

Testing as a Method of Teaching and Education in the Context of Learning History

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Abstract. The article is devoted to the description of the psychological, pedagogical, and methodological foundations of educational testing in the framework of mastering the educational program in history. The relevance of the study is due to the widespread use of distance learning technologies, which leads to a decrease of teacher control over the students during testing, on the one hand, and an increase of students' independent work on the other. At the same time, the authors note that tests are usually used exclusively as a control and evaluation measure, but they also contain developmental potential. The novelty of the research lies in substantiating the possibility of using the test as a method of education in the context of mastering historical disciplines. The article describes a systematic algorithm for working with the test, which provides an elaboration of each of the elements of the testing and actualization of knowledge about the mentioned events. This method contributes to the formation of stable associative links, as well as methods for analyzing information and searching for an answer using contrario reasoning. The conclusion of the article describes the possibilities of using the test as a method of learning, self-training, and education, as well as the prospects for researching the effectiveness of using "learning testing". The authors conclude that it is necessary to develop guidelines for learning testing.

1 Introduction

Distance learning is becoming an important component of modern education. The inclusion of electronic courses in the educational process poses a number of new problems for teachers. One of these problems is the use of testing in the new environment that is being shaped by modern digital technologies.

A distinctive feature of the digital environment is the change of the learner's role. In the new conditions, the responsibility of the students and their motivation play a bigger role, as the basic functions of the traditional teaching methods that were formed in previous years are changing. Testing is one of the control components of the educational process, which is strongly influenced by information technologies and is changing its forms and directions of application. Methods of working with tests, developed in the past years, acquire a new meaning. Testing in an electronic environment can be carried out without direct support from a teacher, and test-takers do not have the opportunity to promptly receive advice.

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It should be noted that in the modern education system, the test acts as a means of control, a criterion for the educational program, the final challenge that shows the student's level of success. In this regard, students develop a stable attitude that the goal of mastering the educational program is reduced to overcoming the test, the results of which determine the future fate of the student. The test acquires a kind of "sacred" meaning, which is not accelerating, but, on the contrary, suppressing the activity of the students, who hope they will be lucky with the assignments.

Fixation on test results, and not on learning outcomes, undermines the very essence of the educational process: associative links are formed within the framework of the operative memory associated with the task of passing the test, and not long-term memory; there is no transfer of the acquired knowledge to outside, into real life, no parallels are drawn; energy is spent not on mastering the curriculum, but on cheating - studying the weaknesses of the test or its organization, with the help of which one can increase the test score [1, 2]. The latter problem is gaining momentum due to the transition to distance learning.

In addition, the use of testing in Russian conditions has its own methodological features. With the current trends in Russia of reducing classroom activities in favor of students' independent work, there is a growing need to form a new methodological attitude to the testing as an instrument of teaching and education, which carries an element of student involvement in the educational process. This methodological vision can be characterized as "learning testing". We are not talking about a radical revision of the testing system or its theoretical foundations as a model for the examination of knowledge, but about supplementing this form of work with internal mechanisms that can make testing more student-friendly and less mechanical. Consequently, testing will not be a substitute for a genuine understanding of the essence of the subject being studied.

In this article, we address the description of the psychological, pedagogical, and methodological foundations of "learning testing" in the framework of the Historical disciplines. There are certain specifics working with testing in history. History as an academic discipline is focused not only on acquiring knowledge of history, but is also aimed at developing the foundations of critical thinking and reasoning. This process is determined by a set of competencies that are declared in the Professional Standards for teachers, Federal Educational Standards, as well as the historical and cultural standards that underlie the history course at school. Historical science is replete with complex periods and events that cause controversy and different value judgments. Many textbooks advocate different approaches in assessing different events in history and the opinions of professional historians do not always coincide with the opinions of the authors of the textbooks. These circumstances increase the requirements for history testing in a digital environment, where students have access to various information. In this environment, history testing is subject to increased requirements in order to maintain the basic functions of qualimetric assessment of knowledge.

2 Methods

The test is "a system of assignments, the fulfillment of which allows to check the level of proficiency in a particular subject using a specially designed system for assessing the acquired knowledge" [3]. Its advantages include objectivity in assessing, the ability to reach a large number of people while testing, the ability to monitor knowledge in the entire discipline or in specific sections, the possible implementation of a distance format, reducing the amount of time spent on checking, thereby increasing the amount of time, which can be devoted to the analysis of the material being studied [4]. At the same time, the test itself can act as a teaching method [5].

Testing is currently recognized exclusively as a way to control the process of learning. However, this is not its only purpose. S.F. Shatilov distinguishes the following functions of the testing: control and correction, which implies an assessment of learning new material, prevention and stimulation, which draws students' attention to the material that should be given special attention, teaching, which is associated with the fact that students revise their knowledge in the process of testing, diagnosis, meaning checking the results of the learning process, education and development, implying the evaluation of the personality characteristics of the students, generalization, which means the final test provides an assessment of the assimilation of the curriculum.

Despite the fact that control is of paramount importance in each of the functions, it is impossible not to notice the fact that the test can act not only as a control and evaluation measure but also can:

- carry out problematization of various issues within the discipline and encourage the study;
- be a teaching tool, focusing attention to the test elements (test assignments, answer options) which carry information that is appropriate for consideration, and memorization;
- be a source of information for the teacher about the students' knowledge of the material, their weaknesses, or their lack of understanding. The latter can have different reasons, including the specifics of the presentation of the material by the teacher and, therefore, testing can show the need to correct the curriculum and change certain characteristics of the presentation [6].

The test can be built into the structure of pedagogical activity not only at the stage of monitoring and evaluating the results, but also be used at the stage of designing and organizing pedagogical interactions and act as an independent means of teaching and self-learning.

The latter is of particular importance in the framework of distance learning, because the possibilities for the organization of live communication, including its verbal and non-verbal components, are reduced, which means the difficulty, and sometimes even complete impossibility, for the teacher to receive feedback and evaluate the effectiveness of the pedagogical influence. In this case, the organization of the self-learning process becomes more important.

One of the advantages of using testing as an assessment method is the reduction of psychological pressure, in contrast to traditional forms of knowledge control [4]. However, currently, we can state that the test itself has become a source of stress for students [7, 8]. It means that the test results acquire such a level of significance for students that it leads to the disintegration of the activity. In other words, we observe an inversion of the emotional and behavioral component of the learning activity, when the ancillary emotional component of the motivation reinforcement comes to the fore and starts to prevail over activity [9]. This mechanism can be described using the Yerkes–Dodson law of motivation. According to this law, the graph showing the dependence of the training effectiveness on the level of motivation has a bell-shaped form. It means that the peak of productivity is achieved at an average level of motivation, while a too low or too high level of motivation leads to an insufficient or excessive level of emotional response [10]. Thus, the predominance of the control and evaluation function of the testing and the influence of its results on the further fate of the student (final grade, admission to an educational institution, etc.) leads to an increased degree of its significance for the student and, as a consequence, the inversion of the emotional and active components. Consequently, a change in the level of significance of the test for a student and teaching how to work with it can lead to a correction of the level of motivation, which can increase the productivity of learning activities and lead to higher results.

In addition to reducing the level of emotional response, reassessment of the role of the test can help in building a hierarchy of motives and contribute to the development of

internal cognitive motives, rather than external social ones, stemming from focusing on assessment and avoiding failure. According to the study conducted on a sample of 397 students, 87% of them during examination have undifferentiated leading motives or a narrow motive of getting a good grade, and only 13% of them have a wide range of leading motives like self-development, self-knowledge, and achieving the desired grade. At the same time, students who showed a broad focus not only on achieving the desired grade, but also on self-development in the process of passing the exam, showed a lower level of emotional stress and confusion on the exam itself [11]. A study by Gibson (2015), conducted on a sample of 1,800 students, found that using testing as a self-study method increased the average grade on the final test compared to students who did not use it [12]. Other researchers have also reported on improving student test scores by using self-study testing [13, 14].

In this case, the test becomes an educational task where assimilation of knowledge comes to the fore, and working with the test becomes the form of specific educational activities, arranged in a certain way, as further elaborated below.

Thus, the theoretical basis of this article was the classical concepts of educational activity structure, motivation, hierarchy of motives and ideas of the development of educational activities by A.N. Leontiev, S.L. Rubinstein, P. Ya. Galperin, D.B. Elkonin, V.V. Davydov, as well as data from various theoretical and experimental studies carried out by domestic and foreign authors.

3 Results

Tests in historical disciplines have their own distinctive features, which require a special approach. This problem in Russian education was touched upon in the works of Abrakova, Shlyakhova, and Samoilova. In the basic understanding of the role of testing in historical disciplines, it becomes necessary to develop certain principles for working with tests, which can be characterized as the principles of "inclusive testing", which are important not only for students but also for the teachers who design test assignments. These principles take into account the special features of testing in the field of history.

1. The test is always subjective.
2. The test is a logical task.
3. The test has no meaningless answers.

Let's reveal these principles.

1. The personal opinion or the acquired knowledge of the test-taker may seriously differ from the viewpoint of the author of the test. The purpose of the assignment is also important. When working with simple one-step tests like the State Examination, students should answer based on the opinion of the authors of the textbook and the course studied, and not on the in-depth knowledge of history and its controversial components. If it is not taken into account, then simple questions may cause doubt and hesitation. With the help of the test, thinking and reasoning are formed. In a number of cases, there may be no absolutely true answers in history testing, which does not mean that this work is meaningless.

2. The test is a logical task. It is assumed that, by working with the test or analyzing its structure, one can obtain the right answer even without the initial knowledge. Therefore, it is necessary to look at the unfamiliar task through the eyes of its author. Each test must have an educational objective that it pursues. The answers in history tests are often based not on the principle of absolute true knowledge, but on the principle of finding the most logical answer from the suggested ones. This principle assumes that the student should perceive the test not as the ultimate truth, but as an educational problem that needs to be solved.

3. Tests compiled according to the principles of "learning testing" contain the events, facts, and processes that have significance and their own historical meaning. History tests should not use fictional events and facts. It is dangerous to use deliberately distorted definitions of concepts and terms in history tests [15, 16]. Each component of the assignment, regardless of its role, should be taken from a historical context. In this case, the entire set of historical events turns into a database, from which the compiler takes the components to form tasks. Working with tests, the student learns that one should not ignore the "incorrect" or "unnecessary" answers, and all the elements are important for learning. In this regard, didactic work on preparing tests by the test takers themselves or on improving existing tests with their own versions of the test structure becomes useful [17, 18, 19]. In this case, each conditionally incorrect answer is another source for learning something new in history.

In a digital environment, in order to implement the principles of "learning testing" in history, the importance of such a didactic technique as behavioral algorithms is growing. The unification of history testing work can be illustrated by the example of the simplest (four options to choose from) test in digital form, on the basis of which algorithms for more complex tasks can be developed. The algorithm can be represented in the form of standardized activities of the trainer when working with the test, the teaching of which becomes an important component of independent preparation for tests, not only at the moment of knowledge examination but also at the stage of self-study. The algorithm involves the active use of tests for self-learning. The structure of the algorithm is as follows:

Step 1. Reading the assignment.

Step 2. Actualization of the assignment.

Step 3. Exploration of the presented options (developing your own options).

Step 4. Provision of answers using the reverse logic.

Step 5. Substitution of the answer to the original assignment and consistency check.

Let us briefly characterize the content and significance of these steps:

Step 1. Reading the assignment is important, as attention to it is usually insufficient. It is not difficult to just read the assignment. It is difficult to understand what the compilers want from the student and what part of historical science they want to test with this task. It is necessary to read the task through the eyes of the compiler. In a number of cases, the task is built with the expectation of the student's possible inattention; sometimes, when reading, the associations that arise lead to an obvious option, which, nevertheless, is not correct. In Olympiad tasks, in a number of cases, the compilers proceed from the concepts of elegance, consistency, and multistep solutions. These parameters must be taken into account when being acquainted with the assignment.

Step 2. Actualization of the assignment. This is the most important step of the work. It is necessary to recall all the associations, the basic facts, and processes that are associated with this assignment or the time to which they relate. The principles of associative comparison of facts and events in history are a powerful mechanism for memorizing and developing cognitive abilities. When working with testing in any form, it should be taken into account that test themes often jump from one era to another and change topics. The special feature of history tests is that the test-takers are not ready to instantly remember everything that is necessary and do not keep in mind the entire historical factual basis. Deep in memory, many of these processes take the form of associations and logical chains. The actualization of the task helps to "get into" the issue and the era with which it is associated and to remember the key figures of the time.

Step 3. Exploration of the presented options and developing your own options. At first glance, it is a fairly simple step. However, the fact that there are no wrong options in well-written history tests should be kept in mind. Each ready answer or option you proposed should have its own actualization. This chain of associations can come in handy at any

moment in your life. It is necessary to actualize all the proposed options in memory when reading assignments in a closed test. At this step, all the answer options should be actualized. This is important since in one task, the date of publication of Ivan III's law code (1497) could turn out to be in no way connected with the events of Russian foreign policy, but it does not mean that this information is useless. In a different assignment, in a different context, this information could be needed as part of Russia's domestic policy. The student should learn that if obscure or unknown answer options come across, then it makes sense to take a step back and work a little more with this concept in order to familiarize yourself and be ready for associative work. Thus, the test acquires meaning as a system of prompts for events and processes. The test author is able to program the learners' interest in certain facts, by including them in the test. Chains of cause and effect also help in drawing up associations. Any phenomenon in history has causes and effects. They must be taken into account since they are often the didactic purpose of the test.

Any answer option in a history test is a link in causal relationships if viewed through associations. These connections are an integral part of the logic of historical development that underlies the history testing. In the case of developing your own answer, the answer is developed as part of a certain logical or associative chain. It is simply impossible to guess the answer, but quite possible to come to it logically. The assignment may require indicating a wide variety of concepts or events that are associated with the proposed passage. Answer options should have logical and associative connections with the task. Each option should have its own, inherent characteristic. Some students' responses to consequential sequences became textbook examples. For example, the names of the Decembrists' wives caused a variety of associations for many students, including the following: women, aristocrats, heroines of novels, etc. Some of those associations bring a smile and are unlikely to be counted as substantial, but it is always better than not giving an answer at all. However, there are also cases when students build their own logic in the task.

Step 4. Provision of answers using the reverse logic. In closed tests, the correct answer is not always immediately clear, but the wrong option is much more obvious. After the options have been actualized, and associations have been formed, the test taker can proceed to the selection of possible options. The most illogical and those that are not directly related to the topic of the test assignment should be eliminated first, in order not to be distracted with similar options. This step also works for final exams in secondary and general education, and university tests. This reverse logic is necessary in order to check your actions, as well as not to rush and to refine all the information contained in the test. Haste is one of the most insidious enemies of testing. Answering each option, you need to match it with association markers in the task. The associative and logical sequences of the answer option should coincide as much as possible with the actualization of the assignment. The match should not be partial, otherwise, there is a high risk of error. Moreover, as the tasks are subjective, a perfect match is not at all guaranteed. Furthermore, for example, in the Olympiad tests in electronic format, in contrast to the Unified State Examination, the compiler can give a controversial point in history for an answer that needs clarification. The author's explanation will be the key here, and not the answer itself. Therefore, the validity of the chosen answer will depend on the student's logic. The ability to argue for the answer in open test assignments depends on the ability to form individual causal sequences of events. It is necessary to select starting from the less motivated answers then move to the stronger ones. It is necessary to end with the most reasoned answers. If you do the opposite, starting with the strong one, and then check the other options, the haste will push to reduce the work time, since it becomes more desirable to move to the next task.

Step 5. The test taker, having chosen the solution to the problem, should not rush to write it down. This is also a typical mistake. It is necessary to substitute the answer to the original assignment and say it to yourself or out loud first. Memorization information

markers must match. For example, imagine the case when the specified description of the prince's activities partially fits several names. The test taker chose an answer but did not compare it with the initial assignment, thus risking making a mistake. The verification stage is necessary since this step should bring the posed question and the chosen answer together.

4 Discussion

The above-mentioned algorithm helps students to develop the following skills: the ability to set cognitive goals, plan the ways to achieve them and choose the most effective ways to solve cognitive tasks, analysis and synthesis, and critical thinking. Thus, the competence of working with the test essentially becomes a universal cognitive educational activity.

The benefits of using testing as a teaching method include:

- addressing the test as a database, which leads to the actualization of existing knowledge, and the integration of information stored in long-term and operative memory;
- reduction of psycho-emotional stress when working with the test, which sometimes can directly affect the results of the test assignment;
- developing the skills of working with information, critical thinking, logical operations, methods of proof - direct and indirect, including the method of "exclusion" and the method of reverse logic;
- a possibility to use it in individual work, particularly in distance learning.

Thus, the main conclusions are following:

1. Considering the implementation of information technologies in the educational process, as well as the transition to distance learning, it is increasingly difficult to monitor students in their learning process. In this case, testing can act not only as a form of control but also as a learning mechanism.
2. It is necessary to expand the functionality of testing and, as a consequence, the attitude towards the test. In this case, the test will be perceived not as a goal, but as a means of teaching, which will reduce the students' level of emotional tension and the exploitation of the avoiding-failure motivation and can contribute to the reorganization of the hierarchical order of motives. It will change the balance in favor of the students' internal cognitive motives and will increase the internality of the locus of control through a deliberate approach to learning.
3. There is a need to develop guidelines for "learning testing": competent formulation of tasks, the omission of fictional answer options, adequate complexity of the test, well-balanced answer options, and the compliance of the test with its goals and the content of the educational program. Adaptation of the algorithm for other educational disciplines also is required.
4. It is important to take into account the peculiarities of using information technologies and design the test work in such a way that they contribute to the development of the analytical abilities of students, rather than encourage cheating. The test should focus the attention of students on the subject of the study, and not on the possibilities of cheating the system.
5. Further research on the effectiveness of the learning testing is promising. The relationship between attitudes to the test and the psychoemotional state, the hierarchy of motives, locus of control, and student performance are among possible subjects of the research.

We can conclude that information technologies and distance learning inevitably lead to the transformation of classical pedagogical tools and methods. It is important to seek new ways of using them, taking into account their potential advantages, and not to fight with them by, for example, developing proctoring procedures, while it would be more adequate to change the tasks themselves to minimize the possibility of cheating.

The purpose of this article is to describe the psychological, pedagogical and methodological foundations of using the test as a means of teaching history and the algorithm for working with it, based on the aforementioned position.

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