USE OF VIRTUAL REALITY AND DIGITAL TECHNOLOGIES FOR STUDYING FOLKLORE IN UKRAINE'S EDUCATIONAL INSTITUTIONS

O. Pydiura

У даній статті описано явище використання віртуальної реальності з навчальною метою на прикладі синергії фольклористики та цифрових технологій. Не важко погодитися з думкою, що віртуальна реальність сьогодні постає, як ідеальне навчальне середовище. Концепція використання технологій віртуальної реальності для навчання і науки в повній мірі реалізована в програмно-апаратному комплексі Віртуальної реальності для освіти - VE 3D ieCenter. Завдяки цьому апаратному комплексу стає можливо використання засобів віртуальної реальності для вивчення учнями чи студентами фольклору. Аргументована доцільність використання 3D Інтернету, як засіб підвищення інтерактивності навчального процесу.

Прагнення вирватися за рамки двовимірного подання інформації привело до створення динамічних віртуальних технологій. На сьогоднішній день в освітніх та інформаційних технологіях для викладачів доступні нові перспективи у вигляді 3D інформації в мережі Інтернет. Із застосуванням технологій віртуальної і доповненої реальності учні середніх і вищих навчальних закладів зможуть взаємодіяти з предметами в віртуальному просторі або брати участь у важливих історичних подіях. Технології віртуальної і доповненої реальності слід застосовувати в сфері освіти у першу чергу через те, що освітня система повинна пристосовуватися до ускладнюючих процесів, моделей і теорій, а учням необхідно оперувати великою кількістю інформації і новими способами її подання.

Як приклад використання віртуальної реальності під час практичних занять з вивчення фольклору в статті було описано структуру інтерактивного квесту та семінару. Теоретичні результати дослідження, на нашу думку, можна використовувати як один із варіантів вирішення головної задачі програми «Освіта протягом усього життя», тобто зниження негативних наслідків трудової міграції, через задіяння спеціалістів у сфері програмування та культурної антропології, фольклористики, що мають попит у розвинутих країнах світу. За підтримки Міністерства освіти і науки України, меценатів – є цілком реальна можливість по створенню спеціалізованих наукових лабораторій при провідних вітчизняних університетах у галузі фольклору. Таким чином, створюються передумови щодо повернення на батьківщину висококваліфікованих працівників та забезпечення їх постійними робочими місцями

Ключові слова: *взаємодія, синергія, віртуальна реальність, 3D Інтернет, інтерактивний квест, фольклор, анімалістична казка*

1. Introduction

In the era of total development of computer technologies, the education system has been able to raise the level of refinement of information during the educational process, without limiting this vector to presentations, research, practical lessons, etc. Ordinary computer science lessons do not provide such a high level of knowledge acquisition as the synergy of virtual reality and educational tasks. In the article, we will look at a specific example of this phenomenon, namely the study of folklore. Pupils and students through interactive learning can aim the use of virtual reality in the walls of educational institutions at the formation of complex knowledge from different folklore genres.

2. Literature review

During the study of scientific sources, a small number of professional studies have been identified that cover this issue comprehensively. The results of the exploration are based on works, separately devoted to digital technologies and folklore, and the findings of the researchers are presented in the following main areas:

– problems of functioning of VR technologies [1];

– systematization of descriptive knowledge regarding VR technologies [2];

– the foundations of the philosophy of virtual reality. Development prospects [3];

– advantages and disadvantages of the center of visualization and virtual reality for science and education [4];

– development of folk art from its origins to the present, especially the existence of texts under certain historical conditions. A new periodization of folklore and classification of genres is presented, taking into account modern studies of history, ethnopsychology, cultural studies, mythology [5];

– digital reality research, social communication, contextual adaptation, representation of the personal self as the basic behavioral and expressive motivation to create a custom avatar in virtual worlds [6];

– the impact of computer reality (the fictional world of video games) on the real world of the recipient and their intersection with the subsequent formation of a superposition [7];

– conceptual analysis of the use of virtual technologies as a method and means of learning [8];

– oppositional view on the interpretation of folklore in traditional science [9];

– historical and ethnographic analysis of Ukrainian folklore, language, philosophy through field research [10];

– a comparative study of the impact of literature and myth on video games [11].

Thus, the urgency of the outlined problem, its insufficient elaboration in modern folklore, scientific, pedagogical theory and practice and certain contradictions led to the choice of the topic of the article: «Using virtual reality and digital technologies for the study of folklore in educational institutions of Ukraine».

3. The purpose and objectives of the study

The purpose of the research is to popularize the latest technologies not only in the departments of folklore studies, but also in other fields of scientific and pedagogical activity.

To achieve this goal, the following tasks were set:

1. To form a positive view of virtual reality in pedagogical and humanitarian institutions, as a progressive means of interactive learning.

2. Development an interactive quest and colloquium as an example of using virtual reality during folklore study sessions.

3. To prove the feasibility of using virtual reality and digital technologies to study folk art.

4. Folklore and digital technologies

Virtual Reality is a technically created world that is transmitted to a human through his/her receptors of sight, hearing, smell, touch, and more. Virtual reality is capable of simulating both action and reaction to action. To create a plausible set of real-world sensations, a computer synthesis of the qualities and reactions of virtual reality takes place in real time [1]. According to the scientist, virtual objects are almost synonymous with real, because they have a similar pattern of behavior. The recipient can influence these objects in accordance with the laws of physics [2].

Prior to the advent of digital technology, virtual objects were understood to be objects that do not exist, but may occur under certain conditions. In the 1960s, Myron Krueger introduced the notion of artificial reality [3].

There are the following features of virtual reality:

– virtual reality is created by another reality, external to it;

– relevance (there is an actuality, at the moment of observation, «here and now»);

– autonomy (has its laws of being, time and space);

– interactivity (can interact with other realities, however, with independence) [2].

It is not difficult to agree with the idea that virtual reality is emerging today as an ideal learning environment. Thanks to it, we are able to improve the quality and speed of training of specialists in various fields: avia-

tion, process control, medicine, remote control of technical means, etc. [4].

We also see the great potential in using virtual reality in visual elements of lectures or seminars, in various trainings, which in general yields tremendous results.

Virtual reality technologies allow the full use of what a person receives: 80 % of information from the outside world through vision, with people remembering 20 % of what they see, 40 % of what they see and hear, and 70 % of what they see, hear and do [4].

The concept of using virtual reality technologies for education and science is fully implemented in the virtual reality software and hardware for education.

Main features of VE 3D ieCenter:

1. Interactive high-quality visualization for scientific and educational purposes, virtual modeling and prototyping of different processes and objects;

2. Creation of interactive educational courses and their further demonstration for students and teachers in virtual reality systems, ordinary PC, 3D Intranet;

3. 3D visualization of scientific data in real time and high quality visualization of simulation modeling;

4. VIP presentations for management and decision makers;

5. Virtual testing of human interaction with various technical devices and systems;

6. Center for creating interactive virtual layouts, educational simulators and simulators [4].

Advantages of VE 3D ieCenter:

1. Real economic efficiency;

2. Ease of use, time saving in data visualization, ease of use with Virtools or 3DVIA Studio Pro software does not require special programming skills;

3. Improving the quality of training, interactive learning in the form of games;

4. Reduction of the area, required for the placement of a laboratory and training equipment, through the use of computer simulation models, simulators;

5. Work on a real-time basis with interactive virtual layouts, models, gaining real experience and knowledge still in the development stage;

6. Using the 3D concept for everyone and everywhere, one center of responsibility for development. Ability to create interactive 3D educational programs and their further demonstration in virtual reality systems (3D visualization), demonstration on ordinary PCs (creation of CDs, DVDs), creation of 3D sites (using 3D Internet technology);

7. Ability to integrate into existing audio-visual complexes. Possibility of demonstration of ordinary 2D information [4].

The benefits of VE 3D ieCenter describe the following question: «Is it possible to use virtual reality tools to study folklore by students or pupils?» The answer to this question will be considered on the example of animalistic fairy tales. As we know it: «animal tales are historically the oldest layer of folk fairytale epic. In the Slavic tribes, like in many other peoples, in the period of the birth and development of hunting prose stories about animals appeared. At first, they were magical and intended to order animals - totem ancestors» [5]. Scientists, who study peoples at the primitive level of development, submit records of a particular category of stories, told

before hunting the beast that is the subject of the narrative. It is necessary to understand those night stories that occur in different tribes before hunting - they will bring good luck in the future hunting [5].

Let us focus on Grushevsky's words, namely the performers of fairy tales before catching. It will be a good idea to create a location in a virtual reality where students will find themselves in a Slavic tribe. They will sit near the bonfire and prepare for the hunt. When immersed in this environment, students will be able to fully experience the era. The first level of adaptation of consciousness to such circumstances is the «dressing» of avatars [6]. The students themselves will perform this action. Due to this, in cyberspace they will see themselves as a member of the tribe. Of course, there will be different visual effects (wind noise, crackling of the fire, the surrounding nature, etc.) that will further enhance the dive. The teacher can act as a storyteller, which will control the process of an interactive lecture or seminar. We agree that it would be most appropriate to use this type of training at seminars. The lecturer asks students questions about the stories of the animalistic fairy tales. In their turn, students name the fairy tales that they remembered in lectures. In addition, members, involved in this process, can tell each other tales. To analyze the folk story, the lecturer offers one of the tales. It can be a «Tale of a wolf-caroler» who: «comes to Christmas for his grandfather and picks up a sheep, goat, horse, grandmother, and then takes it all to the forest, and eats there» [5]. This is where the core of the seminar is formed. Students are presented with an identical version of a documented fairy tale. Viewers will be able to view it from all angles and take a direct part in the story's plot. Their purpose is to interpret the pagan and Christian elements, the motives of appeasing the totem, performing its will and wishes, establishing the totem or the elements of initiation. An algorithm that allows you to change the stories can add variability of learning. For example, students can add an element of a social-fairy tale and observe how the story is transformed and what the consequences will be of such an experiment.

In addition to fairy tales, virtual reality makes it possible to consider the genres of song folklore. The aim is to increase the interest of the younger generation in folk songs. The following interactive learning option can be submitted in the form of a quest:

Subject: *Social and household songs*
Objective: to improve self-motivation;
formation of new competences;
realization of the creative potential;
increase of the personal self-esteem;
development of personal qualities (for example, poetic, musical, artistic abilities);
raising students' interest through the modernization of teaching material;
Equipment: software, virtual reality helmets.
Type of lesson: interactive lesson (virtual quest)
Course of the lesson
1. The introductory part.
1.1 Organizational moment.
Hello, children! Today I will hold classes for you. I pay attention to the discipline, the behavior of students. In addition, I inform the rules of use with the equipment.

1.2. Updating basic knowledge.
It is necessary to hold a conversation to update students' knowledge of social and household songs.
1.3 Topic and purpose of the lesson.
I report the topic (continued): «Social and household songs» and the purpose of the lesson.
2. The main part
2.1. Announcement of the rules of passing the virtual quest.
Given the limit on the number of simultaneous participation in the virtual quest (maximum 8 people in one session), two teams of four players are formed. In addition, the number of tasks in their duration is short-lived in order to engage all children in the class in several sessions. The rating is on a 12-point scale. For each task, the team receives 3 points.
2.2. Task 1: **«Avatar. Identification»**
Teams get into virtual rooms. Each team has its own room. The program randomly assigns an avatar to participants. Their job is to quickly identify their characters. The players help each other. The following characters are available: Cossack, Bondman, Chumak, and Soldier. The team that unmistakably identified the characters also wins. If both teams completed the task correctly, the one, who completed the task faster, will win.
2.3. Task 2: **«The Key»**
The teams get to the authentic XIX century hut (for each team, the house has an individual look). The cozy hut has three doors that are locked with a key. Students' task is to find snippets of songs in the interior of the hut and identify their titles and their avatars. For example: «Oh on the mountain and the reapers reap», «Stands a maple by the water», «The clamor, clamor, in the oak forest», «Oh, in the steppe well». When done correctly, players get the keys and move to another location. If one makes a mistake, the found song fragments disappear, the interior objects change and the task begins again. Fragments of the songs remain with the students. The evaluation is carried out by the same method as described above.
2.4. Task 3: **«Hunting»**
This stage is designed for the individual skills of the participants. Each participant enters the room, where pieces of songs fly in the air. For example: «Oh on the mountain and the reapers reap», «Stands a maple by the water», «The clamor, clamor, in the oak forest», «Oh, in the steppe well». The participant must catch his or her song particles. This tour is a test of knowledge of the texts and the ability to separate the necessary information. The evaluation is similar.
2.5. Task 4: **«Scroll»**
The stage takes place in the same location. After the participants have separated the desired fragments, a scroll materializes on which you want to arrange the fragments of the song in the correct sequence. The task is designed to establish the logical order and the ability to respond quickly in a limited time. After the task is completed, the scroll flashes in bright light and transforms into a staircase, leading to another location. The transition comes under the authentic rendition of the song.
2.6. Task 5: **«The fate of the Ukrainian»**
The contest finished. Members of all teams converge in one location. There is a projection of the history

of the Ukrainian people into social songs. However, students are not passive observers. The unfolding of the story takes place not in static form, but in the form of cut-scenes where the students are able to fully feel the spirit of the era.

3. The final part

3.1. Summary of the lesson

Summing up. Conversation.

3.2. Homework.

To write an essay «The role of Social and household songs in the life of a Ukrainian»

The desire to break beyond the two-dimensional presentation of information has led to the creation of dynamic virtual technologies. To date, new perspectives in the form of 3D information on the Internet are available to educators and students. It is advisable to associate them with such concepts as «three-dimensional graphics», «virtual reality», which are combined under one denominator of 3D Internet. Teachers or students can now use the 3DVIA Studio Pro suite of programs. Using the Multi-user Publisher module and free, downloadable 3DVIA Player, you can publish virtual educational environments, created using 3DVIA Studio development modules on the Internet. Then, with 3DVIA Player, anyone can visit your virtual world with his or her PC connected to the Internet. This opens up truly gigantic prospects in the field of distance education [4].

Even the project described above is quite likely to be transferred to the confines of the 3D internet, allowing for the expansion of the circle of students or those, wishing to get acquainted with folk subjects. In addition, we see the great potential in detailed digital copies of Ukrainian folk costumes. Thanks to this technology, regardless of location, researchers or students will be able to scrutinize the national clothing of Ukrainians, both the cut of the garment and the material from which it is made.

With the use of virtual and augmented reality technologies, secondary and higher education students will be able to interact with subjects in the virtual space or participate in important historical events. Google is promoting its Cardboard project in schools for free, with over 100 training programs ready by the beginning of 2016 [8].

Virtual and augmented reality technologies should be applied in the field of education primarily because the education system has to adapt to complex processes, models and theories, and students need to operate with a wealth of information and new ways of presenting it.

5. Research results

Through our research on the consideration of the problem of interaction of virtual reality in the field of folklore, we have obtained the results that helped to form the theoretical basis for the creation of scientific educational projects for the study of national heritage not only in Ukraine, but also abroad.

Theoretical results of the study, in our opinion, can be used as one of the options for solving the main objective of the program "Lifelong learning", i.e. reducing the negative effects of labor migration, due to the involvement of specialists in the field of programming and cultural anthropology, folkloristics, which are in demand in developed countries world. With the support of the Ministry of Education and Science of Ukraine, philanthropists - it is a very real opportunity to create specialized scientific laboratories at leading domestic universities in the field of folklore. In this way, preconditions are created for the return of highly qualified workers to their homes and their permanent jobs.

6. Conclusions

– Virtual reality tools allow you to visualize any folk motif.

– 3D Internet allows collaboration with scientists from different countries of the world and opens opportunities for popularization of folk traditions.

– Thanks to virtual reality, the educational system adapts to the requirements of today.

– The possibility of integration of folkloristics in the sphere of virtual reality has been revealed.

– It is advisable to use virtual reality and 3D internet during lectures and practical classes.

References

1. Tekhnolohii virtualnoi realnosti. URL: https://www.it.ua/knowledge-base/technology-innovation/virtualnaja-realnost-vr

2. Virtualnaia realnost. URL: https://ru.wikipedia.org/wiki/Виртуальная_реальность

3. Mairon Kriuger. Iskustvennaia realnost: proshloe i budusche. URL: http://testlib.meta.ua/book/127801/read/

4. Obrazovanie i nauka. URL: http://ve-group.ru/3dvr-resheniya/obrazovanie-i-nauka/

5. Lanovyk M. B., Lanovyk Z. B. Kultovo-animistychni (mifolohichni) kazky // Zvirynyi epos. URL: http://www.info-library.com.ua/books-text-4166.html

6. Lin H., Wang H. Avatar creation in virtual worlds: Behaviors and motivations // Computers in Human Behavior. 2014. Vol. 34. P. 213–218. doi: http://doi.org/10.1016/j.chb.2013.10.005

7. Samoylova E. Virtual World of Computer Games: Reality or Illusion? // Procedia – Social and Behavioral Sciences. 2014. Vol. 149. P. 842–845. doi: http://doi.org/10.1016/j.sbspro.2014.08.324

8. VR-tekhnolohii yak metod i zasib navchannia. URL: http://od.kubg.edu.ua/index.php/journal/article/download/444/392

9. Plachynda S. P. Slovnyk davnoukrainskoi mifolohii. Kyiv: Ukr. Pysmnyk, 1993. 63 p.

10. Myloradovych V. P. Ukrainska vidma: narysy z ukrainskoi demonolohii. Kyiv: Veselka, 1993. 72 p.

11. Influence of literature and myth in videogames. URL: http://www.ign.com/articles/2006/05/18/the-influence-of-literature-and-myth-in-videogames

Oleksandr Pydiura, Department of Folklore, Institute of Philology, Taras Shevchenko National University of Kyiv, Volodymyrska str., 60, Kyiv, Ukraine, 01033, E-mail: oleksandrpidura@gmail.com