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FORMING INFORMATION CULTURE OF SENIOR PUPILS WHILE TEACHING INFORMATION TECHNOLOGIES

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Abstract

The paper justifies timeliness of its subject by analysis of various points of view. Information technologies facilitate improvement of academic motivation and student knowledge enrichment. Information-based understanding of the world, comprehension of information vision, knowledge of a multitude of information sources and methods of working with them, skills in creating new information, searching and processing information from remote media, storing and transmitting available information. The information culture is analyzed as a component of general human culture, as a component in the information-based understanding of the world and system of knowledge and skills providing goal-oriented independent activities. An attempt has been made to justify original nature of the information culture. The main idea of this research is forming in senior pupils a culture in operation with information technologies and information within the framework of the learning process. The research involved studying theoretical sources. Forms and methods of forming the information culture in senior pupils were analyzed and the most efficient ways of forming the information culture of senior pupils are presented as elements of a continuous process. The essence and content of the concept of information culture have been established. A methodology has been proposed to use information technologies in teaching senior pupils. Methodological recommendations have been developed with the aim of assisting a teacher in developing the information culture in pupils. Many of the considered research materials may find practical use in teaching Information Technology in general education school.

Keywords: Information technologies, information culture, pupils.

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1. Introduction

Information culture is a culture of operating informations and information and communication means, it is a component of general personal culture. A system of relevant knowledge, skills and experience taken together with information-based understanding of the world that uses all the forms of information technologies provide goal-oriented activity of each pupil in optimal meeting their information demands.

Any changes in life of a society lead to changes in its culture. Features of such changes are determined by the system of main values and reference points of a world view that regulate human activities within the limits of a certain type of society. In accordance to that, specific trends in cultural development of the information society are determined. Three types of information technologies, namely, multimedia, hypertext and communication, have got the highest currency in various spheres of human activity (Haddon, 2004).

Federal State Educational Standard of Secondary (Senior) education is founded on the notions of culture: culture of people, spiritual culture, polyculture, environmental culture, etc. General requirements to the curricula and syllabuses finds its expression in a necessity to accommodate development of student competence in the field of ICT use.

Modern manufacturing and market relations made competitiveness in the society the core principle of development that is determined largely by education. This is what determines priorities of state policy in the field of education. The system of education is aimed at support and development of the future generation, which is the main intellectual and creative base of the state. FSES for secondary schools provides formation of personality that is capable of using its deep knowledge and professional skills to freely orient themselves, self-actualize, develop oneself and independently make correct, morally-responsible decisions in the conditions of the modern fast-paced world.

2. Problem Statement

Solution of today's social problem requires comprehensive mastery of constantly growing flows and amounts of diverse information. It determines a special significance of the role of information culture in today's society.

Nowadays it is obvious that even the best computers, all types of modern storage medium, vast knowledge bases and data bases, state-of-the-art systems of modern communications are incapable of solving the problems that the society and individual face today in case the society does not recognize the global importance of the information culture.

The main characteristics of formation of the information culture are:

- establishment of information as the most important universal category of societal development;
- accelerated growth of information volumes, societal informatization, improvement in information engineering and technology;
- establishment of information society.

A large number of methodological and pedagogical works are dedicated to information culture and its formation.

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It is without doubt that preparation of a person to life in the information society shall specifically include personal information culture and its formation.

Increasing the efficiency of school education process obviously requires introduction of new, continuously improving teaching technologies. The technologies shall have a high degree of content adaptability, that is, they shall be adaptive in the modern torrent of changes. Organizational forms of learning activities, a complex of means and methods, forecasts of expected learning results shall meet the requirements of the school educational standards (Matros, 2005).

The research hypothesis is based upon an assumption that the formation process of the information culture in modern pupils will be the most efficient if:

– the process is implemented in accordance with the age peculiarities of senior pupils (year 10-11);

– formation of the information culture is goal-oriented and systematic.

3. Research Questions

Research subject includes procedures and means of applying information technologies in the lessons of Information Technology in senior secondary school with the aim of forming the information culture

4. Purpose of the Study

The purpose of the study is to provide theoretical justification of efficient use of elective courses during the Information Technology lessons in senior secondary school for formation of the information culture in senior pupils.

5. Research Methods

Research methods are:

The following methods were applied to solution of tasks and testing of the hypothesis:

- analysis of psychological and pedagogical literature dedicated to the problem with the aim of creating a methodological foundation for the research and finding out positions of various specialist concerting this question;

- study and generalization of best practices from Russian and foreign experience;

- analysis of problem situations;

- analysis of artifacts of pupils' creative activity.

6. Findings

Formation of pupil information culture primarily assumes presence of ICT competence in school teachers, that is, presence of knowledge of foundations of electronic teaching and distant learning technologies, essence and structure of the information educational environment of the educational organization; skill in analysis of capabilities of modern innovative technologies for achievement of educational results, planning of educational process on the basis of methodologically justified use of electronic educational resources; mastering the skill in expert evaluation of ICT means from the point of

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view of educational needs in their attraction and evaluation of software and prospects of its use taking into account subject-specific pedagogical tasks; readiness to orient oneself in the modern information space and organize information interaction with all the participants of the educational process using telecommunication means (Khataeva & Surkhaev, 2015; Iusupova & Sadulaeva, 2017; Poliakova, 2005; Robert, 2008).

While training a teacher for work under the conditions of informatization of education, it is necessary to form and develop the components of teacher's professional activity described in the work of Khataeva and Surkhaev (2015).

The following methods of forming the culture of operating with information technologies and information in senior pupils may be proposed: Forming the information culture in pupils of the *Information and Culture Studies* subject-oriented profile by means of an elective course. The elective course proposed in this work is titled "Profile-specific work with IT and information and New Information Technologies" and is intended for the final year students.

Studying of such a course develops a union of related topics from different specialized and informational subjects. It may include such modules as: "Information society and work culture related to information technologies and information"; "Concept of information, its classification and properties"; "Information and communication technologies in subject-oriented learning"; "Application of text processors in the field of professional activities"; "Electronic spreadsheets and features of their application in subject-oriented activities"; "Methods of creating and demonstrating electronic presentations"; "Creating data bases and methods of operating data base management systems"; "Working with Microsoft Outlook, using it to plan meetings, monitor work completion, maintain a list of tasks"; "Applications of reference retrieval systems, their purpose and main capabilities"; "Instrumental (specialized) software in the subject-oriented activity"; "Application of programming languages and programming environments"; "Internet and computerized telecommunications" (Roach & Sahami, 2013).

The first three modules form the foundation and shall be included in the syllabus of this elective course of any subject orientation. The rest of the modules are included backed by specificity of a certain subject-oriented educational profile, propensity and interests of pupils. When developing the syllabus of the elective course for a given purpose, composition of modules and time allotted to their study are selected taking into account analysis of syllabuses of related subjects and with consideration for opinion of subject teachers and results of pupils' polling. In the beginning of Grade 10, pupils may be provided with a questionnaire to determine their propensity and interests in the field of information technologies, their view of application of new information technologies in professionally-oriented activity and the role of capability to work with information technologies and relevant knowledge in the modern information society. This questionnaire may supply the pupils with a choice to select the modules (starting from the fourth one) that they deem necessary to study with the aim of forming a subject-oriented information culture (Matros, 2005).

When developing the syllabus for such an elective course for senior pupils of any subject-oriented profile, it is necessary to analyze the subject content within the given profile.

Formation of culture in working with information technologies and information in senior pupils n a subject-oriented learning means: establishing inter-subject links with specialized subjects; selecting a modular approach and humanistic student-centered technologies as the main principles of learning;

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determining necessary number of hours for each of such modules; finding out about possibility to provide the course with relevant learning means; determining the ratio of creativity and pupil independence in studying the course; forethought of the question about what educational resources pupils shall create while working with the syllabus; determining criteria allowing assessing the success in mastering the syllabus; forethought of alternative forms of intermediate and final assessment of pupils during and after the learning process with the syllabus (Matros, 2005; Karakozov, 2000).

The model of senior pupil information culture supposes poly-functionality of its structure and includes several interrelated components: *applied, instrumental-pragmatist, cognitive-operational, communicative, worldview*. The *worldview component* is determined by producing an integral attitude of a pupil towards objects and phenomena (that is, their own position), of the quickly-changing information environment, forming the worldview of a global information space, information interactions in it and possibilities of its transformation and perception on behalf of a person.

This component relates to student knowledge on limits of computer equipment influence and prevailing value of human health, life and personal spiritual development; about a role of information technologies and informatics in development of the modern civilization; on information infrastructure of the society; about moral, ethical and legal standards of operation in the information medium; on information security of society and person, on drawbacks and advantages, forecasting and diagnostics of human activity and society informatization, trends in its development. The worldview component appears in pupil's reflection of meanings, motives, attributes, goals and results of their activity, both in the interest of personal and creative self-actualization and for the utility to other and society; a combination of personal responsibility, freedom and personal self-limitation as an experience in self-actualization in the information medium, obtaining one's own position in different situations of information activity, informed personal moral selection of behavior and personal point of view (Yurchenko, 2011; Lazareva, 2007).

The *cognitive-operational component* is determined by a general idea that a pupil has about modern fundamental knowledge in the field of information technology and informatics, their experience in practical application of this knowledge to specific personal activities at a level of initial orientation, mastering the systemic-informational approach in a specific subject area. This component permits the pupil to have partial understanding of the information environment and interactions in it that provide situational orientation and experience in activities in the information environment by assessing its processes and phenomena, identifying one's field of opportunities and goals for conducting the information activity. Identifying a combination of developing non-standard solutions and algorithmic, systemic thought.

Instrumental-pragmatist component relates to different types of organization by its information activity. This component appears as pupils' mastering of a cross-cutting methodology of performing their information activities, repetition of a combination between the direction of activity with statement of general culture and professional tasks, evaluation of available resources and rational organization of solution process with the aim of providing the activity with creativity and obtaining flexibility, adaptability and mobility in the information environment.

Maturity of the *cognitive-operational* and *instrumental-pragmatist* components of the pupils' information culture determines its orientation-instrumental level, that is, the level of general computer literacy. Criteria of achieving this level are inter-subject nature and universality of the information activity,

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its instrumental, methodological nature as a component of various human activities. Development of pupil's information culture at this level supposes a skill in developing tactics for creating individual information activity.

Maturity of the components of *orientation-instrumental* and *application* levels determines the level of the information culture in the professional-applied context, where assessment of achievements is based upon mastering professional properties of the information activity. Such activity of a pupil has a professional orientation in completing educational tasks. Development of pupil's information culture at this level determines an opportunity to elaborate strategy and tactics for performance of information activity in personal educational area. The *applied component* is determined by pupil's conceptualization of efficient informatization of teaching technologies: Mastering general systemic approach of its creation, correction, implementation and further reproduction on the informational foundation; knowledge in the area of design, adaptation, application, expertise, methodological tools of new communication and information technologies in education. This component directs pupil's activities during their solution of different tasks in the information education environment.

The *communicative component* supposes pupil's competence in constructive and flexible vision of an information dialog Human – Human and Human – Computer. The concept of "Human – Computer" determines efficient management of a computer system. Maturity of all the components creates a foundation for creative-reflection level of the pupil's information culture. This level of pupil's information culture relates to pupil's skill in developing a strategy for integral personal solution of all kinds of information activities in the information environment at a certain level of its development, presence of reflective, integral-conceptual aspects of the information activity (Abdullaev, 2015).

Such a model of senior pupil information culture assumes implementation of the following important lines of improvement in the modern teacher education:

1) pupil's mastering of modern knowledge in the field of information technologies and informatics;

2) formation of skills in design and application of personal integral information education technology aimed at a specific subject area;

3) formation of pupil's world view of the global information space and information interactions in it, as determined by a trend to growing role of personality as a foundation of morality in human existence in the information society (Sadulaeva & Sadulaeva, 2015; Iusupova & Sadulaeva, 2017).

7. Conclusion

Information-based understanding of the world, comprehension of information vision, knowledge of a multitude of information sources and methods of working with them, skills in creating new information, searching and processing information from remote media, storing and transmitting available information, using computer equipment and information communication technologies where necessary – those are requirements imposed upon graduates of educational institutions on behalf of modern information society (Matros, 2005; Liutikova, 2002; Strekalova, 2013).

The foundational idea of this research is forming the culture of working with information technologies and information in senior pupils within the framework of the learning process.

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