1600	90	110
	ImmersiON VRRelia PRO-DG1	1080 x 1920	60	123

Fig. 4. Comparison of VR glasses resolutions

#### 1.4. Other modes of virtual reality/AR, MR, XR technology

Virtual reality (VR) means the complete shutdown of the physical world. With VR glasses, we can bring users into real and various imaginary environments. If this is a

complete exclusion of the real world, then in the following types of reality, this world is intertwined with the real.

**Augmented Reality (AR)** often adds digital content live using a camera on a smartphone. Examples of such experiences are Snapchat and the game Pokemon Go [8].

**The mixed reality (MR)** experience also combines elements of AR and VR, real and digital content interact, in an even more advanced form. Mixed reality technology is beginning to emerge with Microsoft's HoloLens (Figure 6), which have made a real revolution in this field [8].

**Augmented Reality (XR)** is a kind of term that encompasses all the technologies listed above and within which the user gets the maximum experience of simulation and reality at the same time [8].



Fig. 5. Types of virtual reality

The figure below (Figure 6) shows an example of glasses that can also be used for AR or other (MR and XR) technology. The essential difference of these glasses in comparison with VR glasses is that with these glasses, in addition to the virtual one, real space can also be perceived at the same time. These glasses (and other versions of these glasses) are a new step in the modern way of communication, visualization.



Fig. 6. HoloLens glasses for AR, MR and XR technology

## 2. VR AND AR TECHNOLOGY AND THE EFFECT OF "REMEMBERING"

### 2.1. Examples of the use of VR and AR technology

VR and AR technology can also serve as a medium for preserving memories. We all know family photos, which we have carefully kept and which evoke fond memories of childhood, family members and the events associated with them. VR itself and other technology, however, can transfer this photographic 2D format into an expanded 3D format. These pre-made videos (Figure 7 and Figure 8) can then be revived over and over again through VR equipment (VR glasses) (Figure 9 and Figure 10). The effect, however, is incomparable compared to photography, because with the help of this technology, we get the feeling that these events are actually taking place here and now. Of course, these events could be upgraded in AR technology, where with the help of AR glasses (Figure 6) in real space, a person could be detected in digital form.



Fig. 7



Fig. 8



Fig. 9



Fig.10

Fig. 7, 8, 9, 10. VR / AR technology and memory recall

The astonishing results of VR and AR and other such technologies, in connection with the recollection of memories, are also shown in the following two cases. In the photo below (Figure 11), there is an excerpt of a story from distant Korea, where a mother, after several years through VR and other technology, meets her deceased daughter again. She talks to her, she can touch her and somehow re-establish contact, which death unfortunately prevented. The daughter character herself is made, like a realistic avatar, with a pre-programmed response to communication. Of course, this also raises ethical and moral issues, which can be far from positive from some professions. And yet, what matters most is how the one who enters this world of virtual reality feels. In this case, there were only positive experiences on the part of the child's mother, which also led to the healing of some emotional wounds, etc. It is important to emphasize that each individual reacts differently and that it is necessary to study the matter well before entering such an experience and consult an appropriate expert so that in the

end the experience itself can be welcome and a kind of therapeutic.



Fig. 11. Meeting mother and daughter using VR / AR technology

The following example concerns the period of the genocide of the Jews and the concentration camps during World War II. In the VR world, we meet an elderly gentleman who has survived the cruelty of such acts. The idea of this project was to capture this person (Figure 12 and Figure 13) with the latest technology, who will answer key questions about genocide and thus tell a story. With the help of VR and other technology, others will be able to relive this story, as they will get in touch with this witness through the virtual world (even after his death) and communicate with him, ask him a question, etc. In this way, a greater psychological effect can be created on the participants of this experience. The possibilities of entering this world can be without VR glasses (Figure 14), but it can also be upgraded with this technology.



Fig. 12



Fig. 13



Fig. 14

Fig. 12, 13, 14. Meeting with a survivor of a concentration camp

## 2.2 Example of VR and AR technology for own use

Some time ago, I also spontaneously switched to the use of VR / AR technology and to the connection of the previously mentioned contents. It started with recording and sort of recording "classic" videos of my family members for my own archive. To which I wanted to upgrade this video into a VR experience. For such a feat, I needed new equipment (a camera with the possibility of recording in VR 180 ° technology, tripods, etc.), in short, equipment that allows production in virtual form.

The content itself was related to the topic of suggestions and how the suggestion can affect the individual, with an emphasis on the positive effect and within a kind of therapeutic approach. The artistic conceptual content, which I called "The Art of Suggestions" and within which I made a theoretical introduction in the article "The art of suggestions" published in the international journal IJAPR (International Journal of Academic Pedagogical Research), was a kind of starting point for later realization in its own project [5].

I started the project in two ways, namely in the classic VR format, where I used the Vuze XR camera (Figure 15) to capture the events behind the dining table (father's suggestions) and what video content I could relive later with VR glasses, such as z Oculus GO (Figure 3), which glasses are also supported by the camera shown below (Figure 15). Of course, I had to take into account all other laws and technical approaches (lighting, sound, use of tripods, etc.) when recording. Figure 16 shows a video clip using the aforementioned camera. The camera is designed so that it can be recorded in the way it is perceived by people with their eyes, which is also evident in the shape of the camera itself. The shot itself is "revived" only with the proper use of VR glasses.



Fig. 15. Vuze XR camera, which allows video capture in VR 180 ° technology

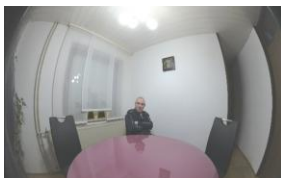


Fig. 16. Video capture section in 180 ° VR technology

The other way was to switch to AV technology. The idea was to make shots with the same content, but with the help of "Green screen" technology. This allows certain parts (in this case a person) to be placed in virtuality with the help of AR glasses, anywhere and anytime. This can build on a previous experience (Figure 16) as we can see the person here and now and not in the space where they were filmed. For this, of course, we need appropriate AR glasses, which are still in development and more difficult to access (such as Hololens, Figure 6) for the average user and everyday use.

I started making a custom studio (Figure 17), for making AR content and the video itself, then also played through the appropriate AR glasses (Figure 18). For this virtual experience, the technology is still evolving and also depends on the type of content we want to capture. Definitely, for the content I have chosen myself, this approach is satisfactory and gives the results that are expected in the end. A kind of inspiration for this part of the project was definitely the book A Human's Guide to the Future, authored by Jordan Nguyen, where it is a description of similar concepts [2].



Fig. 17. Adapted studio for later production of video content in AR technology



Fig. 18. AR Glasses

### 2.3 Example of VR and AR technology for school purposes

There have also been shifts in the use of VR / AR technology in education. Learning materials, which were previously in books and other literature, suddenly "come to life" and the student gets a better experience in terms of understanding and 3d representation of the content offered. Areas of application can be related to the subject itself (e.g. learning about the world in VR technology in the subject of geography, learning about human anatomy in biology, solving mathematical problems (Figure 19), etc.).

I could also introduce my own experience with such content (Chapter 2.2.) into school learning content. I teach the subject of fine arts and other subjects related to this subject, so that the contents of video production and consequently also virtual reality can definitely be linked to the curricula from the mentioned areas, such as the curriculum for fine arts [1], fine arts [4] and film education. All this must be linked to conceptual artistic creation where the teacher must also approach these contents with his appropriate methods as described in his handbook by didactic T. Zupančič [6].

Above all, these contents are also welcome in classes where the educational moment and emotional intelligence, empathy, etc. are strengthened. Of course, this can be done within class hours and hours, which are also done by the school counselling service, spec. and soc. pedagogues, etc. All this requires conditions, both spatial, temporal and financial (purchase of equipment).



Fig. 19. VR / AR technology in education

### 3. CONCLUDING REMARKS

The world is evolving and changing. VR and other technology have also made progress over the last decade and continue to evolve. It is important to recognize both the advantages and disadvantages of modern technology and to use the positive ones to our advantage. VR / AR also enables this, both in terms of education and in terms of a positive

psychological effect on a person, through a kind of therapeutic approach, examples of which I also highlighted in the article.

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### SOURCES OF PICTORIAL MATERIAL

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