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The Necessity of Teaching Programming Languages at Secondary Schools

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Abstract The article analyzes main principles and laws of forming the culture of information of secondary school pupils.

Keywords. Informatization, The culture of information, The Theory of information, Information technologies.

Introduction

Obviously, the most significant feature of the XXI century is the clash of humanity with the need to implement in practice a wide range of information technology opportunities in education. In our opinion, the need for the formation of a new field of pedagogical science, due to its informatization, has become completely natural, which determines the importance of its theoretical and methodological substantiation, the development of models, basic principles, methods, forms and means of teaching, which would be based on the educational resources of a new generation. In this regard, it becomes a reasonable assumption to achieve a significant improvement in the quality of the educational process at all stages and levels.

Main Part

In the present historical period of the development of society, all its members have found themselves in a state of constant immersion in ever-increasing volumes of information flows, which determine the renewal of knowledge accumulated in society and the need for a person to master new types of activity. In this regard, the need for an ever deeper analysis of the flows of the information is fully justified, which determines the importance of the formation of an individual's information culture through teaching programming languages in general education schools. The term "information" originates from the Latin word informātiō which literally translates as clarification, shaping, teaching, informing.

The main factors that determined the occurrence of such a phenomenon are:

1) Transformation of information into a universal category of social development;

2) An increase in the volume of information "absorbed" by a person on a daily basis;

3) A formation of almost all spheres of society;

4) Improvement of new types of information technology and technology.

Speaking about the significant contribution of many eminent Russian scientists involved in the development of methodological problems of information culture, it is worth mentioning M.G. Vokhryshev, A.A. Grechikhina, N.B. Zinoviev, Yu.S. Zubova, I.K. Kirpicheva, V.A. Minkin, I.G. Morgenstern, V.M. Petrova, A.I. Rakitova, B.A. Semenovkera, E.P. Semenyuk, N.A. Slyadnev, A.D. Ursul, V.A. Fokeeva, Yu.A. Schrader. The named

researchers took part in the construction of the theoretical foundations and conceptual and terminological apparatus of information culture.

The modern concept of "information culture", having passed the difficult path of its development, overcoming various transformational transformations, was practically formed thanks to a more detailed study of information exchange, i.e. it is the consideration of information from different angles of the characteristics of socio-cultural processes. Also, the establishment of the concept was greatly influenced by the development of mathematical modeling, through which it became possible to study various processes that make it possible to process information, automate information systems and develop mechanisms for their functioning for the purpose of information broadcast.

The scientific substantiation of the concepts that expanded the understanding of the studied phenomenon through the study of the semiotic and semantic aspects of the transmission of information has acquired an important role in substantiating information culture as a part of the modern culture of society. The named aspects make it possible to establish the objective content of sign orders information load, which in turn predetermines the specific features of communication actions in the course of information transfer. The information exchange itself is universal in nature, which implies the possibility of applying the existing models, borrowed from cybernetic modeling, in the course of interpreting the recorded information processes in almost any context.

An example is the use of social anthropologists and structuralists (50s) on youth subcultures, which is almost two decades earlier than in domestic science. It was from this time that the results of the analysis of information processes observed in the cultural context were presented in the scientific literature, which, in fact, formed the basis for the formation of "information culture".

Information culture does not represent a specific form of culture, however, how one of them is built through the application in practical activity of information processes caused by interactions, and is an important heuristic characteristic, criterial identification in any culture.

Based on the main provisions of information theories, it allows you to systematize a wide range of criteria: completeness (saturation, intensity), relevance (demand), reliability (accuracy) and efficiency (effectiveness), together, allowing to present in more detail the ongoing information processes of the culture of the same name, which have a close relationship with its functional purposes, implemented in the socio-cultural space. The named information interactions are usually divided into three main types: type 1 – “cumulation” (accumulation); type 2 – “processing” (transformational modifications); type 3 – “translation” (transmission), as types that can be used within the learning process.

Thus, the above indicates the universality of information processes that can provide a wide range of opportunities for the practice of applying various methods of information theory, and in educational practice to combine the methods of anthropological sciences. However, it is on the pedagogical material that it is quite difficult to abstract the information used in the analysis by quantification methods, which is due to the high probability of obtaining incorrect results due to the significant "distance" between the research objects (historical, gender and age, ethnic, etc.). As a result of the above, the analysis of information

culture on pedagogical material, unfortunately, most often comes down to the analysis of symbolic forms of expression of information.

In our opinion, the knowledge presented in pedagogy is somewhat deprived of the data that information culture can provide, because it is this culture that makes it possible to single out in any process synchronous and diachronic indicators characterizing anthropological meanings. These indicators serve as important criteria for establishing the level of human development of the natural and cultural environment. In addition, it is they who translate into practical activity the processes of cumulation and translation of the existing cultural experience, which allows solving many problems that have arisen today, isolating the ratio of universal / specific, uniform / diverse, expanding the heuristic potential of the practical use of structural-functional and system analysis in pedagogy.

Information culture determines the nature of the student's interactions with innovations in the field of information technology, which do not act only as technical devices, since they have deeply penetrated into all spheres of life of a modern person. The indissolubility of this connection is due to the interweaving of information technologies in the daily life of a person, as a result of which it is currently not possible to isolate them from the worldview and pedagogical context.

The continuing growth of the information industry once again emphasizes the need to analyze innovative technologies through the prism of ongoing worldview changes, which are most adequately reflected in modern pedagogy, one of the tasks of which is not so much the deconstruction of the main categories as new formations noted in the structure of the worldview principles of a person, which make it possible to correlate with what is being built, according to the requirements of society and attitude.

The progress of information technologies noted in the last decade was initially focused on rational and adequate principles of organizing human life, based on scientific rationality and democratic values. Nevertheless, one cannot fail to note today the fact, already obvious to everyone, that information technologies are capable of simultaneously generating processes that are destructive for an individual. The sufficient inconsistency of two diametrically opposed views quite often confronts modern scientists, who express polar opinions on this matter.

Representatives of various scientific spheres are puzzled by the problem of adequate assessment of the role and place of modern information technologies in the life of society and each of its members. So I.A. Bronnikov notes: "<...> The 21st century almost completely removes the problem of alienation due to the fact that it removes the very problem of reality, which is not only alienated, but it disappears, along with the general substrate of human experience, replacing it with a multitude of relative pictures of the world".

It is worth noting that now every individual through information technologies is able to create his own unique reality, and also to focus on the fact that this word in modern literary sources is rarely used without quotation marks: “<...> which is almost impossible to find its origins and origins ".

A number of modern scientists, when defining the concept of "information culture", most often consider it through the prism of society. An example of this is the definition of the concept of "information culture" by such

scientists as I.V. Lysak, who emphasizes that "<...> it is inextricably linked with the social nature of a person, acting as a product of his creative abilities, the content side of subject-subject and object-object relations, fixed by means of various material carriers".

According to N.A. Warm, paramount importance in information culture should be given to universal human values: "Information culture is a qualitative characteristic of a person's life in the field of acquiring, storing, broadcasting and using information, in which universal human spiritual values take priority." However, when focusing on the pedagogical consideration of significant information technologies (television, advertising, the Internet), the current situation cannot be considered even satisfactory.

Librarians were the initiators of drawing public attention to the phenomenon of "information culture". For the first time in their works the bibliographers K.M. Voikhanskaya, B.A. Smirnova and E.L. Shapiro. It is library scientists who have become the main research asset of the Information Culture Department, which we mentioned earlier. Subsequently, a number of universities (Samara and Kemerovo state academies of culture and arts) joined the department's activities. By the joint efforts of such organizations, the formation of essential ideas about information culture was achieved, which, being part of the general culture, interacts with social information focused on the formation of informational qualities of a person, as a field of scientific activity, acting as a consequence of the role of information in development, highlighted and realized by the scientific community. society and the life of each individual.

Let us turn to the publications of the philosophers A.A. Vinogradova, A.I. Rakitova, A.D. Ursula in the works in which the concept of "information culture" acquired a categorical status and began to be applied in a wide special-scientific context. So, according to the definition, the opinion of one of the domestic experts in the field of informatization E.P. Semenyuk, the concept of "information culture" acts as "<...> the information component of universal human culture, which is able to objectively characterize the level of all information processes and information relations existing in society", and the author of a number of scientific works revealing the essential basis of information, A. AND. Grechikhin believes that information culture is "<...> informational activity of an axiological nature, i.e. conditioned by the values of the common culture ".

In the course of the development of scientific and technological progress in the country, the concept we are studying gradually absorbed the baggage of knowledge from various scientific fields, which, in fact, became the basis for the use of fundamentally new approaches involving the operation of information, thereby achieving the set goal - solving urgent problems of our time lying in the space of the "information crisis" (information theory, cybernetics, semiotics, etc.).

Accordingly, in the course of the construction, development and implementation of the theory of information culture, specialists representing such sciences as semiotics, linguistics, informatics, sociology, psychology, pedagogy, cultural studies, many others, have joined in activities focused on the formation of its methodological foundations..

At the present stage of society, in our opinion, an urgent need has arisen to analyze, interpret and generalize the existing knowledge that lies in the space of the theory of information culture from the point of view of creating a new

scientific discipline called information pedagogy, the theoretical basis of which can be the definition of information culture by Professor M. G. Vokhrysheva, in whose works she is presented as "<...> a part of culture, characterized by the peculiarities of the functioning of information in society and the formation of informational qualities of the individual".

Referring to the works of M.G. Vokhrysheva is not accidental, in our opinion, today the complexity of building the theoretical basis of information culture lies in the need to take into account its integrative nature, therefore, in the course of considering the formation of the information culture of the student's personality, there is a need to take into account the prerequisites from various fields of knowledge. However, in the course of the study, it is necessary to create a kind of concentration of problems within the boundaries of a special scientific discipline - information pedagogy.

Conclusion

In this case, a significant emphasis is placed on the “human” essence of information culture, thereby emphasizing that it is not only closely related, but also interdependent on human behavior in the information environment. Naturally, the formation of a new scientific discipline, which arose at the junction of the interaction of modern information technologies and culture, obliges to solve related problems caused by the connection between the cultural heritage of society and its information development.

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