

## Searching Ways to Improve the Exam as Forms of Control at a Vocational School in the Conditions of Modernization of Russian Education

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### ABSTRACT

The relevance of the investigated problem is caused by the objective necessity of construction of the Russian examination practice, taking into account the leading trends in the education system development, where student-activity approach advocates the dominant, and insufficient development of this issue in both the theoretical and methodical plan, based on the primary focus of the examination content on reproductive component, does not dock with the modern educational realities. Objective of the research: to develop and pedagogically substantiate the didactic conditions and means of improving the examination control procedures at a vocational school in the conditions of modernization of Russian education, drawing on diagnostically specified learning objectives and focus on personal characteristics of the student. Leading approach to the study of this problem was the holding of a retrospective analysis of the literature on the quality control of the educational process, the analysis of the actual state of the problem of examination quality control of preparation of students of professional institutions in theory and practice, with the purpose to identify the didactic conditions and means of improving the examination control in a vocational school. The author's version of pedagogically-based examination procedures in a vocational school in the conditions of modernization of education is represented in the article, developed on the basis of the revealed didactic conditions (diagnostic mission objectives, focus on level and student-activity approaches, reflected in the structure and content of the exam, correcting pre-exam training) and means (typology of examination tasks, complex advisory activities). The article represents practical significance for using by vocational school teachers in the process of organizing and carrying out the examination; researchers in the field of vocational training in the study of problems related to the examination control.

### KEYWORDS

Professional education, quality of education, exam, as a form of monitoring of educational results in a vocational school, structural and substantive aspects of the exam

### ARTICLE HISTORY

Received 16 April 2016  
Revised 30 May 2016  
Accepted 12 June 2016

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## Introduction

The entry of the Russian society into the world space, fundamental socio-economic changes and the rapidly changing conditions of life - all of this provides a need for qualified professionals of different levels and areas of training. This trend is clearly marked in the "National Doctrine of Education in the Russian Federation" and "The Concept of the Federal target program of education development for 2016 - 2020 years" (2014) (created in connection the expiration of the previous state of the program), which, along with due appreciation of interests of the state, more and more attention is spared to the satisfaction the needs of the individual student in self-development, development of the ability to analyze emerging issues, propose alternative solutions and to develop criteria for the correctness of these decisions. In this regard, one of the important directions is the idea of forming a new quality of vocational education with the preservation of its fundamental (Bolotov, 2012), actualizing the need to update the quality control system of preparation of students in vocational education, including the examination as an integral part of it.

In the process of study and analysis of the psychological and pedagogical publications, online articles, etc. it was determined that many authors (Archangelskiy, 1980; Bepalko, 1989; Ibragimov, 2007; Calney & Shishov, 2010; and others.) pointed out at the importance of the research problem in the context of the organization and methodical support of the implementation of the control functions in the educational process, methods of conducting written, oral, graphic control, etc. However, despite their sufficient number they focused, mostly, on the study of general issues of control and dated the last century. Hence the lack of research of features and capabilities is the examination system in vocational education at the present stage, and as a result of it is immutability and some archaic for over 50 years. In addition, if the entire educational process in vocational school aims at the implementation of the social order in the form of training a competent specialist, the exam (or rather its organization) as examination of the quality "products" (based on the understanding of "quality" as a result) enters into a definite contradiction with the basic provisions of the concept. As a result, a widespread examination practice, with emphasis on the identification of the ability to keep in mind the knowledge transmitted by the teacher and reproduce them at his request (Nokhrina, 2000), giving rise to the formalism and subjectivity in the evaluation of preparation of students, on the one hand, does not allow to qualitatively provide strategic transformation, caused by the process of modernization - on the other.

## Materials and methods

### *Research methods*

During the research the following methods were used: theoretical (analysis, synthesis, concretization, generalization, analogy method, modeling); diagnostic (questionnaires, interviews, testing, method of tasks and assignments); empirical (the study of experience of educational institutions, regulatory and instructional documents, pedagogical supervision); experimental (verifying, forming, control, experiments); methods of mathematical statistics and graphic results.

### *Stages of research*

The study was conducted in three stages:

- the first step: study and generalization of domestic and foreign sources and documents on the research problem, the analysis of the actual state exam problems in theory and practice, the determination of the initial position to improve the efficiency of the examination in vocational school;
- the second step: the definition of the content of organizational methods of examination quality control training, testing procedures developed by the author of the examination together of all its components;
- the third step: the generalization and systematization of the research results, correction conclusions.

## Results

### *Designing proficiency examination in vocational school*

One of the most significant shortcomings of the examination control in our country, regardless of the level of education, the status of the institution in the general education system, from programs and plans is its dominant "knowledge" orientation. In addition, the examination system reform was not exposed until the last few years. The process of modernization of Russian education in terms of control and evaluation procedures, being reflected in the introduction of the Unified State Exam for all categories of citizens who receive secondary general education, touched on today only the examination control in the system "secondary school - college, high school." The decisive for us in this context is the fact that the reform of this process was limited by rigid boundaries - graduation and entrance examination, ignoring the control in the form of annual and terms examinations. From this perspective it becomes urgent and necessary to find ways of improving the examination practice in accordance with the basic tendencies of development of the vocational education system and the labor market, which was based on level model V.P. Bespalko (1970, 1989) (I - level - the base (B); II - advanced (A), III - high (H)). However, the level in the exam appears, in our opinion, only in technical difficulties or software, because the first and second levels are school tasks, and the third level are specialized tasks that go far beyond the school material. In addition, the present reform of the examination control concerns today examinations only in the framework system of "secondary school - college, high school" without affecting a huge layer of examination tests, which is located between the control carried out at the entrance and at the exit of the institution: term, annual and final.

We, in turn, tried to transform the organization and technology of "current" examination test, that is, instead of the traditional exam with 2-3 tasks reproductive nature, focused on the formal component of the discipline to carry out a three-level exam, a substantial part of which is grouped in a certain way by control tasks, different both in degree of difficulty and types of student activities that involve, in turn, a different degree of manifestation of personality components (autonomy, willingness to combining previously learned knowledge and developed skills, etc.) in the course of solving the problem.

Two conceptual ideas are put in the basis of this variant, interconnected and determine, in our opinion, the leading condition renewing this procedure. The first is to use level approach (in particular the focus on some of the

provisions concepts V.P. Bepalko (1989), B.S. Bloom (1956), as an objective assessment of the quality of knowledge is possible only at the apportionment reasonable levels of learning (Bespalko, 1989) (reflected in the taxonomy of learning objectives (Bloom, 1956)), which in turn is directly reflected in test purposes.

On the other hand, the consideration of this issue, leading the philosophical idea of modern software, unfolding in one of the didactic test principles is the development of each student based on his or her identity, indicating the use of differentiated tasks involving different methods of their implementation (reproductive or productive), which we suggest to group in the ticket in three levels:

- reproductive - reproduction;
- analytical – using (reproductive - productive);
- system - creativity (productive-creative).

The separation of levels takes place on the basis of distinguishing in the psychology of the two types of human mental activity: unproductive (or reproducing) and productive, never, however, is not defined in the "pure" form. Thus, the reproductive activity of the student is characterized by self-reproduction of the required educational material, that is a retelling of the content of a particular text, the formulation of the law are the answers only on reproductive issues, reflecting the sequence of construction of the logic of the lecture. During the productive activity the student does not only reproduce formerly learned information, but also applies it in operation, converts for use in non-standard (untypical) conditions. And in the process of productive activity, reproduction is not excluded, but is ancillary. During the productive activity of its implementation algorithm previously assimilated or adapted to the new situation, or finds in other situations new knowledge, the new rules of action or reproduces from other parts of the learned algorithms.

We, in the development of a three-level exam, conditional use this division, pointing out that the telling from memory some fragment of the scientific knowledge of the discipline, the student performs reproduction activity according the model (I exam level). However, the answer to exam question can require the student not only the direct learning and subsequent retelling, but applying the gained knowledge in a typical, already a familiar situation. For example, when translating foreign text, sometimes the student mobilizes all his "knowledge" potential to an answer. This is level II, where only the reproduction of the material provides only a partial response, reflection is needed, attraction information from other disciplines, or generalization of the whole system of knowledge on the subject to give up the exam, indicating that reproductive and productive activities of the student. And finally, III level is aimed at solving problems that do not fit into the framework of the "typical or standard", that is, complex untypical problems, including elements of the problem, or themselves are the problem, requiring a free operating material in an unfamiliar earlier situation with elements of creativity approach, which means productive and creative activity.

During the exam there is the task before the teacher to review and assess not only the scope and completeness of knowledge, but ownership of ways to apply them in practice, we talk about the formation of certain abilities and skills

of students, there is a need for a more accurate diagnosability present them as three levels (Table 1):

**Table 1.** Control skills during a three-level exam

<i>Skill levels</i>	<i>Task feature</i>
I - the ability to reproduce from memory objects, laws	Writing formulas laws, theorems, rules for visualizing theoretical materials
II - the ability to act according to a known algorithm, the rule	Typical tasks throughout the course, characterized by the use of IP-logical methods on the material of knowledge on the subject
III - the ability to build from learned operations procedures in the solution allows to get the task decision; ability to find original solutions.	Unusual (untypical) tasks that involve the transfer of methods of obtaining evidence from one area to another, implementation of the common methods of learning activities. The use of productive skills in a variety of non-standard situations. Solving problems with rationalizing creative content elements.

Regarding the form of the "three-level exam", then when it is selected, we proceeded from the fact that if one of the main objectives of the monitoring is to check the understanding of the material, the most appropriate, especially for disciplines saturated logical connections, it is oral contact of the teacher with the student that allows to understand that the student had grasped the material, or simply had remembered it. However, the written test is not less important, and sometimes is necessary, based on the specific discipline, so the ticket contains questions that involve both oral answer and written, but with further comments, i.e. it is a combined form of control. The above theoretical positions are directly reflected in the structure of the examination (Table 2):

**Table 2.** Correlation the nature of the issues and levels of activity student in the structural organization of the examination card

<i>The nature of the question</i>	<i>The level of cognitive activity</i>
on reproduction	I. Reproductivity - activity to reproduce the information on the object of study, with an analysis of its meaning and properties. The issue at this level reflects the general theoretical basis, i.e. check basic knowledge of the students, requires reproductive answer to the question, not only to reproduce the information from memory, but also to formulate it correctly.
on understanding, using	II. Analytical - using KSA (knowledge, skills, attainments) for activities on previously learned pattern, provides skills to compare, analyze, draw conclusions and apply KSA in specific situations.
on interthemes and intersubject generalization	III. Systematic (creative activity) - firmly learned basic provisions allow to ensure a high level of generalization of knowledge, establish interdisciplinary communication, which in turn contributes to the creative use of the acquired knowledge in new situations. This allows to reveal new causal relationships, make generalizations and conclusions.

Thus, the first level (reproductive) examines the theoretical basis of students' knowledge (formal component of discipline: each studied subject has such information - laws, the most commonly used formulas, lexical and grammatical units) requires reproductive response to a question, but a precise, clear, logical.

For example a task for the first level exam in English can be represented as follows:

*Read the texts of 1-5 and set their appropriate heading A-F, to which they may be assigned. Use each letter once. The task has one extra heading (similar task is applied for the Unified State Exam in a foreign language).*

Texts	Categories of newspapers
<p>1. Midlands. Cloudy and mostly dry, with some sunshine in places. Max. Temperature is 12°.</p> <p>2. New York (Reuters). A senior United Nations official has left New York for the Middle East in an attempt to free the hostages after two days of intensive talks in New York.</p> <p>3. Let us fly you to your destination in first-class comfort, looked after by the best-trained staff in the world. Any business person knows that they must arrive fresh and ready for work. Your secretary can book you on any flights 24 hours a day on 0557-465-769.</p> <p>4. New York (Reuters). Three students who tried to force the pilot to land the plane in a foreign country were arrested for air piracy.</p> <p>5. I am 13. I have to share a room with my sister. She is very untidy and I have to clean up her mess as well as keep my own things tidy. She never leaves my things alone and keeps opening the drawers of my cupboard and looking at everything. Nothing of mine is private and I'm not allowed to do what I want. What can I do?</p>	<p>A. TEENAGE ADVICE LETTERS TO A MAGAZINE</p> <p>B. POLITICAL NEWS</p> <p>C. ADVERTISEMENT FOR AN AIRLINE</p> <p>D. CRIME NEWS</p> <p>E. WEATHER FORECAST</p> <p>F. TV PROGRAMME</p>

The task of this type reveals: the knowledge of the studied lexical and grammatical units, as well as the accuracy of their mappings.

The second level - analytical question requiring not just a "textual" but so-called "reasoning" reproduction, that is, meaning the transfer of the relevant laws, the theories of foreign texts, etc. Tasks are aimed at control the skills to summarize, to express it in a more compressed or expanded form, requiring an indirect answer on the question, explain your choice, answer questions such as "Why?", "What if?" and others.

Example: Complete the sentences

- |   |                                      |
|---|--------------------------------------|
| 1. Some of us go...                     | 4. Very often our hobbies help us... |
| 2. This has become one of the...        | 5. When we have hobbies...           |
| 3. People living in cities and towns... |                                      |

In this case, students need to understand the beginning of the sentence to its logical conclusion; apply specific knowledge with the provision of a certain freedom: the answer is built on the basis of generalization of knowledge from different themes, with an emphasis on the selection of lexical and grammatical forms.

The third level (system or productive-creative) is characterized by the focus and the ability of students to think independently and solve modified, not typical tasks on the basis of existing KSA, come to new conclusions, rules and decisions. For example: *Outline your vision of the situation*: The environmental situation in Kazan is very complicated. You, the mayor, delivers a report to the State Council of the Republic of Tatarstan. Be prepared to answer questions. In carrying out the task, the student has the right to build their response to the individual understanding of the subject, revealing different aspects of your vision of the problem. This is a generalized structure of a three-level exam, which can be applied to the examination tasks in various disciplines.

### **Organization and carrying out a three-level exam**

The examination committee consists of at least two teachers, being more productive, in our view, would be if one has taught this discipline, and the second - a teacher of related subjects, or the one who will teach this group next term. In this case, there is double so-called input and output control, which greatly reduces the subjectivity in evaluating the student's response. However, for mass practice, given proposal seems a myth due to financial providing of the teacher stress (the presence of a second teacher at the "ordinary" exam does not find approval among those who conduct this examination, it does not provide net hours).

Responsible part of the whole examination procedure is the preparation question cards, which are completed within the scope of the program under study discipline. Determining the optimal number of questions included in the card, always causes problems. As a basis for the solution of this problem, it is advisable to take the structure of the curriculum, keeping in mind that the increasing the number of questions raises the weight of the private and the secondary in content, forming a mosaic picture of the subject and reduction increases the share of the total. Question cards with the examination tasks we do not offer students beforehand, we can talk only about the small-scale and content of the list of issues examined in the course of lectures and seminars, and in the process of self-study. This approach, in our opinion, does not allow the student to prepare cribs (combination and nature of the questions is not known), requiring comprehension of the course material, so that in the course of preparation for the exam, the student has not only "taught, but forgotten» but interpreted the professional knowledge as his own.

Modern training students for exams, when almost all the elements of the learning process have a high degree of control can be defined as the process of uncontrollable because of its efficiency the teacher can only judge by the responses. Step exam preparation can be rightly regarded as a period of "free learning", supported by the planned consultations aimed primarily at assisting in-depth study and understanding of individual topics. However, only the independent work of students in preparation for the test does not always provide the proper sequence, depth of knowledge, as well as the confident answer on the exam. Therefore, we are talking about optimizing the process, it became the third condition update examination procedure. The solution to this problem, we see the following: the traditional consultation "question-answer" form has been replaced by a complex of measures carried out in all days defined by program for preparation. All issues on the exam are divided by the number of days (thus achieving a reasonable dosage of training time information), leaving one day

before the exam itself for so-called "simulation test", aimed at: overcoming uncertainty in their abilities (removed "exam fear syndrome" from the lack of formal assessment); the elimination of the detected gaps in knowledge; correction system of preparation for the exam, bringing students into an active mental activity.

The three-level exam, based on the main provisions of the traditional practices, has at the same time their distinctive features (Table 3).

**Table 3.** Comparison of traditional and experimental examination

<i>Options</i>	Traditional exam	The three-level exam
1 Who examines	Basically, the teacher who led the discipline	Minimum two teachers
2.Type of questions in the card	No single approach	Reproductive, productive creative nature
3. What is being monitored	The degree of assimilation KSA of student	Basic knowledge and type skills; the ability to transfer knowledge to solve practical problems involving personal qualities
4. The degree of manifestation of personal qualities (independence, adaptability, etc.)	Questions practically are not aimed at identifying the characteristics of the data	Tasks II and III levels are aimed at their discovery and development
5. The percentage of crib	Very high	Minimal due to: - the answer to the first two questions without preparation; - construction of the issues in a certain way
6. The form of the exam	Basically, oral or written (CW, test)	Combined (oral + written)
7. Pre-exam training	Planned consultation "question-answer" type	Complex advisory activities with "simulation test" in custody

Conducting such "three-level" exams, assuming demonstration each student across the system of training, including a theoretical unit, practical tasks involving theoretical knowledge and personal characteristics of the student (predictive and creative skills, independence, etc.), allows, in our view, to solve the following tasks:

- to orient the student at need fluency and operating knowledge of educational material;
- to deepen the student's professional position in the process of communication with teachers on scientific and theoretical issues;
- to deepen the self-esteem of professional readiness of the student and his willingness directly to the exam;
- to exclude "the effect of the lottery" during the students' answers.

## Discussions

Various aspects of the examination were considered in the researches of psychologists and teachers. There are a lot of works, showing the basic questions

of organization and methodical support of the implementation of the control functions in the educational process, a technique of written, oral, graphical control of knowledge, an individual, frontal and thematic quiz was disclosed, requirements to the quality of knowledge of students to evaluate their oral and written replies on the various disciplines were formed. In the 60-70 with the development of programmed instruction and extensive introduction technical means in the educational process, new aspects appeared in the study of problems concerning the reliability and effectiveness of different types of test tasks (Kartashova, 2014). There is interest to the foreign methods of testing and its transposition into the domestic "soil" (Avanesov, 1989; Ulasevich, 2013; Chizhova, 2013). The most fundamental work on the monitoring and evaluation KSA (knowledge, skills, attainments) should include works Sh.A. Amonashvili (1984) and E.I. Perovsky (1960). The need for changes in traditional practice of monitoring and evaluation of knowledge was substantiated by scientists G.U. Ksenzova, V.A. Calney & S.E. Shishov (1999) and etc. with the development of methodological bases of monitoring the quality of education in the system "teacher - pupil", analysis and adjustment of appraisal activity of subjects of educational process (Ksenzova, 2002). However, researchers conducted in "this line" are directed to the consideration particular control problems KSA, touching the actual exam passing, without a comprehensive analysis. Besides, one of the "weak spot" of modern examination is undiagnostically defined learning objectives, which are the planned result, which also affects the quality of specialist training. Hence there is the lack of research of features and capabilities of exams in various academic disciplines in the system of vocational education.

## Conclusion

Proposed on the basis of developed didactic conditions and means, multicomponent examination procedure, having been built on tiered and student-activity approaches is, in our view, since multifunctional because:

- can be used for all levels of education and disciplines (Humanities, Mathematics and Physics cycles and etc.);
- focused on the different stages of the examination control in vocational education:
  - a) landmark exam can be introduced as proficiency examination, but tasks are differentiated both on two levels, if an examination on general subjects, as well as on three levels, if it is on special subjects;
  - b) using the author's approach on the final (course) exam allows the student to systematize, summarize and logically build all system of KSA on the discipline system, develop independence, strengthen vocational and educational interest, and above all to prepare the student for the final phase of training;
  - c) the final control, organized in the form of diploma projects or public examinations "absorbs" and reflects all the elements of proficiency examinations: reproduction, analytical work and creativity. During the research, in addition to identifying the theoretical foundations of improving the examination control, we have hold experimental work to develop options for the complex examination measures, the results of which we will cover in the next article.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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### References

- Amonashvili, Sh. A. (1984). *Educational and educational function of school evaluation exercises: experimental pedagogical research*. Moscow: Pedagogy. 296 p.
- Archangelskiy, S. I. (1980). *The educational process in high school, his legitimate bases and methods*. Moscow: Higher School. 368 p.
- Avanesov, V. S. (1989). *Fundamentals of the scientific organization of the pedagogical control in high school*. Moscow: MISA. 168 p.
- Bespalko, V. P. (1970). *Programmed learning*. Moscow: Higher School. 300.
- Bespalko, V. P. & Tatur, Y. G. (1989). Systemic and methodological support of the educational process of training. Moscow: Higher School, 143 p.
- Bloom, B. S. (1956) *Taxonomy of Educational Objectives, The Classification of Educational Goals*, New York, Longmans: Green and Company, 207 p.
- Bolotov, V. (2012). Evaluation of the quality of education. Retrospectives and prospects. *School of Management*, 5, 9-11.
- Calney, V.A. & Shishov, S. (2010). Multicenter analysis of the quality of education. *The quality of education in schools*, 3, 3 - 11.
- Chizhova, N. N. (2013). Testing as a form of evaluation of the quality of education. *Vocational education*, 2, 51-52.
- Ibragimov, G. I. (2007). *The quality of education in a vocational school*. Kazan: Kazan School. 248 p.
- Calney, V. A. & Shishov, S. E. (1999). *Teaching quality monitoring technology in the system "teacher - pupil"*. Moscow: Russia Pedagogical Society. 275 p.
- Kartashova, O. S. & Pushnikova, V. P. (2014). Use of automated quality assessment systems of education and evaluation of expected results as an incentive to the development of educational space in an innovative mode. *Quality Management Education*, 2, 85-94.
- Ksenzova, G. Y. (2002). *The estimated activity of the teacher*. Moscow: Russia Pedagogical Society. 128.
- Nokhrina, N. (2000). test control system. *Higher education in Russia*, 1, 106-107.
- Perovsky, E. I. (1960). *Test your knowledge of students in high school*. Moscow: Publishing House of the Academy of Pedagogical Sciences of the RSFSR. 511 p.
- The concept of the Federal target program of education development for 2016-2020 years, (2014) Direct access: <http://government.ru/media/files/mlorxfXbbCk.pdf>
- Ulasevich, O. N. & Volkov, A. V. (2013) The school system of education quality assessment. Managing a modern school. *The director of studies*, 2, 35 - 53.