# TESTS OF CONTROL LESSONS AS A TYPE OF MODULAR TECHNOLOGY THAT PROVIDES MONITORING OF STUDENTS' ACADEMIC PROGRESS

**Yunusova Gulnoza Abduxalikovna**
PhD., associate professor, Department of Natural Sciences of the Academy of the Armed Forces of the Republic of Uzbekistan
E-mail: gulnozaunusova653@gmail.com

## ABSTRACT

The principles of modular learning impose serious features on the main types of lessons, significantly changing their tasks and course compared to traditional ones.

One main type of lesson within the framework of modular technology are control lessons. Usually there are two control lessons inside the module (for organizing input and output control), sometimes there is a need for additional lessons that test the current knowledge and skills of students.

**Key words:** evaluated types of work, ICI, corresponding modules, modular rating system, current knowledge and skills of students, construction of test programs, similar disciplines, input and output control.

## INTRODUCTION

Our understanding of the rating as an individual cumulative index (ICI), which is the sum of all marks obtained during the study of this module, led to a preliminary calculation of the threshold number - the maximum score possible with excellent performance of all evaluated types of work. This score is announced to students in order to serve as a guideline to strive for, as well as a benchmark against which the successes of individual students are compared [1]. Thus, it is possible to get a complete picture of the success of a particular student both from a relative point of view (by comparing with others) and from an absolute point of view (by comparing his ICI with the maximum score). From here, the academic performance of the class team as a whole is also easily deduced.

## MATERIALS AND METHODS

For example, the situation when a student scored 120 points out of 150 possible during the module and is the first in the class by rating (i.e. others scored less than 120) indicates a low level of academic performance of the class, even the leader mastered the material by only 80%. Ideally, the maximum score should be the same for all modules in order to focus students on the subject, but this is not possible at school for

organizational reasons (different duration of quarters and the volume of the corresponding modules) and spontaneous (annual quarantines due to flu epidemics and other random factors).

The principles of modular learning impose serious features on the main types of lessons, significantly changing their tasks and course compared to traditional ones. Let's consider the specifics of the main types of lessons in the framework of the modular rating system on the example of N.G. Dairi's research [2].

One main type of lesson within the framework of modular technology are control lessons. Usually there are two control lessons inside the module (for the organization of input and output control), sometimes there is a need for additional lessons that test the current knowledge and skills of students. Considering that there are not so many lessons, say, history, for example (on average, for a semester and, accordingly, the module leaves about 15 hours), spending 2-3 of them only on solving control test tasks is not always rational. In order to effectively use the study time, it is sometimes possible to combine control lessons with other types of lessons, more often with consultations. If the test does not take place on a computer and the result does not become known to students immediately, then the test results are announced at the next lesson with their mandatory analysis. On average, students spent about 15 minutes solving a written test task.

**RESULT AND DISCUSSION**

The most important problem, in the successful solution of which lies the key to the success of the implementation of the entire modular rating system, is the construction of a competent and balanced testing technique for students. In addition to the general methodological principles of creating tests mentioned above, there are a number of technical issues that also have a serious impact on the effectiveness of this method of testing knowledge.

The common features in the test tasks for input and output control are the breadth of coverage of the material, the combination of different forms of tests, the correctness of their formulations and the ease of calculating the results. At the same time, the approach to the content of tasks for input control is different than when creating tasks for output control. If the output control is designed to determine the degree of assimilation by students of the material already passed, i.e. tasks for him can and should contain the entire volume of the studied information, then the input control checks only the initial knowledge of the students, the degree of their readiness for the new module, and certain difficulties arise with the search for the content side of the tasks here.

N.G. Dairi encountered various conditions in his research, and his recommendations on this matter are quite optimal: if the group has already passed similar disciplines (propaedeutic courses), then the entrance control forces students to

recall the key elements of the already familiar material; if students have not been introduced to anything like this in an educational institution yet (this is especially true of the history of the Middle Ages), then the content of the input control tasks can include questions that ensure continuity between the previous module (course) and the upcoming one [3]. For example, before starting the topic of vectors, it is necessary to monitor the knowledge and practical skills of students on operations on matrices, for example with this type of test:

1. Find the product of matrices [4]:

1.1. $\begin{pmatrix}2 & 1\\3 & 2\end{pmatrix}\cdot\begin{pmatrix}1 & -1\\1 & 1\end{pmatrix}$

$A)\ \begin{pmatrix}3 & -1\\5 & -1\end{pmatrix},\ B)\ \begin{pmatrix}3 & -1\\5 & 3\end{pmatrix},\ C)\ \begin{pmatrix}-2 & -1\\-5 & 4\end{pmatrix},\ D)\ \begin{pmatrix}3 & -1\\1 & 0\end{pmatrix}$

1.2. $\begin{pmatrix}1 & 2 & 0\\-1 & 1 & 6\end{pmatrix}\cdot\begin{pmatrix}2\\4\\1\end{pmatrix}$

$A)\ \begin{pmatrix}10\\8\end{pmatrix},\ B)\ \begin{pmatrix}3 & -1\\5 & 3\end{pmatrix},\ C)\ (-2 \quad -1),\ D)\ \begin{pmatrix}3\\8\end{pmatrix}$

2. If $f(x) = x^3 + 4x$; $A = \begin{pmatrix}-1 & 9\\5 & 2\end{pmatrix}$, then find $f(A)$.

$A)\ \begin{pmatrix}-5 & 468\\260 & 61\end{pmatrix},\ B)\ \begin{pmatrix}2 & -1\\5 & 4\end{pmatrix},\ C)\ \begin{pmatrix}-2 & -1\\-5 & 4\end{pmatrix},\ D)\ \begin{pmatrix}-3 & -1\\-1 & 0\end{pmatrix}$

3. If $A = \begin{pmatrix}1 & 2 & 3\\4 & 1 & -1\\-2 & 1 & 0\end{pmatrix}$ and $f(x) = 3x - x^2 + 4$, then find $f(A)$.

$A)\begin{pmatrix}4 & -1 & 8\\2 & -1 & -14\\-8 & 6 & 11\end{pmatrix}, B)\begin{pmatrix}1 & 1 & 0\\2 & -1 & 1\\4 & 3 & 2\end{pmatrix},$

$C)\begin{pmatrix}4 & -1 & 8\\2 & 3 & 14\\4 & 3 & 2\end{pmatrix}, D)\begin{pmatrix}4 & -1 & 8\\2 & 3 & 14\\-8 & -8 & 2\end{pmatrix}$

4. Calculate $\begin{pmatrix}1 & 1 & 0\\2 & -1 & 1\\4 & 3 & 2\end{pmatrix}^2$

$A)\ \begin{pmatrix}3 & 0 & 1\\4 & 6 & 1\\18 & 7 & 7\end{pmatrix}, B)\begin{pmatrix}1 & 1 & 4\\3 & -1 & 1\\4 & 3 & 2\end{pmatrix}, C)\begin{pmatrix}3 & 0 & 3\\2 & 3 & 4\\4 & 5 & 6\end{pmatrix}, D)\begin{pmatrix}4 & -1 & 8\\2 & 3 & 14\\-8 & 6 & 2\end{pmatrix}$

5. Find $A^{-1}$ :

$A = \begin{pmatrix}1 & 2\\2 & 5\end{pmatrix}$.

$A)\ A^{-1} = \begin{pmatrix}5 & -2\\-2 & 1\end{pmatrix}$ $B)\ A^{-1} = \begin{pmatrix}2 & -1\\-5/4 & 3/4\end{pmatrix}$

$C)\ A^{-1} = \begin{pmatrix}2 & -1\\5/4 & 3/4\end{pmatrix}$ $D)\ A^{-1} = \begin{pmatrix}2 & -1\\-1 & 1\end{pmatrix}$

## CONCLUSION

It should be particularly noted that the modular system does not work on the principle of a "set lunch", like a traditional system, but on the principle of a "buffet", i.e. it is designed for independence and activity of students seeking to gain the most useful knowledge from studying the subject [5]. There are differences in the construction of test programs on a computer and on paper. In the absence of good programmers on a computer, it is difficult to design any other forms of tests other than closed-type tests; any task can be constructed in writing. Also, sometimes when answering a computer, it is not possible to trace the most typical mistakes of students for the following the teacher checks the written answers personally and is free to analyze them in this regard [6].

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