

A COMPUTER TESTING TO VERIFY STUDENTS' KNOWLEDGE

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ABSTRACT

The aim of the study is to develop and test an electronic program to verify the knowledge of students in psychology, to control and to test of students' knowledge of higher educational institutions, its subject is to use of computer testing as a means of testing students' knowledge during the current control. The work used a complex of complementary research methods: analysis, contrast, comparison, generalization, systematization; study and analysis of scientific literature on the research problem; empirical: testing, experiment, questionnaires, as well as methods of mathematical statistics. The assessment of student knowledge using a computer enhances the objectivity and reliability of the tests. This gives an opportunity not only to test the awareness of the students but also to correct this. This helps boost the degree of assimilation of the discipline's didactic units. It lets you save the teacher's time to check student work. Experimental research has verified the students' high readiness to interpret and recall knowledge in a computer-based learning instruction. It helps the curriculum to be customized, taking into account student's individual characteristics and the learning process itself. The use of NIT provides ample opportunities for a tangible improvement in the quality of the educational process, increases both the level of assimilation of new knowledge and students' interest in learning in general.

Keywords: Computerization of education, computer-based training, computer testing, algorithms, educational programs.

INTRODUCTION

Peculiarity of the time in which we live in is high informatization and rapid development of computer technology. In the conditions of global informatization of society, computerization of education is of utmost importance. Introduction of information technologies in all branches of modern life has led to the fact that computer skills have become a necessary attribute of professional activity of every specialist. In this regard, an important task of higher education is to form a personality with a new, creative type of thinking, able to work with a lot of information and choose the best solutions.

Uzbek educational institutions should also keep up with the times. New teaching methods should take into account modern requirements to the use and application of information technologies. Their application in educational institutions should lead to the formation of a new generation of technically and information literate, capable of solving problems of everyday life both by conventional means and using new information technologies (NIT). In teaching the humanities cycle, S&T should become an effective tool that will facilitate the acquisition of knowledge in various subjects and make the process even more interesting, visible and lively. In doing so, substantial individualization can be achieved of the educational process, to embody the possibility of objectively determining the degree of learning by each student, which is usually a complex problem of the educational process [1, 2].

The use of NIT provides ample opportunities for a tangible improvement in the quality of the educational process, increases both the level of assimilation of new knowledge and students' interest in learning in general. Therefore, it can be argued that one of the main problems of modern education is the imperfection of the system of control and evaluation of students' knowledge of higher education institutions. Monitoring and evaluation remain subjective, and methods of their implementation are outdated. Consequently, there is a need to introduce a system of objective control and the ability to measure assessment using qualitative and quantitative indicators. That would ensure compliance with the requirements for control - objectivity, reliability and purposefulness, consistency, etc. - and would make training effective and bring it closer to world standards. The first position in the list of such means is occupied by the computer-based test control of knowledge.

COMPUTER-BASED TRAINING AND TESTING AS A WAY TO IMPROVE THE LEARNING PROCESS

Modern education involves several types of education: traditional, problem, game and computer education [3]. Computer learning emerged with the advent of computer technology and was most developed with the advent of computers, which allowed self-study at any convenient time and in any mode. Such training takes into account the level of training of the student, its psychological features of cognitive sphere, character and temperament. From the point of view of the concept of intensive learning, the use of computer programs is extremely effective, because with their help the main method is implemented - the independent work of the student is directed and controlled by the teacher [4].

At the same time, computer-based learning has its drawbacks, the main one being that it is almost impossible to create curricula that would completely replace the teacher. Therefore, this type of training has only certain areas of application. They are limited by the principles of computer-aided learning, the possibilities of different types of training systems and automated training courses, and the type and complexity of professional skills produced with their help. The task is to reasonably apply computational techniques in the learning process on the basis of correct consideration of these points [5].

Computer-aided learning is a certain technology of organization and maintenance of the educational process based on the application of training, information and control programs implemented on computers of different types. Functionally, it has several areas of application: development of simple and complex skills in the field of professional activity, control of the degree of achievement of the educational objective; consolidation and enhancement of knowledge of the theory and algorithms of action; modeling and functioning of complex systems to develop management skills; accumulation and statistical processing of educational process data. As in the process of work with training programs in most cases an intellectual product, rather than a material one, is carried out, their application is connected first of all with development of skills realized in a mental form. As a rule, they are complex skills of acceptance or development of individual or collective decisions in the field of administrative activity, and also simple skills of the decision of the problems containing application of algorithms of mental actions. An important area of application of this type of training is the control of students' level of knowledge. The use of specialized programs allows for effective current, intermediate and final control. The advantage of computer control in comparison with its other types is in the instant delivery of the result and the possibility of demonstrating to the student its mistakes, the possibility of evaluating complex, multi-variant solutions, the ability to accumulate the results of control and calculate the rating. At the same time, it is possible to control the degree of learning of educational material of any volume within a short time [5].

Computerization of the educational process is the newest and effective technology of learning, which is based on fundamentally new ways of action. However, practice shows that the entire learning process cannot be built on the use of computer technology. It should be used only when it is necessary and can have the greatest effect compared to other methods of learning. In this respect it is desirable to use curricula in three situations: when a student does not need the presence of a teacher (when mastering simple skills); when performing various types of control; when in the course of developing a complex skill it is impossible to model the processes of functioning of complex systems by other means of teaching [7].

When organizing computer-based learning, its advantages and disadvantages should be taken into account in comparison with other learning methods and tools. Above all, the computer learning is always present in the game aspect. In this respect, it is close to game-based methods of learning on psychological situations. The essence of this project boils down to the fact that the one who learns remains alone with the computer and tries to beat it, believing that he has a worthy intellectual opponent. This dramatically activates mental cognitive processes, contributes to the development of skills for analyzing situations and synthesizing solutions, requiring a large number of random and deterministic factors. As a result, the students have much more effective visual memory, which significantly accelerates the process of learning the knowledge of theory and algorithms of action. This process is also facilitated by the absence of psychological influence of the teacher on the student, since the student is well aware that any of his answers will be accepted by the computer and therefore no incorrect reaction or criticism will be directed at student [7].

An important advantage of using specialized programs is their ability to instantly give the student an assessment of the results of his work. In this respect, the control function is most effectively realized, on the one hand, and the possibility of repeated reproduction of educational material within a relatively short period of time is provided due to its quick return to the initial point of the solution of the educational problem. Computer-assisted learning, like no other method, makes it possible to implement the most effective stage of learning and development of skills - the stage, their repeated replication in a short period of time, and, accordingly, the fixation in consciousness and sustainable mastering of them.

Computer-based training also has a number of drawbacks. First of all, most learning systems do not allow students to be creative. The main problem is to assess the quality of a learner's creative work product, as it is difficult to predict in advance what the result will be. Therefore, it is difficult to develop and introduce a method of its evaluation into computers when solving a learning problem. And it is necessary to show errors. There are certain prospects in solving this problem. They are related to the development and application of expert training systems in the learning process. However, these researches are still just beginning. It should be noted that such a problem does not occur in programs which can offer wrong answers together with correct ones beforehand, i.e. in educational programs which use material studying with the help of testing [6].

For computer testing, all material was divided into themes [10]. During the study of each topic, combined sessions were conducted, during which the current control of knowledge on the previous topic, the presentation of new material, consolidation of knowledge and homework were carried out.

Test assignments included 24 questions with 3 closed-ended versions of answers. Each correct answer was scored 0.5 points, and an incorrect answer was scored 0 points. That is, the maximum number of points on the results of each test was 12.

When compiling the test tasks, the rules necessary to create a reliable, balanced tool for evaluating student performance were observed [1, 2]. Thus, the content of questions was analyzed from the standpoint of equal representation in the test of different educational concepts, actions, tasks, problem situations, etc. The test was not loaded with secondary terms, insignificant details, requiring mechanical notching of the material with an emphasis on mechanical memory. The test questions were clearly, briefly and unambiguously formulated so that all students could understand them. No single test task could be a clue to answer another. Answers to each task were chosen in such a way as to exclude the possibility of simple guessing or throwing away a deliberately inappropriate answer.

Thus, taking into account the assessments of the thematic evaluation on "Mental cognitive processes", students were divided into two groups - experimental and control. The results of the thematic evaluation are shown in Table 1.

Table 1 - Results of the thematic attestation on "Mental cognitive processes"

Groups	Number of grades in points									Average score	Achievement rate (%)	Quality (%)
	Sufficient level			Medium level			High level					
	4	5	6	7	8	9	10	11	12			
Experimental	0	2	10	14	10	2	8	4	0	7,88	100	76
Quiz	2	2	12	12	8	4	4	4	2	7,92	100	68

It was revealed that 40% of students have an average level of knowledge on the topic "Mental cognitive processes", almost every fourth student has demonstrated a sufficient level, which indicates a low level of their knowledge on the topic.

In order to check the statistical difference of the results of the thematic evaluation on the quality of knowledge the criterion of R. Fisher's angular transformation was used [10]. The indicators for its calculation are given in the table.

Let's build an axis of significance.

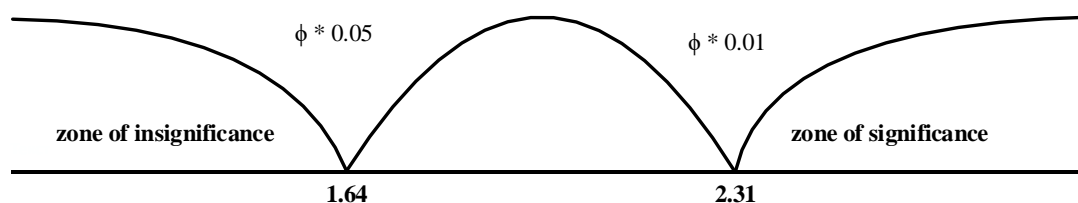


Fig 1 - Axis of significance by R. Fischer criterion. Source: author's design

It is revealed that the index $\phi_{emp} = 0.46$, is outside the zone of significance, that is, there are no significant differences in knowledge of students of the experimental and control groups.

The Student's t-criterion was used to verify statistical differences in the results of the thematic evaluation. Its index is equal ($T_{emp} = 0,6 < t_{cr} (p \leq 0,05) = 2$; $t_{cr} (p \leq 0,01) = 2,68$), that testifies to absence of statistically significant difference in knowledge of students of both groups.

The training sessions in the experimental and control groups were identical in terms of the number of theoretical sessions and the volume of training material. After each topic had been studied, a written survey was conducted in the control group, and in the experimental group - a computer test using the STUDENT_TEST software.

As we can see, the use of computer technologies makes it possible to achieve a significant increase in the efficiency of educational work in comparison with traditional training and control. Computer testing reduces the time for the control procedure, frees the teacher from routine work and allows to activate cognitive processes of students.

CONCLUSIONS

Computer-based testing, which is increasingly used in pedagogical practice, provides an opportunity not only to test students' knowledge during testing, but also to correct it. The research has shown that the use of computer testing in the educational process helps to increase the level of assimilation of didactic units of the educational discipline "Psychology". It was determined that computer control allows to save time of a teacher for checking students' works. The carried out experimental work has confirmed the higher readiness of students to perceive and remember the educational information in the conditions of computer testing, which allows taking into account the individual features of the learning process. The data obtained at the final stage of the experiment confirmed the main provisions on the possibility of implementing the ideas of personal education in the form of computer testing.

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