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Testing: advantages and disadvantages

Testing (from the English. Test - experience, test) - a method of measurement and diagnostics, using standardized tasks and a certain scale of values.

Today, the pace of life is becoming faster and faster, the amount of information and opportunities are growing, and, accordingly, modern students need to master more and more educational material. To facilitate the learning process, new methods and technologies appear, but one should not forget that the learning process is becoming more rapid not only for students, but also for teachers. According to a new program document prepared by experts of the Global Education Monitoring Report and the International Institute for Educational Planning at UNESCO, the number of university students increased two and a half times to 298 million people from 2000 to 2018. Naturally, such a rapid increase in the number of students requires new learning technologies and testing of their knowledge. This technology was the assessment of students' knowledge

through testing with the availability of response options.

The pedagogical test has its methods and tools and consists of:

- test systems
- standardized test procedure
- a standardized procedure for processing and analyzing results.

Most of the developed countries of the world are switching to this method, since it allows you to quickly and impartially evaluate knowledge, in contrast to the more traditional oral dialogue examinations, or written, where the assessed must give a detailed answer. These classical methods imply a long test by the teachers, which means they spend more time and money than checking a set of letters or numbers. Moreover, with such checks, the subjective factor on the part of the examiner plays a big role. The complexity of assessing student performance is caused by the inconsistency of approaches and methods for assessing knowledge, as well as by the fact that the same methods are used by different teachers with varying degrees of accuracy and integrity. Each teacher has his grading system, in which he is right. Proponents of knowledge assessment methods with detailed, non-standard answers adhere to the point of view that this type of testing well reveals certain mental processes (such as the ability to structure, synthesize, compare, contrast, interpret and evaluate). Moreover, examinations of this type imply more active efforts and a high level of knowledge on the part of the student, since he must compose the entire answer on his own. Their use allows you to judge the abilities of the student and allows him to practice in the much-needed skill, like a written statement of his thoughts. Objections to the use of methods with detailed non-standard answers boil down to the fact that assessment is a purely subjective process and that it gives only a limited view of the student's knowledge, and if the same question allows for several correct answers, it is very difficult for the teacher to find an objective criterion for assessment every answer. Moreover, the teacher is free to find the answer wrong only for the reason that it does not coincide with his "preconceived opinion". More than once it was noted that the same work is evaluated by different teachers differently. Performing a test of this type takes a lot of time, and therefore in the classroom you can ask only a few questions that require detailed answers. Opponents of such tests believe that this assessment technique does not sufficiently reveal the true state of knowledge. Other objections to the use of these tests boil down to the following: its appearance may be influenced by its appearance, handwriting, the teacher's personal opinion of a given student, not to mention such factors

as his current mood, degree of fatigue, etc. It should be noted that testing methods with a set of answer options for measuring students' abilities and knowledge levels have been introduced in the United States since the beginning of the last century (thanks to the works of J. Kettel, Edward Lee Thorndike, and others). Until 1961, 2126 standardized tests were created (it is difficult to even estimate their number now, given the development of modern information technologies). And, despite the well-known shortcomings (complex assessment of higher-level competencies, such as: analysis skills, synthesis, information assessment, etc.), the use of testing systems did not lead to degradation and lack of competitiveness of graduates of American higher educational institutions, but quite the opposite . The achievements of the Educational Testing Service, created in 1947, are now used all over the world. In contrast to the beginning of the last century, education has now become computerized, which means that the test assessment method opens up new possibilities, as it is easily applicable to be converted into computer programs, which makes this method of assessment even more rapid and eliminates the influence of the verifier, since the analysis of the results the subject holds the computer. Information and Analytical Center during the tests on the results of the working trimester surveyed what method of assessing the level of knowledge, students consider the most objective, that is, where the resulting assessment does not depend on the impact of subjective factors. It should be noted that the survey was not a full-fledged opinion poll, during which certain scientifically based methods of collecting information and processing the results are used. At the same time, the survey showed that, in the opinion of an ordinary third-year student, the first place in terms of objectivity during the assessment of knowledge is computer testing (50.8% of respondents). Therefore: 1) the system of computer assessment of students' knowledge should be extended to all professions. That is, it is necessary to develop a set of test tasks following the curricula of relevant professions that students receive. In this case, be sure to take into account the specifics of the activities of students during the work process.

The use of tests to assess students' knowledge gives the assessment process the following features:

- objectivity (the influence of the subjective factor of the teacher or student is minimized)
- comparability (there is the possibility of ranking the sample of students by level)

- completeness (a section of students' knowledge on all topics of academic disciplines is being studied).

2) The test results inform the teacher about the quality of their own teaching and the list of topics that require in-depth or improved study of a group of students.

3) Students, evaluating their educational achievements with the help of a computer-based knowledge testing system, gain access to the knowledge measurement tool - guaranteed unbiased and reliable.

The Bologna education system generally implies a significant distance of the student from the teacher, the student must consume knowledge himself, analyze it himself, and with the introduction of computerized test control, the need for teachers is lost, even for knowledge testing. But, looking at convenience and economy, this approach can be negative for future specialists to obtain high-quality knowledge and reduce the number of qualified personnel. In addition to all the above advantages of testing using response options, it is necessary to analyze its disadvantages, since for more than ten years this method has been the main one in most countries of the world and the unrecorded problems it generates can lead to serious errors in the knowledge system of the current generation of students. The main disadvantages of this kind of testing are that, choosing from the list of answers, the student is deprived of the opportunity to express himself, to demonstrate the ability to structure, synthesize, evaluate cognitive material. Although test questions in these tests may require the ability to evaluate, compare, etc., nevertheless, testing on this basis is far inferior to the test control of knowledge, which involves creative work on the part of the student. There are also elements of subjectivity, because in many educational institutions there are additional test questions formed by the teacher. In this regard, for the same problem, the set of test questions on the quality of knowledge testing may not be the same.

The disadvantages of testing include:

1) the duration and complexity of test development;

The first step is to define the goals and objectives of the test. Examples of erroneous decisions.

The second stage is the development of tasks in a test form. As in art, mastery of form is a necessary, but not sufficient condition for developing a quality test.

The second stage requires training in the field of the subject being taught, knowledge of test forms, knowledge of logic and the ability to

transform fragments of the content of the academic discipline into the content of the tasks.

At the third stage, test tasks are developed.

In the CIS and the West, question-answer forms of assignments prevail, which implies the knowledge of a clear answer to a specific question, while in Europe a new method is gaining popularity based on the logic of statements. The advantages of this framework stem from the difference between statements and questions: the truth or falsity of a statement is easily determined by logical rules, while the questions themselves are neither true nor false. The proposed framework opens up the possibility of effective computerization of knowledge control.

For successful activity in the third stage, developers are additionally required some training in the application of statistical methods, data processing and interpretation.

At the fourth stage, tasks are selected and create tests that improve the quality and effectiveness of the test. The presence of a sufficient number of test items allows you to proceed to the development of the test as a system with integrity, composition and structure.

The path to achieving this ideal lies through the difficulties of creating high-quality tests. The development of tests begins with an analysis of the content of the taught knowledge and mastering the principles of the formulation of test tasks. Unfortunately, tests are still looked at as a tool that is easy to come up with, while the strength of the tests is their effectiveness, resulting from theoretical and empirical soundness.

From the test developer, some mathematical and statistical training, knowledge of the basic test theories and methods of multivariate statistical analysis, experience in the correct interpretation of test results are required. Besides, you will need the ability to tactfully discuss with the authors the obvious and hidden defects of their assignments in a test form, psychological readiness for a joint search for arguments and endless patience.

At the fifth stage, one of the models of the mathematical theory of pedagogical measurement of the so-called latent variable is applied. At this stage, the content of the variable of interest is refined, the measurement scale is determined, a computer program is used to determine and clarify the values of the so-called logics of the difficulty of the test tasks and the logics of the level of preparedness of the subjects.

2) The second difficulty of test control is the need for confidentiality to ensure the objectivity of test results;

Most of the important test controls required for entering higher education institutions or cutting off the semester and annual knowledge in the CIS are conducted not on computers, but in writing and with further verification by teachers. To exclude the personal influence of the examiner on the result, special verification commissions are created and a system in which the student's examination forms are checked by third-party teachers from other universities and cities. Such a system, although it provides anonymity and impartiality, still does not completely exclude the human factor. Also, this verification scheme negates such an advantage of test control as quickness, since a lot of time is spent on sending forms and settling the work of verification commissions. The global computerization of all educational institutions could be the solution to this problem, but unfortunately, in many underdeveloped countries, universities and schools cannot provide the audience with enough computers to test a large number of students. Also, the transition to a fully computerized system will entail new difficulties and additional costs for the maintenance of equipment and software. But it is still necessary to keep up with progress. Computerization is important not only for solving the problem of testing, but also for all stages of training, especially training within the framework of the Bologna system.

Competition thus creates new realities in higher education. The Bologna Declaration aims to create a competitive European market for higher education, which, as planned, will be in demand all over the world. These processes are drawing all countries into the orbit of radical change. The national doctrine of education, declares the task of integrating the education system into the world educational space, and this task has already been translated into the plane of a direct practical solution.

Already today, computer technology is rapidly unifying the content of the educational process, bringing it closer to Western European and American standards. Computer training programs (copra), distance learning, new test knowledge assessment techniques have become today almost the main indicators of the performance of each educational institution. Computerization of the educational process is undoubtedly significant in the preparation of modern specialists, especially for those fields of activity where the computer is a necessary working tool: accounting, banking, financial and credit operations, statistics, design work, etc. Not so unequivocally positive the role of computer technology in the humanities. Now, in our opinion, unreasonably many hopes are placed on the cooperation of a student with a computer.

In some universities, one of the forms of such cooperation has become "copra" in many leading disciplines. Turning to the humanitarian cycle, it can be noted that here they represent, as a rule, fairly abbreviated, one might say, depressed material of training courses, tests for self-control, recommended literature on topics. At the same time, there is no need to "shovel" thick textbooks, monographs, seek out and take notes of journal articles. Indeed, in the "Copra" the necessary minimum of information has already been selected, which is sufficient for a positive assessment on the exam. Moreover, helpful dealers from the market place this material into collections of cribs, which are sold freely in bookstores. The student can only cut them into small rectangles and put them on the topics. One can imagine the problems that this creates for university teachers. Of course, the computer eliminates the routine, non-creative work. Meanwhile, it is not clear that students use the vacant time to creatively assault the peaks of science, with the possible exception of a small part of enthusiastic, talented young people. Practice shows that we need a certain incubation period for the accumulation of knowledge, which are gradually melting into the worldview. And this period just falls on time, filled, at first glance, by the rough work of searching, selecting, understanding, assimilating the necessary information. This is a necessary condition for penetration into the subject content of the course. There is no doubt that the computer, taking upon itself many functions that do not require intellectual tension, speeds up the obtaining of results, increases their accuracy, makes it possible to set and achieve new goals. At the same time, however, there is no reason to assert that the computerization of education helps to give birth to "Platons and quick minds of Newtons". An outstanding historian and educator of the United States Brooks Adams noted that "nothing in education is more surprising than the huge amount of ignorance accumulated in the form of inert facts." Information models schematize the real objective situation, making it difficult to understand and understand. Computer technologies in education are gradually replacing traditional, proven forms of knowledge assessment, replacing them with test ones. In any case, when certifying universities, the commission draws the main conclusions not following the results of attending and analyzing lectures, seminars and practical classes, but taking into account mainly the results of student testing. This sets the vector of work of universities.

3) Another significant problem of test control is the possibility of a high probability of "guessing" the correct answers;

Testing is often criticized for the fact that for most of the tasks of a closed type there is a chance of accidentally guessing the correct answer. The fewer possible alternatives are offered to the tested person in the framework of one task, the greater the probability of guessing.

From the recommendations of National Institutes for Assessment of Achievements in the Field of Education in Great Britain: "Questions of alternative answers offer only one alternative, which the testee either accepts as correct or rejects." T. o. examiners have a 50% chance to guess the correct answer to one question. Therefore, it is advisable to apply these tasks in series to one element of tasks, since the probability of guessing the answer to 10 such questions is equal to 0.00098.

From the National Institutes for Assessment of Achievements in the Field of Education in Great Britain manual: "Individually, alternative answer questions are not very effective, but long series of such questions have certain advantages. Answers to them usually do not take much time, so there is an opportunity to cover all the material on the subject, asking as many questions as possible. "

In this way this form is appropriate for using this type in a series, when several questions are asked for one element of knowledge. Setting alternative answers is more suitable for identifying the level of assimilation of complex definitions, knowledge of complex graphs, diagrams, schemes.

The problem of guessing is associated with the question of time allocated for testing, and with the question of motivation. The higher the motivation, the greater the likelihood that the subject will try to answer randomly to those questions that he does not have time to answer, i.e. will try to guess. In turn, the number of questions that may be guessed, depends on the time allocated for testing. The shorter it is, the more questions there will be that random guessing will extend. Thus, for the time allocated for testing, a balance must be found: with a small-time, the probability of guessing increases, with a long time, the probability of prompting and other violations of discipline increases.

The first and probably the most effective method that lies within the framework of the fundamental requirements for tests is to create the same conditions for all subjects. We will tell about the basic principles used in the preparation of tests for the needs of the army, used by the American Arthur Otis in 1917-1918:

• The principle of the time limit, so that only 5% of the subjects could complete the execution of the entire test;

• The principle of detailed instruction, both in terms of conduct and in terms of counting;

• The principle of a selective method of forming a response with an indication to emphasize at random in case of ignorance or doubt;

• The principle of selection of tests after statistical processing and experimental verification.

Reception guessing is most suitable for normative-oriented tests; for criterion oriented tests, it can have negative consequences. First, if we need an analysis of the material that is learned or not learned by the subjects, then the basis for such an analysis will be distorted by random guessing. In this case, you must be very careful about the analysis of those issues that are located at the end of the text. So a poor student who has not started to perform a significant part of the tasks, due to random guessing, will receive a larger increment of his total score than a well-done student who has started to perform most of the tasks. And it may seem unfair, however, at the same time a well-accomplished student will receive a significantly higher score due to the correct answers, which in any case will be higher than that obtained by random guessing.

The well-known guessing formula is well known:

$X_{corr} = m – n / (s-1)$, (1)

where X_{corr} — figure, adjusted for guessing;

m - the number of correct answers;

n - the number of incorrect answers;

s - the number of choices in the task.

Suppose in a test of 30 tasks, the first subject coped with 20, and the second with 24 tasks. All tasks had 3 answers each, then by the formula (1) for the first test subject $X_{corr} = 15$, and the second test subject - $X_{corr} = 21$. Thus, the result of the first student decreased by 5 points, and the result of the second, who completed most of the tasks by only 3 points. If, before the correction, the difference between the students was 4 points, then after the correction it became equal to 6 points. Thus, formula (1) allows to increase the discriminativeness of the test, that is, the ability of individual tasks of the test or the test as a whole to differentiate the subjects for the maximum or minimum result.

If the answer to each question is not three, but five, then the result of the first subject is $X_{corr} = 23,3$. We get that with an increase in the number of answer options in the tasks, the adjusted score tends to be uncorrected, which leads to a decrease in the probability of guessing with an increase in the number of alternatives in the answer.

We formulate four comments to the formula (1):

- If the subjects completed an equal number and the number of correct answers in the first one is greater than the second, then using formula (1) will still give the first a higher score, regardless of how many points he scored as a result of guessing. So formula (1) gives a good result, in the case when the subjects completed an equal number of tasks.
- To use formula (1), it is necessary to have a uniform test with an equal number of alternative answers in all tasks, which in practice tests of school achievements are extremely rare, as we strive to use various forms of knowledge, including open type tasks, in which guessing is impossible.
- It is a mistake to assume that incorrect answers are received only as a result of guessing, since along with the guessed answers, there are quite a few answers, where the subjects made random errors or showed ignorance.
- It is believed that when guessing any answer option can be selected with the same probability. Subjects can correctly reject all the options, except two, thus manifesting in part their knowledge of the subject, and then randomly choose from two alternatives.

From all the above, it follows that the formula (1) of the correction for guessing in the case of the normal time to perform the test and the requirements for guessing the answer cannot affect the results of the subject relative to his place in the group.

4) It is also worth mentioning the need to eliminate incorrect tasks after each test.

Since a test is compiled by a person, there always remains the probability of an error and its incorrectness, which will entail a decrease in the student's performance. Therefore, each completed test must be rechecked after the exam, taking into account the comments of students. For such a procedure requires well-established feedback of the teaching staff with students.

5) A very important problem of testing about which few people think, is the poor survival of knowledge.

In many educational institutions there is a practice when students have a database of actual tests, or a database of tests of previous years, in such a situation a student can pass it all and without looking at the fact that such bases can count thousands of tests, it is easy to remember the correct answers. The problem is that often after such training the

student does not demonstrate a deep understanding of the material, but his ability to automatically memorize, often a situation arises where the student does not even fully understand the content of the question and answer, but simply remembers the correct version of certain words or markers. We surveyed students of the Dnepropetrovsk Medical Academy, as in this higher educational institution most of the exams are conducted in this way. When studying the test bases, many students analyze the questions and determine why this particular answer is correct, but many also honestly admitted that they simply memorized the answers to difficult and incomprehensible questions for them, naturally acquired knowledge thus forgotten a week after the exam, and as noted some of the respondents, they forget everything immediately after leaving the exam room. Indeed, when a person needs to memorize a large amount of information, that after a short time one-time use of it, short-term memory is activated. It is obvious that such training has a very negative effect on the level of knowledge and qualifications of the future specialist. And so, we can draw the following conclusions about testing with options: This technique greatly simplifies the work of both the student and the verifier, minimizes the subjectivity factor on the part of the examiner and allows for highly differentiated statistics of all students. But at the same time, understanding is lost about the real depth of the student's knowledge. We believe that the optimal solution should be a balance between exams with answer choices and with open oral and written answers. With the help of tests, it is possible to conduct cuts of knowledge on topics or short intervals of the educational process, but the trimester, semester and annual exams should be conducted in an open form, since they imply an assessment of a large complex of knowledge and understanding of the relationship between all topics.

References:

1. Grebenyuk O.S., Rozhkov M.I. General principles of pedagogy M.:Vlados-Press, 2004. 160p.
2. Klyuchevsky V.O. Works in 9 tt. V. 9. Materials of different years. M.: Think, 1991
3. Afanasyev V.G. The world of the living: systematic, evolution and management M.:Polityzdat, 1986.– P. 54.
4. Korotkov E.M. Quality Management Education: Textbook. manual for universities. M.: Academic Project: World, 2006.– P. 211.
5. https://thinktanks.by
6. http://testolog.narod.ru

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Abstracts

STUŚ WICTOR, MOISEJENKO MYKOŁA, BARANNIK KOSTIANTYN, POLION MYKYTA, ŻBAKOW MATWIJ. **Testowanie: zalety i wady.** *W artykule omówiono najczęstszą metodę oceniania wiedzy uczniów, a mianowicie kontrolę testową. Porównywane są takie jej zalety: szybkość oceniania, systematyzacja, bezstronność, a także minusy: słabe przyswajanie wiedzy, brak głębi i kreatywnego podejścia przy odpowiadaniu, niedoskonałe tworzenie pytań. Czy ta metoda oceniania może negatywnie wpłynąć na poziom wiedzy studentów i ich dalszą aktywność zawodową?*

Słowa kluczowe: *rodzaje oceniania, zalety testowania, wady testowania, możliwe konsekwencje.*

СТУСЬ ВІКТОР, МОІСЕЄНКО МИКОЛА, БАРАННІК КОСТЯНТИН, ПОЛІОН МИКИТА, ЖБАКОВ МАТВІЙ. **Тестування: переваги і недоліки.** *У статті розглядається найпоширеніший метод оцінювання знань учнів, а саме тестовий контроль. Порівнюються його плюси, такі як: швидкість оцінювання, систематизація, неупередженість і мінуси: погана засвоюваність знань, відсутність глибини і творчого підходу при відповіді, недосконалість складання питань. Чи може цей спосіб оцінювання негативно позначитися на рівні знань студентів і їх подальшій професійній діяльності?*

Ключові слова: *типи оцінювання, переваги тестування, недоліки тестування, можливі наслідки.*

СТУСЬ ВИКТОР, МОИСЕЕНКО НИКОЛАЙ, БАРАННИК КОНСТАНТИН, ПОЛИОН НИКИТА, ЖБАКОВ МАТВЕЙ. **Тестирование: преимущества и недостатки.** *В статье рассматривается самый распространенный метод оценивания знаний учащихся, а именно тестовый контроль. Сравниваются его плюсы, такие как: скорость оценивания, систематизация, непредвзятость и минусы: плохая усваиваемость знаний, отсутствие глубины и творческого подхода при ответе, несовершенство составления вопросов. Может ли данный способ оценивания негативно сказаться на уровне знаний студентов и их дальнейшей профессиональной деятельности?*

Ключевые слова: *типы оценивания, преимущества тестирования, недостатки тестирования, возможные последствия.*

STUS VIKTOR, MOISEYENKO MYKOLA, BARANNIK KOSTYANTYN, POLION MYKYTA, ZHBAKOV MATVEY. **Testing: advantages and disadvantages.** *The article discusses the most common method of assessing students' knowledge, namely, test control. Its advantages are compared, such as: assessment speed, systematization, impartiality and minuses: poor digestibility of knowledge, lack of depth and creativity in answering, imperfect drawing up of questions. Can this method of assessment adversely affect the level of students' knowledge and their future professional activity?*

Keywords: types *of assessment, advantages of testing, disadvantages of testing, possible consequences.*