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The Use Of Digital Gaming Technologies In Solving The Problems Of Environmental Education

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Abstract – This paper defines the theoretical justification and the possibility of using digital gaming technologies in the process of solving the problems of environmental education at various stages of the general educational system. A theoretical review of mobile, computer applications and the practical possibility of their use in accordance with the age and individual characteristics of students in the process of environmental education are brought in the article.

Keywords – Environmental Outlook, Environmental Education, Play, Information Technology, Personality Education, Mobile And Computer Gaming Technologies.

I. INTRODUCTION

The actuality of this article largely corresponds to the requirements of the time. Environmental education is one of the most important factors in the formation of a full-fledged, harmoniously developed personality, focused on preserving and increasing the world's natural wealth, rational use of natural resources of one's own country and even the formation of national and racial tolerance among civil society. Today, the education of an ecological worldview is placed at the head of many educational systems in the developed countries of the world.

One of the problem areas in the formation of an ecological worldview is the use of information technologies in the process of education, the transition from the educational and academic into the digital plane. Meanwhile, in modern conditions of constant digital noise and pollution of the media space, the teacher has to fight for the student's attention with various polluting media objects. Mobile and computer games are elevated by most teachers to the rank of the main enemies of the educational and upbringing process. While they can also be used as a powerful means of educational influence on students in the selection and combination of scientific knowledge, theoretical substantiation of game material, pedagogical foundations of education and didactics of the process, combined with the brightness and colorfulness of the gameplay. The current scientific work is devoted to the consideration of this problem, **the object** of which is mobile and computer gaming technologies in the educational process, and **the subject** is environmental education at different stages of the educational process.

II. THE AIM OF THIS WORK

To consider the use of mobile and computer gaming technologies in the context of education of an ecological worldview.

III. MAIN PART

Today, there are many approaches to defining the concept of an ecological worldview. Modern teachers who were engaged in the field of pedagogical ecology such as V.V. Lisnichenko and N.B. Lisnichenko gave their following definition to the ecological worldview: "*The ecological worldview is a set of views, assessments, principles that it determines the general vision of a person of his place in the world around him, and at the same time life positions, programs of behavior, actions in the social and natural environment, allowing not to violate natural balance in the system "man – society – nature*"[4]. At the same time, academician D.K. Belyaev defines the ecological worldview much more succinctly, namely, as a persistent conviction, desire to preserve and understand our influence on nature [1]. By N.G. Vasiliyev is even argued that the concept of an ecological worldview has some notions in following. *Ecological worldview is a set of scientific and everyday knowledge about the relationship of society with nature, ethical, aesthetic, value attitudes of a given subject, that is, specifically subjective features of ecological consciousness, reflecting a specific social environment and specific natural conditions life of the subject of spiritual and practical development of nature*"[2].

Meanwhile, based on the specifics of the subject of ecology, we can derive our own definition of the concept of an ecological worldview: An ecological worldview is an awareness of one's own place and the importance of human in the natural system of nature. This approach to the definition is the most objective for the simple reason that, often, a person is considered as the highest stage of the evolution of nature, separated from it by some sign. However, as we all know, human is only a part of nature and even far from the highest, because, as the famous scientist biologist Charles Darwin defined that the dominant in the environment is not the perfect or the strongest species, but the most adapted species is in a given niche [3]. Thus, we come to the realization that the preservation of nature and natural diversity is not a necessity for the sake of nature itself, but for the survival of our species. Arguing in this plane, we come to the main problem of ecology – to its misunderstanding and interpretation.

One of the methods for overcoming this problem may be the use of ICT in the process of environmental education. These include, for example, virtual excursions, considered in the lesson and outside the lesson of 3-D models, the construction of such based on knowledge of the principles of biological systems, the use of interactive environmental educational presentations and tasks of an environmental nature, as well as many other methods and techniques.

The main share of environmental education in the general educational system is education in the framework of natural science and biology, which includes both in-class and out-of-class work [5,7].

One of the special and rarely considered forms of using mobile and computer technologies in the pedagogical sphere is mobile and computer games, which combine the advantages of game forms of teaching and upbringing of students in conjunction with the advantages of the operational electronic systems themselves [8,9,10]. Of course, such a form of presentation of material can't and should not be used by a teacher as the fundamental principle of the didactic and educational process. However, it may well be used as a reinforcing, actualizing factor, a factor in team rallying around a common (in particular, ecological) task, as a method of submitting additional material in a public form or as a means of solving the problem of the absence of an object for research by students.

Games of this kind can be roughly divided into two broad groups:

- Context learning games;
- Purposeful educational games.

In this system, context-learning games here will be existed many computer and mobile games and applications that do not have a direct context and an obvious environmental orientation, but include environmental elements. Therefore, for example, these will be various natural simulators that allow the child to plunge into the natural habitat of this or that animal. These kinds of games are especially common today among students of primary school and the first stage of secondary general education, however, it is necessary to emphasize that before recommending the game as a complementary or general developmental game aid, the teacher must carefully approach the issue of studying the game. Many of these games eventually acquire an exclusively playful character and abandon the scientifically grounded mechanism of play [6].

In turn, for example, an excellent example is Plague.inc, which can serve as a visual aid both for considering the environmental characteristics of the spread of various types of diseases, and as an illustration of the complexity of countering the spread of diseases. Where the student can feel like the head of higher education institutions and may reconsider its attitude to the recommended sanitary

measures. In addition, many games reflect the current ecological state and the unequal struggle of environmental scientists with the consequences of techno genic pollution of the environment.

Meanwhile, as mentioned earlier, games of this type can only be used as an addition to the educational process and be supported by some kind of didactic task. For example, returning to the example of a disease simulator, you can instruct students to write an essay on the importance of maintaining personal health to ensure the safety of everything society or the nature of the rapid spread of some pathogens in the population due to poor environmental conditions.

A special and most significant group of computer and mobile games and applications are special games or didactic ones. To date, there are very few such games in the open access and most of them are at the stage of testing and implementation in general pedagogical practice, however, some developers directly target educational audiences. For example, these include the *Mosaic3D app*. from the developer *Mosaic Education*, which has more than a thousand different game 3D models, including those on environmental and biological topics, as well as on history, physics, chemistry and many other school disciplines.

This group also includes specially designed games for individual purposes, for example, a teacher can unite students from an entire school into a single ecosystem by developing an interactive game mobile application. For example, for each “Ecological” case, the student will bring points to their group or class, and the teacher will monitor compliance by analyzing the photos and videos sent through the application of work results of students. At the same time, a distinctive feature of such an application could be an open database system, an electronic library and the presence of various mini-applications for the entertainment of students in their free time.

IV. Conclusions

Thus, despite the low level of knowledge and insufficient material on computer and mobile gaming methods of educating an ecological worldview in the public domain, delving into the jungle of the Internet, a talented teacher can find enough applications and games that position themselves as a teacher’s assistant. However, contextual learning can also be used for the same purposes, which, meanwhile, as practice shows, is often even much more effective in terms of education than special education, because not only we influence the environment, but also to a greater extent – what surrounds us influences us.

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