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IMPROVING THE DIDACTIC FOUNDATIONS OF THE CREATION OF MODERNIZED EDUCATIONAL LITERATURE AND ELECTRONIC TEXTBOOKS ON COMPUTER SCIENCE

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Abstract:
The purpose of this article improving the didactic foundations of the creation of modernized educational literature and electronic textbooks on computer science. In the study, such methods as regulatory documents, analysis of educational and methodological literature, observation, study and generalization of pedagogical experience, questionnaires, text, interviews, pedagogical experiment, mathematical and statistical processing of research results were used to achieve the goal and accomplish the tasks set.
Practical results include the improvement of the educational process in higher education based on electronic textbooks, pedagogical technologies, as well as the issues of providing the necessary technological and pedagogical components at the appropriate level in the teaching of sciences were highlighted in the textbook entitled “Normative foundations of the management of the pedagogical system." The process of creating modernized textbooks and electronic textbooks in computer science for pedagogical higher educational institutions has been identified as the object of research. Only 1186 students were involved in the experimental work.

Keywords: Didactic foundations, process, components, computer science.

Introduction

The principles of a systematic approach to learning are one of the methodological foundations for the creation of computer science teaching technologies and scientific programs, as well as modern educational literature based on the development of educational materials.

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One of the most important tasks of today is to train specialists with practical skills in the field of computer science in accordance with the State Educational Standard, qualification requirements for the educational direction "Methods of teaching computer science" in the field of computer science education. Because educating young people with modern skills that meet the requirements of the time and motivating them to work with information through the education and upbringing system is multilaterally related to the professional competence of the teacher of the subject, in particular, his experience in working with information, as well as skills in designing the educational process.

An analysis of the curriculum of the subject "Methods of teaching computer science" showed that there are repetitions in the content of these subjects. Accordingly, as a result of the experiments, proposals were made to improve the content of these subjects and to include new subjects in the curriculum of the educational direction "Methods of teaching computer science".

Table 1. Previous research

Title	Ref.
Technology of creation electronic manual and mechanisms of organization the teaching process in accordance with it	[1]
The role of the global Internet network in the innovation education system	[2]
The role of modern pedagogical technology in the organization of video recording and video recording	[3]
Measures to protect against computer viruses in the educational system	[4]
Didactic requirements for the content of educational subjects in the direction of primary education	[5]
The effectiveness of the use of innovative technologies in the creation of an electronic textbook in the educational process	[6]
The role of e-learning courses in educational efficiency	[8]

If the scientific significance of the research is explained by a scientific and theoretical analysis of the factors ensuring the effectiveness of the quality of education in higher education institutions based on the effective use of modernized educational literature, the identification of pedagogical and technological components of the structure of information education, the development of a system of programs, projects, electronic materials based on organizational and methodological tasks of interactive interaction in the

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innovative activities of teachers and students and didactic principles of improving the quality of teaching the subject, The practical significance is determined by the improvement of educational processes to improve the quality of education based on information and communication technologies, the development of effective methods and tools for the compilation of manuals, the creation of teaching aids, teaching guidelines.

The scientific novelty of the study consists of:

methodological, didactic, and psychological requirements for the creation of educational literature on computer science are determined on the basis of horizontal integration into the process of teaching computer science of the tasks of teaching subjects (educational, developmental) from a cooperative point of view from the vertical and subjective sides.;

The mechanisms for creating modernized textbooks and electronic textbooks have been improved based on the priority of trends (scientific, openness, diversity, versatility) in creating informative content that ensures reproductive, productive, and creative levels of students' formation of critical thinking competencies, independent information retrieval, and analytical competencies.;

The content of the modernized educational literature on computer science has been improved on the basis of interactive (feedback, self-assessment and development) educational materials divided into modules of information-predictive and industry-specific design with content design.;

The organizational and methodological component of the model of using electronic textbooks in computer science teaching has been improved based on monitoring students' competencies in subjects, the dynamics of the process of programmatic, modular design of innovative interaction between teachers and students.

Literature Review

In the research of scientists of the Commonwealth of Independent States Y.K.Babansky, B.P.Bespalko, M.V.Klarin, V.M.Monakhov, G.K.Selevko, M.A.Danilov, B.P.Esipov, V.A.Slastenin, Ya.I.Lerner and others, the essence, goals and objectives of pedagogical technology, the development of information analysis skills among future specialists have been studied, development of information competence among students, as well as pedagogical, psychological and didactic possibilities of informatization of education.

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The problem of creating informative content in education and the practical application of open education technologies plays an important role in the research work of foreign scientists B.S.Bloom, C.W.Cobb, P.H.Douglas, G.Pimbley and others.

Method

The research used the method of an expert group, the assessment of the quality of a new generation textbook on computer science and design teaching technologies was carried out at Tashkent State Pedagogical University, Jizzakh State Pedagogical Institute, Navoi State Pedagogical Institute and Kokand State Pedagogical Institute.

1186 respondents from among students of different courses of higher educational institutions took part in the experimental work.

A program has been developed for the organization of experimental work on the design and teaching of training sessions on the subject of computer science teaching technology and design. Experimental work on the study was carried out in 2012-2020.

In order not to deviate from the chosen path, attention was paid only to the methodological aspects of assessment in pedagogy, characteristic of information support and technology, the selective method of statistics was widely used, and the principle of majority representativeness was used in the sampling.

According to the idea put forward in most mathematical and statistical methods of reanalysis of research results, when reanalyzing the difference in results at the end of the experiment obtained by students participating in the experimental and control groups, an assessment of the effectiveness of the study is given. To this end, in accordance with the idea of the Student and square methods, the indicators of the second, third and final stages were compared with the final indicators of the first stage of the students of the experimental and control groups.

Results and Discussion

Based on the results of the experiments, using the mathematical and statistical methods of Student and Pearson2, we analyzed the average level of academic performance in the experimental and control groups based on the results of the experiment to determine the effectiveness of the methodology for creating and practical use of educational literature, teaching materials, and an electronic

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textbook on the subject of computer science teaching technology and design.598 students participated in the experimental group, 588 students in the control group.

Table 1 An indicator of the results at the beginning and end of the experiment

HEU	Groups (number of students)	Degree of development					
		Before the experiment			After the experiment		
		High	Average	Low	High	Average	Low
KukGPI	Experimental group (204 people)	105	82	17	65	75	64
	Control group (192 people)	64	66	62	67	63	62
TASHGPU	Experimental group (201 people)	109	77	15	68	74	59
	Control group (211 people)	74	76	61	70	73	68
Jizgpi	Experimental group (193 people)	103	74	16	58	72	63
	Control group (185 people)	62	64	59	57	70	58
Total:	Experimental group (598 people)	317	233	48	191	221	186
	Control group (588 people)	200	206	182	194	206	188

The gist of the matter is this: let's give two basic sets. One is the average score of the students in the experimental group, the other is the average score of the students in the control group. It is assumed that the estimates have a normal distribution. This assumption is valid because the conditions for approaching a normal distribution are simple and feasible.

In the above table, the H1 hypothesis is mainly selected, which shows the effectiveness of students' learning in the experimental and control groups, and the H0 hypothesis, which contradicts it.

Table 2 The final results of the experiment

Set time	Groups	Number of students	Степень освоения		
			высокая	сред-няя	низкая
Before the experiment	Experimental group	598	191	221	186
	Control group	588	194	206	188
After the experiment	Experimental group	598	317	233	48
	Control group	588	200	206	182

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So, from statistical analysis, the effectiveness of experimental work on the methodology of creating and practical use for students of educational, educational and methodical literature, an electronic textbook on the subject of computer science teaching technology and design has become known.

Conclusions

The creation of a new generation of educational literature for the educational directions "Methods of teaching computer science" in the field of computer science education is theoretically justified and the following conclusions are drawn based on the research work:

1. The social necessity of opening educational directions "Methods of teaching computer science" in the field of computer science education is scientifically substantiated, and the educational literature on the newly introduced cycle of disciplines is analyzed, as well as the principles of creating educational literature and electronic textbooks of a new generation and the mechanisms of their preparation are developed.

2. A systematic approach to the rules of the subjects of computer science teaching technology and design and the laws of dialectics, as well as the principles of pedagogical technology, has been improved, and on this basis, the content of the subjects of the cycle “Design of the computer Science learning process" has been determined.

4. The methodology of designing training sessions that contribute to the creation of educational subjects in computer science and design teaching technologies has been improved, as well as the methodology of practical use has been experimented with, and scientifically based recommendations based on its results have been developed.

6. The creation of educational literature on the subjects of computer science technology and design in the subjects of this cycle in the bachelor of higher education is methodologically justified. The development of methodological, systematic and projects of training sessions for teaching these subjects, the methodology of their use in practice make it possible to develop students' educational activities and lead to an improvement in the quality and effectiveness of teaching.

Principles of creation and mechanisms of preparation of new generation educational literature in the educational areas of “Methods of teaching computer

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science" in the field of computer science education, the use of information and communication technologies in the field of teacher education, the creation of educational and methodological literature, electronic textbooks on the subjects of teaching technology and design, as well as the application of methods of their practical use in the educational process serves to improve the quality and effectiveness of learning.

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