

INTERNATIONAL CONFERENCE  
ST PETERSBURG - KRASNOYARSK, RUSSIA  
MAY 20-22, 2020

Science & Technologi City Hall  
Krasnoyarsk

 **SUAI** State University  
of Aerospace Instrumentation



**ICEST**

Economic and Social Trends  
for Sustainability of Modern Society

# «ECONOMIC AND SOCIAL TRENDS FOR SUSTAINABILITY OF MODERN SOCIETY» ICEST-2020

## «VIRTUAL REALITY TECHNOLOGY IN THE PREPARATION OF GEOGRAPHY TEACHERS»

P. V. Zakharov, E. A. Ereemeev, E. N. Bavykina, O. N. Makarova



## 02

# Problem statement

Training highly qualified specialists is an important task of higher education. This problem is especially acute in the field of teacher training for secondary and high schools, where in many regions there is a severe staff shortage in a wide range of specialties. At the same time, there is an active promotion of national projects, the main of which is “The National Education Project”. The introduction of new technologies in the educational project is the basement of several national programs at once: “The National Education project”, “The Digital Economy Program”, “Digital School”, “Modern Digital Educational Environment” and several others. So the project “Digital educational environment” implies the introduction of new digital technologies in 25% of pilot educational institutions by 2024. In modern realities it is impossible to imagine the educational process without involving a variety of technical teaching aids, and, first of all, we are talking about computer technologies. New technologies are especially relevant in studying of the natural science disciplines, where visualization of complex processes is required.

In this work, we consider the issue of using virtual and mixed reality in the preparation of geography teachers, both from a methodological point of view and from the position of creating content for virtual space



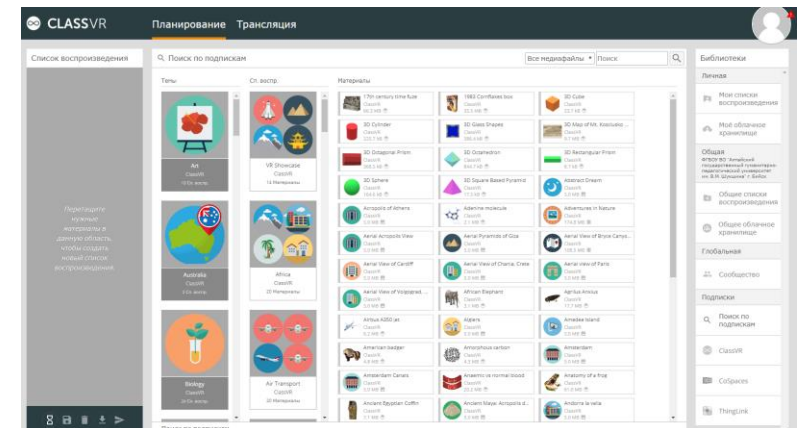
We used equipment and basic ClassVR software as the environment of virtual, augmented and mixed reality, which allows us to control the operation of each headset and at the same time provide an individual approach to each student. The portal system also allows you to download your own content, which is extremely important in considering unique tasks. The portal has ready-made content that can be applied in classes in a wide range of disciplines, both school curriculum and higher education. This opportunity opens up a wide methodological potential for teacher training. Since a modern teacher should be not only the one who reproduces the material, but also the one who creates it.

The communication mechanism of three-dimensional models of objects and a cube of mixed reality through the built-in ARC application will let work with models efficiently.

Besides, control over the focusing of the student's gaze allows you to more accurately track the activity and, if necessary, make adjustments to the learning process.

## 03

## Solution methods





## 04

# Conclusions

Results, implementation

Based on the results of the conducted study, a number of conclusions can be drawn.

- First of all, it should be noted that the interest of students in virtual reality technology and their more active attendance of classes at which the use of VR headsets was announced is increased.
- During the studying of complex spatial geographical objects, virtual reality technology allowed students to get acquainted with the object of study in more detail, and panoramic spherical photographs contributed to the understanding of theoretical material, providing communication with real-world objects.
- We also want to note that creating content for students (future geography teachers) caused more difficulties than expected. If there were no fundamental problems with the creation of panoramic spherical images, the vast majority of students had difficulties with creating 3D models of objects connected with the lack of skills of work in 3D graphics applications.

The way out of this situation is the introduction into the curriculum of additional disciplines related to information technologies in the field of graphics and modeling.



P. V. Zakharov (a), E. A. Ereemeev (b), E. N. Bavykina (c), O. N. Makarova (d)

(a) The Shukshin Altai State Humanities Pedagogical University, Vladimira Korolenko St, 53, Biysk, Russia, zakharovpvl@rambler.ru

(b) The Shukshin Altai State Humanities Pedagogical University, Vladimira Korolenko St, 53, Biysk, Russia, engkent007eu@gmail.com

(c) The Shukshin Altai State Humanities Pedagogical University, Vladimira Korolenko St, 53, Biysk, Russia, bawikina.82@mail.ru

(d) The Shukshin Altai State Humanities Pedagogical University, Vladimira Korolenko St, 53, Biysk, Russia, fmfmak.on@mail.ru

# 05

## Contacts

**INTERNATIONAL CONFERENCE  
St Petersburg - Krasnoyarsk, RUSSIA  
20-22 May, 2020**

**«Metrological Support of Innovative  
Technologies»  
ICMSIT-2020**