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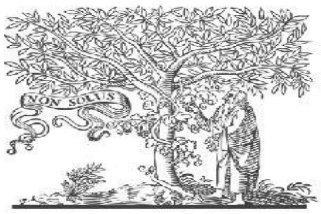

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IJIEMR Transactions, online available on 23th Feb 2021. Link : https://ijiemr.org/downloads/Volume-10/Special

DOI: 10.48047/IJIEMR/V10/I03/47

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Volume 10, Issue 03, Pages: 201-204.

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CONTINUITY AND SUCCESSION IN TEACHING COMPUTER SCIENCE AND INFORMATION TECHNOLOGY IN SECONDARY AND HIGHER EDUCATION

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Abstract. This article considers the continuity and succession issues in teaching computer science and information technology in the secondary and higher education system of the Republic of Uzbekistan. And also was determined the components of students' information and communication competence.

Keywords. continuity, succession, informatics, information technology, component.

I. Introduction.

Currently, a number of objective prerequisites for the transition to the information society state have developed in the Republic of Uzbekistan. The most significant of them are the rapid development of the material base of the information sphere, various industries informatization and management, active entry into the world information community, high human and scientific and technical potential, and preparedness of public consciousness for the need to obtain deep knowledge in the information technology.

The Ministry of public education of the Republic of Uzbekistan has developed programs that reflect what a modern school graduate must master in a basic computer science course. In turn, the computer science study in higher education presupposes its further disclosure as a fundamental scientific discipline. The State standard for informatics and information technologies gives priority to an activity-based approach to the learning process, a wide range development of general educational and subject skills in students, and the activity methods mastery that form cognitive, information and communication competencies.

Continuing education is the constant improvement of person's knowledge, skills and abilities, caused by the desire to be relevant in the existing professional and social environment.

Continuity in education is considered by scientists in philosophical, psychological, pedagogical, methodological aspects.

In pedagogy, continuity is considered from different positions (1):

• as a general pedagogical principle of a continuous learning process, which requires an inextricable connection between the past, present and future between individual learning process aspects, to expand and deepen knowledge, transform it into a consistent knowledge, skills, abilities system; as a principle of progressive upward deployment of the entire learning process in accordance with the content, forms, methods of work with the obligatory analysis of qualitative changes in students;

• as a condition that ensures the establishment of relationships between the goals, content, methods, means of teaching and upbringing, which allows you to build each new learning stage based on past experience, facilitates the students' adaptation to learning conditions at the next stage;

• as a process of continuous personal development, self-education, self-realization, changes in needs, motives;

The continuity principle is universal, associated with the scientific, fundamental, consistency, continuity principles.

Continuity is multifunctional: developing continuity in teaching computer science is necessary for the development of logical, algorithmic thinking, educational continuity - for self-education, confidence in one's capabilities.

In our opinion, the continuity in teaching computer science and information technology (IT) lies in the fact that a single logic of goals, objectives, content consistency is built, technologies are gradually becoming more complex, conditions are provided for transferring knowledge and skills into new activity types. Training is based on the material studying concentricity, which allows you to successfully move from one educational program to another, more complex, which requires the educational programs standardization, based on the strategic goals unity, tasks of teaching computer science and IT.

The study showed that during the informatics existence (55-60 years) as a scientific discipline, its state has changed. The filling process the content of the studied material on computer science and IT lags far behind the computer technology development, which is especially rapidly improving and becoming generally available in recent years. That is why fundamental knowledge and systematization of skills, abilities, development of independent work experience for students in the informatization and computerization is necessary.

In connection with the schools and universities provision with modern computer technology, local and global network; the introduction of informatics in elementary and basic school requires the teaching and methodological and didactic materials development with appropriate computer programs. The change in priorities in characterizing the computer science and IT teaching goals is dictated by the science, hardware and software development. So, at the subject formation stage, when more attention was paid to the technical and practical orientation of teaching computer science, ideas about "computer literacy" were relevant. The Internet development and its use in the educational process updated the concept of "communication competence". This competence is necessary for solving various theoretical and practical problems, its formation develops thinking, prepares the student for the use of modern information and communication technologies in educational, professional and life activities.

Revealing the specifics and interconnections of the concepts of “information literacy”, “information culture”, “communication competence” allows us to formulate a working definition of student’s information and communication competence as an integrative personal characteristic, represented by theoretical knowledge, technological skills and abilities used to process various information sources, and also computer technology, application programs, information and communication technologies.

The study identified the components of students’ information and communication competence (ICC):

• *the content component* ensures the systematic approach formation to the information analysis of the surrounding world, the mental activity development;

• *the technological component* reflects the performing skills both individual operations and the acquisition of experience in working with standard computer programs, information technologies;

• *the activity component* characterizes practical skills in various fields of activity related to information and communication issues, with the independent use of computer programs for training and self-study in the process of mastering other disciplines, in professional and life activities;

• *the motivational component* includes the student's internal position, his goals, the desire to study the material, the psychological readiness to deepen and improve the knowledge gained in the computer science and IT at school.

Schools should implement a continuous course of computer science and ICT study, which provides for three stages (2,3):

 propaedeutic (grades 5 - 7),
 basic (grades 8-9),
 profile (grades 10-11)

At the pedagogical institutes of Uzbekistan, the subject "Information technologies in education" is taught in interdepartmental groups for 3-4 semesters. The subject "Information technology in education" is designed for 184 hours a year, of which 36 hours of lectures, 36 hours of practical training, and 32 hours of laboratory studies and 80 hours of independent work.

Continuous study of ICT involves mastering the theoretical and practical part.

The theory gives the concept of information and information processes, mathematical and computer modeling, construction of algorithms, representation of any information in digital, discrete form.

The practical part of the course is aimed at mastering the skills of using information technology tools. It helps students in other academic subjects. The development of cognitive interests, intellectual and creative abilities through the development and use of informatics methods and ICT tools in the various educational subjects study forms the person's informational activity.

When moving from one stage to another, the complexity level of the studied subject increases.

With this approach, from one education stage to another, the consistency and efficiency of learning ICT is observed at all education stages.

The ICT course for students in grades 5-7 is focused on an active personality formation, motivated to self-education - the ability to access various reference systems, electronic libraries, other information resources, the ability to independently and motivated to organize their cognitive activities.

One of the main computer science and ICT studying goals at school for a given age category is to use elements of cause-effect and structural-functional analysis, to determine essential characteristics (2,3).

An important aspect of ensuring continuity is the pedagogical interaction of school informatics teachers, which is carried out through joint seminars, conferences, "round tables" discussing general issues in teaching informatics and IT at school and university.

The integration principle in teaching computer science and IT ensures the strengthening of the links of the formed components of information and communication competence promotes their universalization and ensures the knowledge integrity, the development and consolidation of computer skills.

The coordination principle is to find a rational balance between the student and the teacher actions. The trainees activity is aimed at the independent search process for information, when they themselves master new knowledge, investigate facts and draw accessible conclusions and generalizations, concretize knowledge, and practice skills.

The differentiated approach principle to teaching makes it possible to master the teaching material at different levels depending on the basic knowledge, on the formed ICC level, and the trainees' individual characteristics.

The strength principle ensures the theoretical knowledge consolidation, the technological and practical skills and the students' cognitive activity development in the computer science and IT. The material is better understood, remembered and used in the future in practice, when it is structured; the main thing is highlighted in it, and is consolidated by practical examples.

The accessibility principle allows you to take into account the students' development peculiarities in order to exclude intellectual and moral overload. Therefore, accessibility depends on the educational material, on the methodological structuring, on the educational activity organized by the teacher.

The scientific principle is aimed at the scientific concepts formation, taking into account the modern knowledge development. Fundamental, solid scientific knowledge presupposes its confident use over the long term.

The systematicity principle presupposes teaching and knowledge assimilation in a certain order, a system, when each educational material element is logically connected with others, as a result of which a close relationship is established between the pass, present and future material.

When teaching computer science and IT, the principle of linking teaching theory with practice is implemented. Computers are rapidly improving, being introduced into all spheres of life; therefore, to increase the effectiveness of the knowledge and skills acquired, it is necessary to practice their real application.

The results led to the following conclusions:

1. It was found that continuity in teaching computer science and information technology is an important principle that increases the formation level of students' information and communication competence.

2. It was revealed that the goals, objectives, methods, means, principles, forms, learning conditions unity, the content correspondence, the determination of the computer science and information technology teaching effectiveness at school leads to ensuring continuity.

3. It has been determined that planning the learning process, taking into account the existing knowledge, skills, and abilities, can effectively increase the students' information and communication competence.

4. To implement continuity in teaching computer science and information technology, it is necessary to jointly participate of school informatics teachers, university teachers in the work of city associations, seminars, conferences, in holding "round tables", in the development of common effective means, forms of education, as well as methods for assessing information and communication competence students.

The conclusions obtained in the study do not claim to be an exhaustive solution to the problem under consideration, but represent one of the options for an approach to the urgent task of modern teaching computer science and information technology. Further research may be related to the successive ties provision, conditions in teaching computer science and information technology, taking into account the profile course of studying these disciplines at different education levels.

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