



The Use of Information Technology and Educational Environment in the Development Student's Competency in the Subject «Computer Supply»

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Abstract

This article discusses suggestions and recommendations on the problems of using information and educational environments in the development of students' competencies and ways to overcome them in the subject of "Computer Supply".

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Introduction. The scope of practical works carried out in higher education institutions for the development of student's competencies in the field of computer science and the attention paid to it is not at the required level despite the rapid penetration of computer technology in all spheres of human activity, the introduction of information technology in the educational process [1, 2, 3]. Therefore, the widespread use of information technology and educational environments has become a serious need for the further development of professional disciplines in the training of computer science specialists in higher education institutions, in particular in the field of "Computer Supply".

Literature review. Today, due to the widespread use of information and communication technologies (ICT) in human activities, they are becoming increasingly important for solving personal and professional problems [4,5]. Therefore, the preparation of highly qualified persons in the field of information and communication technologies is becoming one of the priorities of the government. Scientists such as I.M.Bashtanar, L.V.Bocharova, V.V.Buchelnikov, L.R. Votyakova, N.A.Goncharova, D.V.Daxin, A.A.Mukasheva, A.V.Ovcharov, E.A. Kozlova, L.N.Palamarchuk, T.V.Pankova, A.A.Kuznetsov, V.Yu.Nikishina, O.N.Griban carried out researches in the development of student's competence in the field of information and communication technologies.

According to A.A.Kuznisova, information and communication technology competence is determined as an ability of a person to effectively apply modern technical knowledge and skills into real-life [6]. Due to V.Yu. Nikishina, the professional information competence of a specialist is "Integral characteristics of a person" that allow him to solve various professional problems relying on knowledge, skills, and abilities to use modern technologies and computer networks [7].

According to L.V Otverchenko, the formation of professional information competence is defined as "students' theoretical understanding and managed achievements in the development of relevant information (computer) processes and technologies"[8]. According to O.N Gribani, ICT competence is the ability of an

individual to use ICT in solving various problems to live and work successfully in the society of information technologies [9].

Due to the above mentioned, it can be pointed out that there is a lot of scientific and methodological literature for researchers on the formation of students' ICT competencies. Our research is devoted to the development of competencies of future teachers of computer science at pedagogical higher education institutions through the analysis of these sources in the field of "Computer Supply".

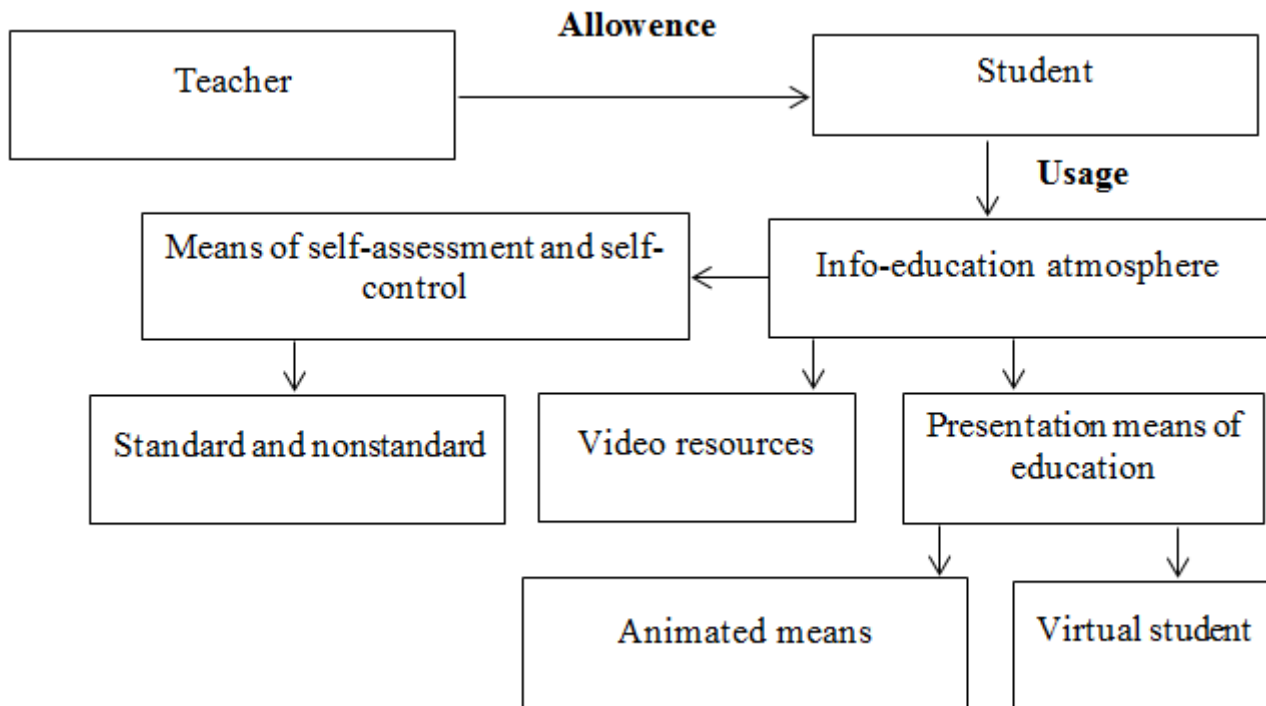
In this regard, according to D.V. Luchaninova, one of the most effective ways to form the competence of future computer science teachers is the usage of interactive and distance learning methods of teaching and it was proved based on analysis. According to her, taking into account a wide use of information environment in higher establishments it can be determined that exploitation of distance learning is more productive in shaping students' creative information competence [10]. Taking wide use of information into consideration one can conclude that distance learning in higher education is the best optimal method of teaching. Today, the adopted normative-legal documents on education are directed to the reduction of classroom classes and serve to increase the number of independent study hours. The use of information and educational environments via the internet is considered in Independent Study. According to this approach, the most logical transition is the transition from a traditional form of education to a comprehensive form. The concept of comprehensive learning involves the possibilities of learning by necessary technical means anywhere. The conclusion is that a significant part of the material is transferred to the distance form, leaving time in the classroom for various interactive forms, which, in addition to the increase of their effectiveness, it will be possible to organize online consultations, group discussions with professors-teachers and students [10].

In this regard, the research of scientists of our country and the CIS such as A.Abdugodirov, M.A.Yuldashev, A.A.Ibragimov, A.S.Djuraev, E.V.Yakushina, G.A.Gareeva, A.V.Karmanovskiy, A.A.Skvortsov, G.M.Kuleshova, O.V.Mirzabekova, V.V.Polovinkina showed that it is advisable to use distance learning, information-educational environments in independent learning activities for the development of information competence of pupils and students.

An information-learning environment is an online learning system that combines various components. However, today such an environment is more typical for higher education institutions. This is connected with the State Standard of Education of the Republic, according to which the information-educational environment of the educational institution includes: information education resources that incorporate digital learning resources; communication networks, a system of modern pedagogical technologies that provide teaching using modern e-learning tools [11].

Research methodology. Organizational forms of teaching: lectures, seminars, consultations, practical, laboratory and independent work, trainings, tests can be organized using information-educational environments. It is connected with the widespread use of electronic education for full-time learners. There will be significant changes in the organization of lectures, practical and laboratory classes through the use of information-educational environments. There are four main components in the formation of a learning process using interactive means of information-educational environments: theoretical materials as an object of study (manual, book, etc.); as a subject of professor-teacher education; as a subject of student education; information as an object of learning from interactive means of educational environment

This component serves as a mediator in "Student-professor-teacher" and "student-theoretical material" relations (look at Picture №5).



Picture 1.5. Components of the use of informational learning environments.

The above structure provides the following opportunities to increase the effectiveness of teaching in the subject "Computer Supply":

Flexibility. Students do not regularly participate in lectures, practical and laboratory classes when they learn how to use the information-learning environment, but they work in a place that is convenient for them, at a comfortable pace, which allows them to learn with the help of task simultaneously.

Modality. Learning resources in the information-educational environment are based on the modular principle. Each individual course creates a holistic view of a particular field of science. This allows the curriculum to be studied individually or in groups independently.

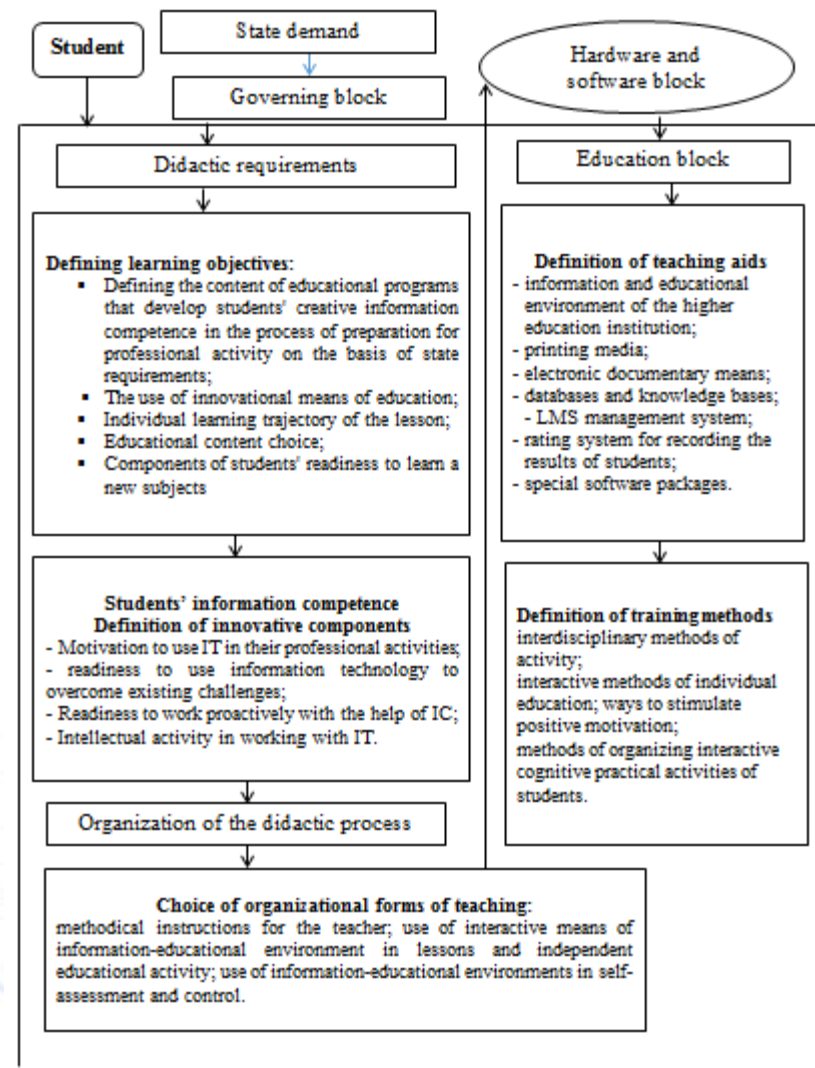
Economic efficiency. Due to the inclusiveness of education, it is cheaper than traditional education. There is no limit in the number of students.

A new role of the professor-teachers. Provides opportunities for the teacher to coordinate the educational process, update and improve the course, manage educational projects. It also manages online study groups, ensuring that students learn their knowledge of professional subjects independently.

Education quality control. Remote examinations, interviews, practical work, course and project work, intelligent computer test systems are used in the information-educational environment as a form of quality control. It should be noted that solving the problem of audience control, its compliance with educational standards is important for the success of the effectiveness of the entire system in the information-educational environment.

The use of distance learning is effective in organizing the interactive cognitive and practical activities of students. In this regard, the connection between teacher and student is carried out online [10]. As a result, students develop the ability to make decisions independently and study subject-related topics through self-study.

Therefore, we came to the conclusion that the structure shown below in Picture №1 should be used in the development of students' competence in the subject "Computer Support" (Developed by DV Luchaninov) [10].



1.6- Formation of students' competence in the subject "Computer Supply".

Basing on this structure, the development of students' competence in the subject "Computer Supply" requires the creation of an information and educational environment on the Internet. This information learning environment should include the followings: subject related State Standards and the corresponding sample program created according to it; topics of the exemplary course and final qualification work on the subject; assignments aimed at developing students' competencies; interim and final control questions; guidelines for the organization of independent learning; science textbooks, textbooks, manuals and electronic versions of similar training information; guidelines on the methodology for the use of modern teaching technologies and information technology in the classroom; availability of audio, video, virtual stands, presentation teaching aids related to science; a set of online tests to assess knowledge, skills, and competencies in science.

Analysis and results. According to the above-mentioned system, an information and educational environment comp-edu.uz was created to develop the student's competence in the subject "Computer Supply" and experimental work was carried out to determine its level of effectiveness. Students of the departments "Methods of teaching computer science" and "Mathematics and Informatics" of Navoi State Pedagogical Institute were involved in the experiment. The students of the experiment were divided into experimental and control groups. The control group was trained in the traditional way, and the experimental group was organized using the information and educational environment (comp-edu.uz) created as part of the research. The results of the students involved in the experiment were analyzed mathematically and statistically on the basis of the Student-Fisher criterion. The formula of appropriate mean value of the selections when using this criterion

$\bar{X} = \frac{1}{n} \sum_{i=1}^4 n_i X_i$, and determining the capturing knowledge indicators $A \% = \frac{\bar{X}}{3} \cdot 100\% - \frac{\bar{Y}}{3} \cdot 100\%$ were used in this experiment. According to the calculated results, the performance of the experimental group increased by 8% compared to the control group.

Conclusion and recommendation. The use of the information educational environment in higher educational institutions also leads to changes in the organizational forms and methods of teaching in the educational process, as well as the improvement of new methods in it. It also considers the use of modern information technologies aimed at achieving pedagogical and psychological goals of education and also provision of practice and methodology of their creation in the field of education

Based on the above analytical data, we can conclude that the use of information learning environments is recommended to develop students' competence in the subject "Computer Supply". At the same time, students have the opportunity to study independently by searching for educational information on the subject. As a result, students' creative thinking increases and their competence will be developed.

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