DEVELOPMENT OF INFORMATION COMPETENCE OF STUDENTS IN THE MIDDLE SCHOOL

[a]GUZEL R. KHANOVA, [b]ANTONINA A. MOSTYAKOVA

*Kazan Federal University , 18 Kremlyovskaya street, Kazan
420008, Russian Federation, Russia
e-mail: [a] khanova_09@mail.ru, [b]info@ores.su*

Abstract: In the conditions of the rapid growth of information flows and their widespread use as a powerful means of communication, there are the problems of society intellectualization, the creation and introduction of new technologies, based on the effective use of knowledge, as a resource for the development of society. However, the issues, related to the development of information competence in the middle school are still not resolved, and are not brought in compliance with the needs of this stage of education system. Taking into account the urgency of the problem and insufficiency of its development, the study was aimed at determining the level of formedness of information competence of middle school students, and experimental approbation of the organizational and pedagogical conditions for the development of this competence. On the basis of the Municipal Autonomous General Educational Institution "Secondary School no 39 with enhanced education in English" of the Vakhitovsky District of Kazan, a low level of students' ability for independent search, analysis, selection, processing and transferring of information was defined, using the method of expert assessment. A system of methods, aimed mainly at encouraging of students for self-gaining of knowledge, conscious mastering of skills and abilities in the process of active cognitive and practical activity, was proposed.

Keywords: information competence, information and communication technologies, biology, educational activity, knowledge.

1 Introduction

The history of society is a complex process, which contains economic, social, political and cultural aspects. Due to this, the society is divided into different periods: formational, civilizational, historical-temporal, etc., complementing each other. However, there is always an inseparable factor - information - its search, accumulation, analysis, transformation and use.

The XXI century puts before all types of educational institutions new goals and tasks for the preparation of students, capable of:

- working with information wisely;
- easily adapting in changing life situations, independently acquiring the necessary knowledge;
- clearly understanding where and how the acquired knowledge can be applied in the environment;
- possessing the ability to generate new ideas, to think creatively;
- being communicative and contact;
- self-developing and working at the level of cultural development.

In the period of transition to the information era, it is necessary to prepare the society for rapid perception and processing of large amounts of information, mastering of modern means, methods and technologies of the work. However, the level of knowledge of one person depends on the knowledge of the other. Therefore, it is necessary not only to learn and process information independently, but also to draw conclusions, based on a collective solution, and to master this technology of work.

Informatization of society is a global social process, the peculiarity of which is that the main activity in the sphere of public production is the collection, accumulation, processing, storage, transfer, use, production of information, carried out on the basis of modern means of information interaction and exchange.

To use the modern information and communication technologies, devices for communication and distribution of information, analysis of information resources and making professional decisions, the specialist must know modern ICT tools and have information competence as one of the components of professionalism. Questions of information competence were considered in the works of R.V. Bochkova, G.M. Kiseleva, E.L. Fedotova.

In the scientific literature, the concept of "information competence" is interpreted in the conventionality of such two concepts as "information competence" and "information adeptness".

Competence – is a set of interrelated   personal qualities of the individual (knowledge, skills, methods of activity), assigned to a certain range of subjects and processes, and necessary for good productive activity in regard to them.

Adeptness - possession by the person of appropriate competence, including his personal attitude to it and to the subject of activity (Isaeva, 2007; Villalobos Antúnez & Ganga, 2016).

The great teachers of the age consider the interpretation of the concept, formulated by Zaitseva O.B., as the most general definition: "information competence is a complex individual and psychological formation, based on the integration of theoretical knowledge, practical skills in the field of innovative technologies and a certain set of personal qualities" (Babansky et al, 1988).

However, despite the wide variety of definitions of the notion "information competence", it can be concluded that all of them are united by the interdependence between information competence and the ability to work with information, through the use of ICT and possessing of skills for solving everyday educational problems, with the help of new information technologies.

We consider the information competence as the ability to search, analyze, select, process and transmit the necessary information independently, using new information and communication technologies. It includes the ability to group activities and cooperation, using modern communication technologies; as well as the readiness for self-development in the field of information technology (Khutorskoy, 2003).

In modern society, information competence is one of the most required competencies. The purpose of our research is the formation of information competencies of students in the conditions of development of modern society (Gareeva, 2010).

Information competences involve the activity skills in relation to information in educational subjects and educational fields, as well as in the surrounding world; possession of modern means of information (telephone, computer, television, telephone, fax, printer, modem, copier, etc.) and information technologies (media, Internet resources, audio and video systems, e-mail); search, analysis and selection of necessary information, its transformation, preservation and transfer (Kiselev, 2014; Miriago, 2018).

2 Methodology

To solve the tasks and check the initial assumptions, a set of complementary research methods was used: the theoretical analysis of the pedagogical literature on the research problem, the study and generalization of advanced pedagogical experience, the pedagogical experiment (control, ascertaining, forming), testing, pedagogical observation, the method of educational cooperation, the method of projects, game methods, case method.

A lot of research is devoted to the method of forming of students' informational competence. At the same time, the process of information competence forming is mostly spontaneous and chaotic. The research of the process of forming this competence on the example of discipline "Biology" shows, that the level of its formation is low. In view of the importance of information competence, we came to the conclusion about the need for its purposeful formation in the educational process. In our work, we proceeded from the fact, that information competence is an integral set of a multitude of components: motivational, communicative, cognitive, value, activity,

reflective and normative-ethical. It includes a system of value orientations, aimed at the development of intellectual personality.

The development of information competencies is of great importance in the process of biological training of schoolchildren. Since the abilities of subjects of educational and cognitive activity for independent search, analysis, selection and transferring of necessary information are formed with the help of real objects of the environment, and modern information and communication technologies. This competence provides students with the activity skills in relation to the information, contained in the school subject, as well as in the surrounding world.

In this study we use the following definition of information competence: it is the readiness to work with information, on paper and electronic basis, manifested in the interpretation, systematization, critical evaluation and analysis of obtained information, from the perspective of current task, in the formulation of reasoned conclusions, the use of received information for planning and implementation of own activity, the structuring of information and its presentation in various forms, and on various media, which are adequate to the needs of the information user (Hilton-Chalfen, 2014).

The experimental work, described in the article, was carried out on the bases of the Municipal Autonomous General Educational Institution "Secondary School № 39 with enhanced education in English" of the Vakhitovsky District of Kazan, (hereinafter - School № 39) and the Municipal Budgetary General Educational Institution "Gymnasium № 90" of the Sovetsky District of Kazan (hereinafter - Gymnasium № 90) among the students of the 7th

and 8th grades. 83 pupils took part in the research. The results obtained were subjected to statistical processing, comparative analysis and interpretation of data. The experiment was accompanied by the collection of statistical data on the results of training by traditional methods, and training with the help of experimental work. For this purpose, the control and experimental training groups were defined. Control group consisted of 43 pupils of the grades 7 "A" and "B" of School № 39. Experimental group included 40 pupils of the grades 8 "A" and "B" of Gymnasium № 90.

To determine the initial level of formedness of information competence of students, we used the method of expert assessments.

The method of expert assessments is conducted in the format of intuitive-logical analysis of the problem, with quantitative evaluation of judgments and formal processing of results. As a result of processing the experts' opinions, the aggregate data are obtained. They are accepted for solving the problem. The joint use of intuition (unconscious thinking), logical thinking and quantitative assessments with their formal processing allows to obtain an effective solution to the problem.

3 Results and Discussion

The results of the ascertaining stage of the experiment on determining the level of formedness of information competence components were approximately the same in the control and experimental groups of students. The analysis of the results of ascertaining experiment confirms the data on the middle, closer to the low, level of formedness of the studied competence (Fig 1).

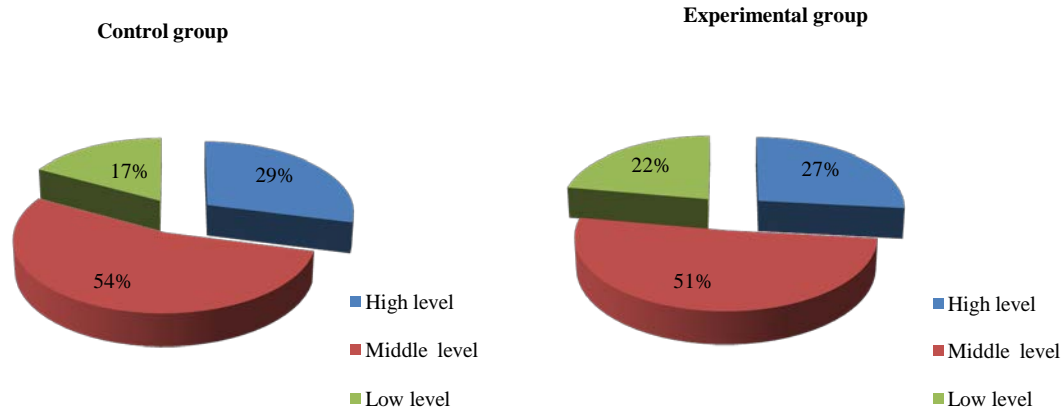**Control group**

Experimental group

Fig 1. Circular diagram of the level of formedness of information competence in the control and experimental groups of students

The results of the ascertaining stage of experimental work, carried out by us, showed that in the experimental group, 27% of students demonstrate a minimum level of information competence, and only 22% - the maximum. Many students have problems with the search, perception, processing and transferring of information. They can't sum up and record only key information, speak in public, they are embarrassed when making presentations. Despite the high need for the development of information competence, the readiness for such self-improvement in most students is not sufficiently developed: there are no well-defined objectives, systemacity, necessary abilities and skills of information competence.

The reliability of data, obtained in the control and experimental groups, was determined using the Student's test. Statistical values, such as the arithmetic mean, the standard deviation and the coefficient of variation, were calculated. On the basis of these values, the dynamics of formedness of information competence components was revealed.

When selecting a specific method of training for the experimental group, we proceeded from the understanding, that the following results of its application should be observed and diagnosed:

- Increased cognitive activity and independence of students;
- Striving for scientific research;
- Development of mental abilities of students and their effective use;
- Increase in the level of information competence;
- Provision of support of students' self-expression and saving their socio-psychological adaptability (Thouin, et al, 2018).

In our work we used a system of methods, aimed mainly at encouraging of students for self- development and conscious mastering of skills and abilities, in the process of active cognitive and practical activity.

- Method of educational cooperation.
- Project method.
- Game methods.

- Case method.

The method of educational cooperation allowed to encourage the educational and cognitive activity of students, taking into account the individuality of each person, facilitated the independent search for information.

During classes, the students were divided into groups of 4-6 people for more effective work on educational material. At the beginning, the work was carried out individually, each student independently searched for the material on his topic, analyzed, selected the necessary, and found a practical justification for it. Further, the students, who studied the same topic, but who were in different groups, joined together and exchanged information, thus acting as experts on this issue. Returning to their group, they presented new information to the participants of the group. Thus, the students could master the entire material of the lesson only after carefully listening of their teammates, and making the appropriate notes in the notebooks. This method of training does not require additional efforts of the teacher. All students in the class were interested in conscientious fulfilling of this task by their team members, because this could affect the final mark.

An essential condition of the project method is a defense of the projects. During the speech, the students not only reported on the progress of work, defended its results, but also demonstrated their knowledge and experience in solving the project problem. The use of the research method in the course of the project

contributed to the development of the following qualities: the ability to offer different ways of identifying and solving the problem, motivation for creativity, the ability to unconventional thinking, the ability to cooperation, etc.

Game methods or intellectual-creative games stimulate the development of cognitive interests of students; promote the improvement of their intellectual and creative abilities; allow the students to bolster self-esteem and realize their potential in the intellectual and creative sphere through the play; help to communicate.

Conducting of role-playing games allowed us to achieve the following goals in our work: to teach students to sum up the key information of educational material, to recite it in a short form; to develop the skills of text analysis, associative thinking, the independence of judgments; to promote the self-determination of students; to improve communicative abilities; to broaden the horizons of biology; during the role-playing game, the students repeated and generalized the material studied. We used this method in the lessons, when studying the topics related to human.

At the end of our work, we tested the participants of the experimental group for all the indicators studied. The analysis showed that the majority of students had an interest in the subject and receiving the information, the share of independence in the study increased (Gonzalez & Melo, 2018).
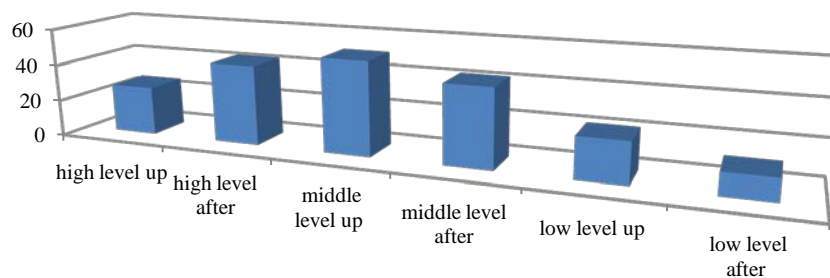

Fig 2. Histogram of the level of formedness of information competence of the experimental group, according to the results of the study

The number of students with a high level of information competence increased from 26% to 43%. They got to know the scientific methods of research and mastered them (Hahnel et al, 2016).

4 Summary

Based on the results of the experiment, we can make the following conclusions:

1. the process of development of information competence of students can be assessed as insufficiently effective;
2. the increase in the level of formedness of information competence of students can be ensured through the development and implementation of effective organizational and pedagogical conditions for the formation of information competence of students.

5 Conclusions

Summarizing the received materials, aimed at analyzing and studying the considered issue in the theory and practice of teaching, we revealed a number of problems of:

- theoretical nature, associated with the understanding and interpretation of the phenomenon "information competence", with the absence of its characteristics (essence, structure, content), that causes certain difficulties in its comprehension;

- methodological nature, connected with the lack of programs, guidance papers for teachers, teaching aids, textbooks, teaching materials;
- organizational nature, due to a lack of study time in the learning process.

Thus, during the experimental work, we found that the problem of this research is relevant in pedagogical practice, and its solution requires the search for effective conditions for the development of information competence of students, as well as the determination of methodological aspects of their implementation within the framework of the learning process in the general education school.

The study showed that consideration of pedagogical conditions and the specifics of learning process of students determine the choice of the optimal form of education. The following pedagogical technologies are the means for realization of this program: research, design, information and communication. The implementation of the process of development of research abilities and skills requires the use of the most effective methods of active learning: the method of educational cooperation, project method, game methods, case method.

The comparison of the results, obtained after the completion of the experiment, with the ascertaining part indicates the effectiveness of the selected methods.

6 Acknowledgements

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