

FORMING AN ASTRONOMICAL WORLDVIEW USING DIGITAL TECHNOLOGIES OUTSIDE THE CLASSROOM

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Abstract. *It is appropriate to form students' worldviews in teaching astronomy. In the article, from the pedagogical point of view, the formation of students' outlook using digital technologies in extracurricular activities is presented. The formation of ideas about the world is also mentioned.*

Keywords: *extracurricular activities, digital technology, information technology, information space, interactive learning technologies, analysis.*

Introduction. From the point of view of general pedagogy, research is carried out in the construction of the strategy of relations between extracurricular information, and from the point of view of teaching methods, the connection between the knowledge of the universe acquired by students in extracurricular conditions is determined in the course of astronomy education.

A person's ideas about the world are formed mainly from four sources:

1. directly thinking about heavenly events;
2. communicating with other people, reading fiction and publications in periodicals, watching TV, etc.;
3. targeted appeal to experts (or persons pretending to be such), scientific and popular publications;
4. astronomy lessons, as part of other school lessons or as part of extracurricular activities.

During the last 10-20 years, the astroclimate at most observation points has significantly deteriorated due to the increase in the development of urban infrastructures. On the street, a person's ability to deeply observe the image of the starry sky is becoming limited. We must admit that for most children and adolescents of the 21st century, lively thinking about the simplest astronomical phenomena is increasingly rare, and moreover, it is becoming much less effective than other types of information presentation. As a result, since there is no clear system of astronomical education, the media environment can be considered the main and sometimes almost the only source of knowledge about the universe.

Literature analysis. Forms of extracurricular work, including work with students, were carried out by the following researchers: Siegel F.Yu., Sarkisyan E.A., Pivovarov A.A., Levitan E.K., Popova A.P. and others.

E.K.Levitan defines several forms of extracurricular work:

- school circle or circles in children's art houses;
- managing the implementation and protection of individual work, including individual or group projects;
- extracurricular activities;
- school and amateur astronomical observations;
- thematic events held in student groups;
- participation in astronomy conferences and forums with lectures or excursions to observatories, space museums, etc.;

- participation in city, regional and all-Union Olympiads in astronomy. Preparation for special exams.

The positive effects of using additional material from fiction, as well as from other sources, are not limited to arousing interest. The ability to acquire knowledge, the ability to apply it to solving various problems is largely determined by the variety of material presentation, on the basis of which new knowledge is formed.

We will answer the question of what digital technology means as follows: it is a modern form of economic management, in which a set of data in digital form and their processing serve as the main factor of production and management. Using the obtained results in practice makes it possible to achieve much higher efficiency compared to traditional forms of management. [6; 539]

The limitation of class time, as well as the excessive number of courses, did not make it possible to properly use the resources provided by various sources of information in the teaching of astronomy. Developments and guidelines have considered the use of external information resources mainly as material for self-study or for club and extracurricular activities.

At the same time, the educational paradigm related to the changed social reality considers the information environment as an important component of the educational process. Modern forms of education involve regular reference of students to various sources of information. Therefore, unfortunately, under the guise of additional material, there is a high probability that unreliable and fake scientific information will enter the educational process. This problem has been raised several times in the pages of pedagogical and educational publications (E.K.Levitan, V.G.Surdin, S.A.Yazev, etc.).

Thus, the analysis of educational and methodical literature showed that the local methodology of teaching astronomy assumes the absolute superiority of the school as a source of knowledge over other sources. Out-of-class deepening of knowledge about cosmic objects, celestial phenomena, space exploration, as well as the formation of a scientifically based opinion on a number of ontological problems, was generally considered a controlled and consistent continuation of teaching astronomy. At the same time, a lot of attention was paid to the prevention and elimination of ignorance and superstitions, mainly within the framework of atheist education.

Research methodology

The democratic changes in society coincided with the development of information technology over time and the achievement of penetration into all aspects of life, leading to fundamental quality changes in all spheres of life. Never in the past has the spiritual life of society experienced such serious deformations in such a short historical period.

Based on the reviewed research on the current trends in the development of the information space and public consciousness, we identified the factors that are important from the point of view of the research problem, that affect the perception of astronomy by students and cannot be done without them:

- redirecting the information space from the verbal-analytical language to the language of visual images;
- strengthening religious approaches in public consciousness
- change of public consciousness of attitude to "alternative methods of knowledge".
- pragmatization of the attitude to education in the public mind.

Reorientation of the information space from the verbal-analytical language to the language of visual images. On the one hand, children move away from knowledge through direct reasoning

and then understanding about objects and natural phenomena. On the other hand, the media environment provides information about the world in many and different forms. There are more colorful publications, movies, and new ways to get information. The competition of information channels makes it necessary to improve the forms of attracting the attention of the receiver; as a result: producers of information, as well as others who profit from its sale, are interested in its commercial appeal, not in its scientific credibility or positive pedagogical impact. The second, as it is known, implies such a selection of material and its presentation in the form of images that are as convenient as possible for perception, that is, designed to influence the first signal system. This situation largely determines the vector of development of digital technologies, as well as the strategy of development of book publishing, press and mass media.

The modern development of science and philosophical thought increasingly calls into question the dominance of the nineteenth century. In the 20th century, concepts such as “scientific prediction and intuition”, “subjective truth”, “extra-scientific thinking”, “limits of the scientific method” appeared more and more in the theory of knowledge, which represent the general tendency to deny the absolute. The complexity and ambiguity of the ideas expressed by some philosophers, doubts about scientism do not prevent them from entering the public mind in the form of logical schemes simplified to a simple level, acting as a worldview attitude. This is expressed, first of all, in distrust of science, as well as in the readiness of the mind to implicitly believe the most incredible and doubtful statements related to the science of knowledge.

An important condition for the effectiveness of the educational process is the high level of student motivation. Under the influence of the socio-cultural environment, the valuable attitude of children and parents to both general education and its separate components (educational subjects, profile and professional direction, expected and obtained results, etc.) is formed. In other words, the specific cultural-historical environment determines the social order of education, and the prevailing motivation in society serves as an indicator of this order.

The transition to market relations led to the development of a utilitarian perception of education by the subjects of society, and as a result, it led to a decrease in interest in natural science knowledge. The values fostered in digital learning environments are far from promoting the value of knowledge and self-education.

Thus, the objective factors influencing students' perception of astronomy using digital technologies were determined.

The first factor should be considered within the framework of the visualization trend of mass communication (culture). In this regard, it is necessary to increase the attractiveness of school astronomy and their competitiveness in front of extracurricular sources of knowledge.

The second and third factors mentioned, on the one hand, are related to the uncertainty of the principle of pluralism, which provides the maximum image of freedom, and on the other hand, puts a person in a position of infinitesimals in the world

Analysis and results

In this regard, the problem of connection and interaction of astronomical knowledge, which should be learned within school lessons, with the same type of information that students get in large quantities outside of school (primarily from the mass media) is urgent and not sufficiently studied. Both sources of information, which talk about the same object in terms of content and evaluation, can be complementary or contradictory. Ideally, one should ensure that a science-based perspective not only exists, but is seen by students as more credible than a fictional, mythological,

or speculative one. In addition, it is important for us to study the worldview and psychological attitude towards the perception of school astronomy by students through digital technologies.

Finally, the last factor calls for additional efforts to encourage the current generation of students to study astronomy.

Interactive learning technologies are computer-based automated resources that provide students with information about the course and tasks that verify their mastery. After completing the task, the student reproduces and analyzes the correctness or error of the result without the participation of the human factor. This requires two-way communication and feedback. In the educational process, only the information of science is presented in the form of presentation, virtual development and various information, and the tools that lead to the establishment of one-way communication are considered information technologies in this education, and the difference between digital technologies and ICT is that there is an interactive service process based on automated software. The use of digital technologies in the educational process is an effective technology in the process of teaching students to work independently and evaluate their acquired knowledge in addition to classroom training. Zero credit-module system focuses on independent education of students. In this case, it is important for the student to conduct independent research, work on himself, search for information and sort out what he needs.

It is necessary to theoretically develop the conditions for the popularization of astronomy and students' independent study of astronomy.

Extracurricular activities in astronomy help to overcome the conflict between the limited number of hours allocated to the study of this subject and the need of inquisitive students to learn more than is possible in class. In addition, interest in astronomy in one form or another is manifested in most high school students, and although it is only in the form of a hobby for some, it is recommended to use it to stimulate a general interest in learning. [2;205]

Conclusions and suggestions

Through the analysis of the pedagogical, psychological, philosophical, scientific and scientific research work carried out on the teaching of astronomy in extracurricular forms using digital technologies in general education schools, it was found that there are the following problems:

1. Pedagogical conditions for teaching astronomy using digital technologies are not provided in general education schools;
2. Methodological and didactic support for teaching astronomy using digital technologies in general education schools is not improved;
3. Non-modelling of astronomy teaching using digital technologies in general education schools;
4. The methodology of teaching astronomy using digital technologies in general education schools has not been improved;
5. As a result of teaching astronomy using digital technologies in general education schools, criteria for assessing the level of formation of students' basic competencies (knowledge, skills, qualifications and personal qualities) have not been improved.

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