IMPORTANCE OF THE COMPUTER-AIDED SYSTEM FOR ASSESSING STUDENTS' KNOWLEDGE IN IMPROVING THE QUALITY OF EDUCATION

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The idea and principles of the present-day methods of modular instruction necessitates the development of an appropriate system for controlling students' academic achievements, which widens the range of their academic and cognitive activities.

The imperfection of the traditional systems of controlling and assessing knowledge and skills is that all "control lines and levers" are in the possession of a teacher. As a result, the student loses initiative, independence and the sense of competitiveness in studying. We do not say about requirements to the quality, scope of knowledge and the level of skills development but do mean consideration of students' individual qualities. This can be achieved if students are given the right to choose independently the pace of studying the program, the way their course will be taken as well as the approach to the assessment of knowledge and skills acquired.

Keywords: test, computer-aided system of knowledge testing.

In the traditional education systems, the level of knowledge is checked at an examination using a set of questions. The grades received by the student for his answers to these questions also refer to those sections of the teaching material which are not represented in the examination question card. The application of test check minimizes examiner's work time and ensures quite comprehensive, though somewhat superficial, coverage of all teaching material.

Nowadays the educational institutions, in addition to the traditional methods of controlling students' knowledge, use test check as it is the most objective form of the assessment of knowledge quality. Test programs, if wisely organized, are quite efficient tools of knowledge control as most teaching material can be machine - checked [1].

The computer-aided system for assessing students' knowledge developed at the Department of Applied Mathematics of Donbass State Engineering Academy is designed for a quick and quite accurate assessment of the progress of large groups of students in various disciplines.

The system deals with individual control. Each student is proposed to choose one of four levels of test complexity. The test is a set of tasks which may be of different complexity. The system includes three levels of question complexity. (Fig. 1)

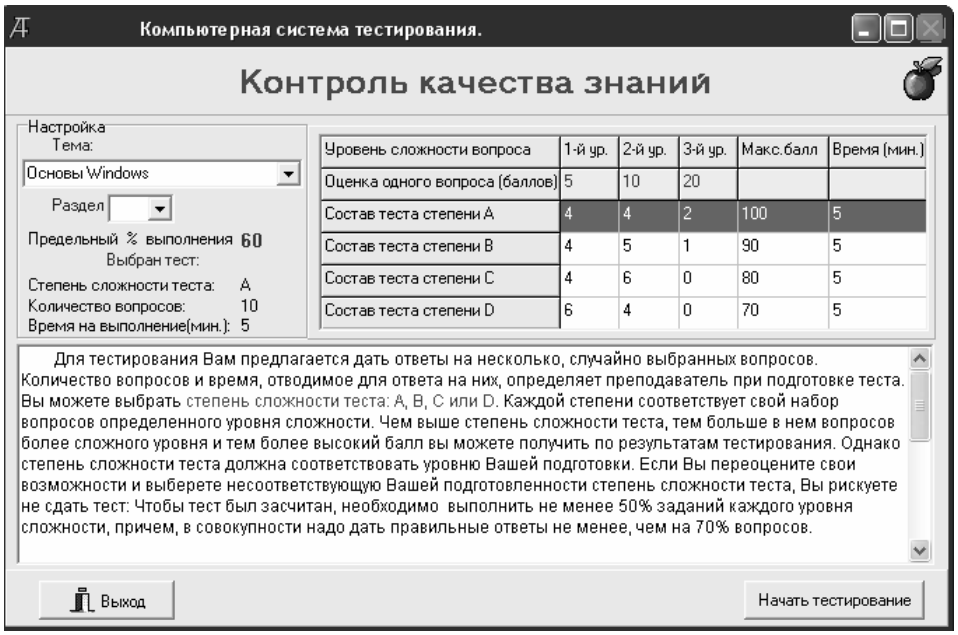

Fig. 1. Choice of questions' level complexity

The test is formed through random selection of the required number of tasks of each complexity level out of the set of tasks prepared and grouped by complexity level. A certain period of time is given to do the test. One topic may include tasks of different types in any proportion. All tasks can be divided into four types [2]:

1 – question with a separate list of answer options.

The student should select one answer out of the list proposed. The selection can be made, either in the list directly or in the special control element for selection, by ticking the number of the correct answer option.

2 – question with a list of answer options, contained in one graphic object.

The student should select one answer out of the list proposed. However, no selection can be made in the list directly as this list is not highlighted separately but constitutes a whole, with the description of the question, and is represented as a single graphic picture. The selection is done in a separate control element only.

3 – problem.

The student is proposed a problem which he should solve and enter the solution (answer) in a special field. In the solution the preset calculation accuracy should be maintained. The contents (statement) of the problem may be represented in both text and graphic form.

4 – question-equivalent.

The student is proposed two lists of equal size: the master list with categories (a set of questions) and the slave list with definitions (a set of equivalents). The student should reposition the lines of the slave list so that they fully correspond to the elements of the master list. In other words, the student should find a correspondence between the lines of both lists.

The work window of the system contains test tasks and control elements to perform testing (Fig. 2).

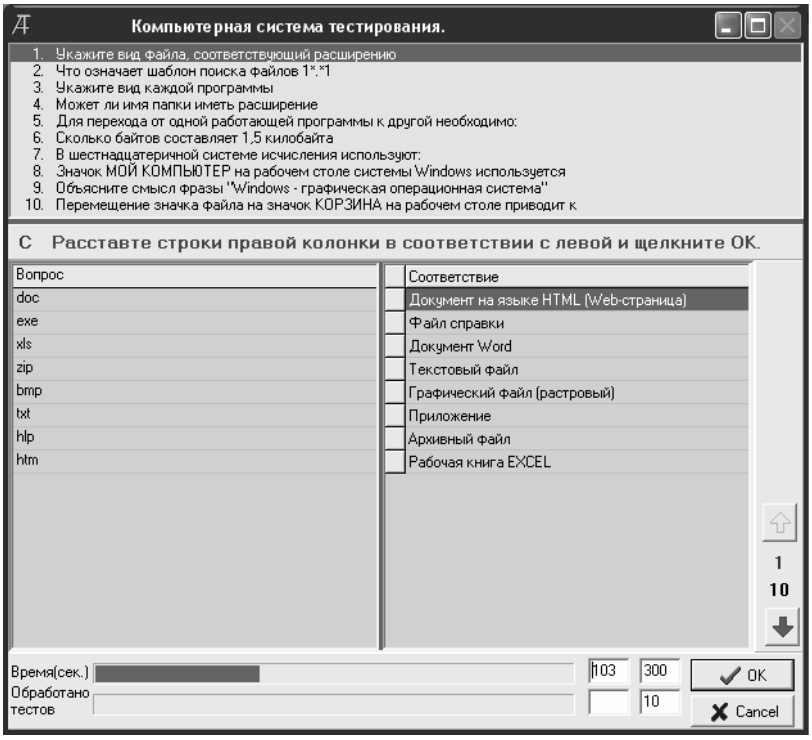

Fig. 2. Working window of the system

The work window is divided into three parts, or zones.

1. The upper part is the ***task list zone.*** It contains the list of all tasks of the test which should be answered by the student. If there is not enough space for a complete list, a scroll bar appears on the right. The current task is highlighted in background color. To select a new task, you should click on it with the mouse button. If the task is completed it is marked with the symbol "*" to the left of the task test, whether the answer is correct or not.

2. The middle part is the ***zone of current task description***. It contains a full description of the current task and tools for selecting and entering the answer to it. The structure of this zone depends on the task type. In any structure, though, there are two action buttons for changing tasks, i.e. transfer to the next one (down

arrow) or to the previous one (up arrow). Between these buttons the overall quantity of tasks in the test and the number of the current task are displayed. If a button cannot be accessed then no transfer is possible any more. This means that you have reached the beginning or the end of the task list. The transfer to the next task can also be made automatically if the student has chosen, entered and confirmed his answer, for example, by clicking the action button **OK**. In this case, after the last task the system switches over to the first one. You can also reach any other task by selecting it in the task list and clicking on it with the mouse button.

3. The bottom part is ***the information and command zone.*** It contains information about the progress of the testing process. On the left there are two progress bars displaying the degree of the utilization of time given for the test task and the amount of tasks completed. A little to the right there are numerical values of these parameters, namely time spent and the overall test time, as well as the number of tasks the answers to which have already been given, and the total number of tasks in the test. Moreover, this zone contains two action buttons, **OK** for confirming the selected or entered answer and **Complete** for forced completion of the test before the expiration of the time given.

Upon test completion a resulting window containing the test results will appear on the screen. In the upper part of the window the reason of the test completion (whether initiated by the student or because of the expiration of the time given) is indicated.

Conclusion

The possibility of automating the check and cutting the time spent by the students on the implementation of check operations decreases the duration of check activities of the students, allowing to increase the frequency of checks.

However, efficient testing without using special tools is virtually impossible because of a large amount of data which has to be processed by the teacher: firstly, it is necessary to prepare a large number of test variants with non-repeating questions, so preparing a test is a time-consuming process; secondly, the assessment of testing results, especially when using statistical methods, is quite complicated. To settle these problems, software tools are used which enable the teacher to draw up promptly many questions for the course and assess testing results.

The check programs should be open systems to allow easy modernization. The important feature of the check programs is the possibility of automatic analysis of a student's answer.

One of significant shortcomings of the test check is that it does not contribute to the development of students' oral and written language. Besides, some elements of subjects relating to humanitarian ones are not convenient for testing.

The testing system presented is timely as it, firstly, allows obtaining and disseminate knowledge of good quality and, secondly, makes it possible for students to control their knowledge without teacher's participation and assess independently the level of its knowledge.

The systems of assessing knowledge quality are aimed at maintaining such training principles as the principle of systematical character and succession, and the principle of sound digestion of knowledge.

References

1. Procky, E. *Knowledge and Skills Testing*. Moscow, 1996. 268 p. (in Russian)
2. *Windows Operation System and applications. Texts Tasks Collection*. / A.Fokin, I.Getman, I.Stashkevich. Kramatorsk, 2008. 144 p. ISBN 978-966-379-263-7. (in Russian)

Getmans, I., Vasiļjeva, L. STUDENTU ZINĀŠANU VĒRTĒŠANAS DATORSISTĒMA KĀ STUDIJU PROCESA KVALITĀTES PAAUGSTINĀŠANAS FAKTORS

Mūsdienu moduļu studiju ideja un tehnoloģijas principi prasa adekvātas studentu mācību sasniegumu kontroles un novērtēšanas sistēmas izstrādi, kas paplašina viņu mācību un izziņas darbības spektru.

Tradicionālajām zināšanu un prasmju kontroles sistēmām piemīt trūkums, proti, ne visi kontroles „pavedieni" un vadības „sviras" ir docētāja rokās. Tas liedz studentam iniciatīvu, patstāvību mācībās un iespēju sacensties. Kā rāda novērojumi, iemesls ir meklējams tajā apstāklī, ka docētāji praksē pārkāpj vienu no galvenajām kontroles prasībām – studentu individuālās īpatnības. Runa ir nevis par kvalitātes prasībām, zināšanu apjomu un prasmju izveides līmeni

(tam jābūt visiem vienādam), bet par studentu individuālajām īpašībām (gausums, biklums vai gluži otrādi – pašpārliecinātība utt.). To var sasniegt, ja studentiem nodrošina iespēju programmu apgūt atbilstoši individuālajam tempam un viņam ir iespējas pašam izvēlēties kursa apguves veidu, kā arī ir nodrošināta individuāla pieeja apgūto zināšanu un prasmju novērtējumam.

Atslēgvārdi: tests, automatizētā zināšanu testēšanas sistēma.

Гетьман, И. А. Васильева, Л. В. КОМПЬЮТЕРНАЯ СИСТЕМА ОЦЕНКИ ЗНАНИЙ СТУДЕНТОВ КАК ФАКТОР ПОВЫШЕНИЯ КАЧЕСТВА УЧЕБНОГО ПРОЦЕССА

Идея и принципы технологии современного модульного обучения требуют разработки адекватной системы контроля и оценки учебных достижений учащихся, расширяющих спектр их самостоятельной учебно-познавательной деятельности.

Традиционные системы контроля и оценки знаний и умений имеют тот недостаток, что все "нити" контроля и "рычаги" управления находятся в руках преподавателя. Это лишает учащегося инициативы, самостоятельности и состязательности в учебе. Как показывают наблюдения, причины этого заключаются в том, что преподаватели на практике нарушают одно из главных требований к контролю - учет индивидуальных особенностей учащихся. Речь идет не о требованиях к качеству, объему знаний и уровню сформированности умений (они должны быть одинаковыми для всех), а об учете индивидуальных качеств учащихся (медлительности, застенчивости или, наоборот, самоуверенности и т. д.). Этого можно достичь, если предоставлять учащимся право на индивидуальный темп продвижения по программе и самостоятельный выбор варианта изучения курса, а также на индивидуальный подход в оценке полученных знаний и умений.

Ключевые слова: тест, автоматизированная система тестирования знаний.