# Formative assessment as a tool for monitoring educational results of subjects in school

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**Abstract:** The article reveals the specifics of control and assessment activities in the system of basic general education in order to diagnose and assess the planned results of mastering the basic educational program, monitoring the subject achievements of students by means of formative assessment. In the article, the definition of the concept "formative assessment", its criteria and distinctive features are described. The key strategies and the most effective methods and techniques of formative assessment that the usage in the practice of teaching subjects in school are listed.

**Keywords:** control works, evaluation activities, formative assessment, summative assessment educational outcomes of subjects, monitoring of subject, monitoring results in school.

## I. Introduction

At present, there is a significant imbalance between the requirements for job seekers by employers and the quality of training of graduates of professional school in terms of the formation of a holistic, integral-systemic thinking among graduates [2]. It is a difficult to predict conditions, the successful work of any university is impossible without continuous improvement of its quality improvement activities, educational, scientific, information and other services [15].

The objectivity of monitoring results directly depends on its organized and well-built system integrated in the university. This system contains subsystems that, in combination, make it possible to carry out comprehensive monitoring:
- set of monitoring indicators;
- subjects of monitoring;
- tools and tools for monitoring activities;
- monitoring activities.

A set of monitoring indicators means a complex objective criteria that allow us to present the current state of educational system and its qualitative and quantitative changes. The subjects of monitoring include educational or specialized external audit of the organization, their structural divisions and employees, directly performing monitoring functions.

The tasks of monitoring the quality of education are:
- development of objective criteria that can show the dynamics of qualitative and quantitative indicators of the educational system;
- assessment and grouping of information reflecting the current state and further perspectives of the educational system;
- Periodic updating of up-to-date information about current educational processes;
- tracking information necessary to address management issues of education.

## II. Literature review

The need for monitoring educational services and their individual elements due to the desire to diagnose, analyze, correct, predict changes in educational processes that are the basis for making managerial decisions. These decisions should be timely and based on the information received, monitoring information that is subject to control by the subjects monitoring.

According to M.M. Potashnik, the management of the educational system should be adaptive in relation to changing educational processes [8, 9]. Theoretical developments in the field of assessing the quality of the educational process were engaged in A.P. Egorshin, V.A. Kalney, M.M. Potashnik, A.I. Subetto, S.E. Shishov, E.A. Yamburg [8, 9, 12, 14,15].

The theoretical foundations for monitoring the quality of education are also set out in the works R.A. Gilmanova, V.G. Hump, H.A. Selezneva, S.E. Shishova, V.P. Panasyuk and others [9, 13].

Also, the issue of quality control of education is found in the works of scientists: S.I. Arkhangelsky, B.G. Anan'eva, I.A. Zimnyaya and others [4, 3, 13].

There were high requirements for the quality of knowledge and skills of university graduates. The consequence of such requirements is the development and integration of methods of quality training of students, as well as objective forms of assessment of their knowledge and professional skills. In the practice of domestic universities, a score-rating system of control is used, which is based on cumulative assessment indicators in progress and quality of mastering educational material by students.

**III.    Materials and methods,**

Monitoring of social systems is differentiated according to the goals and materials of the analysis. By goals, the following can be distinguished:

1.    information monitoring - collection, classification and exchange of information. It does not use a specially organized survey to collect information;

2.    basic monitoring aims at identifying problems and threats at the stages, previous stages of management;

3.    problematic monitoring - aimed at identifying patterns of actions, threats and management weaknesses.

This type of monitoring is divided into two components:

-    problematic monitoring of functioning - is of a local nature and is devoted to the basic study of one task or problem, unlimited time frame;

-    problem monitoring of development is used to solve simultaneously several tasks or problems, while the solution of quality issues is limited to narrow General education issues

4.    management monitoring - monitors and evaluates positive effects from primary and secondary management decisions. This type of monitoring can be used in education to identify the effect of the influence of internal and external factors in grading.

Modern society requires universities to actively participate in informatization educational process, in turn, information depends on financial, technical opportunities and planned policy for the development of e-learning in the educational institution. Accordingly, in each educational institution, the process of information proceeds individually [5, 7, 15].

In pedagogical universities there is some specificity of relations teaching staff to e-education. This is expressed in the understanding teachers that e-learning is not only a technical component, but also didactic, methodical, pedagogical, socio-psychological. Teachers are ready to implement e-learning not only to achieve economic efficiency, but also to improve pedagogical and socio-psychological indicators. Since there is a high level among teachers pedagogical reflection, they are also often ready for introspection of individual needs of students. At the same time, some teachers experience psychological and professional difficulties before using electronic teaching technologies because they do not have confidence and guarantees that such technologies will be pedagogically expedient and will give a qualitative result [6, 8, 11].

Monitoring of e-education includes three components:

1. Organization of the educational process. Monitoring the organization of the educational process is aimed at obtaining dynamic characteristics of the state of the educational process. The results of such an assessment, in addition to the information load, directly affect further development of the adopted strategy and tactics of organizing training in order to improve pedagogical performance. To monitor the educational process that carrying out by means of the e-learning system, the following indicators: the activity of students in the electronic course, statistics of passing training programs, course completion statistics, assessment of outcomes (intermediate an final) training, the effectiveness of technical support for training, etc.

2. Electronic educational materials. Monitoring of e-learning materials allows you to identify their current state, positive aspects and disadvantages from the position, achieve pedagogical goals and objectives, and then form a program according to them further improvement. To monitor e-learning materials as measured parameters, you can use the assessment of test items and the

assessment educational materials. To evaluate tests, we use the following information: a report on test results, data on each question of the test task, final test results for the course, tables of answers to test questions, etc.

3. User satisfaction with the learning process. Monitoring user satisfaction is a major feedback tool learning participants: students and teachers. Participants as needed can be expanded to include professionals who accompany the learning process (methodologists, specialists of the dean's office, educational and methodological department, etc.). Because e-learning reduces face-to-face contact to a greater extent "teacher - student", such monitoring is the only means for teacher to receive feedback from the student. To assess the level satisfaction of users, the following were considered as the main learning characteristics: assessment of the quality of learning using e-learning training, assessment of the level of personal motivation at the beginning and at the end of training, assessment of new training formats, etc.

In the modern world, the requirements for both content are constantly increasing. education, forms of its implementation, pedagogical technologies and teaching methods, and to modern means of assessing educational results [7]. Various kinds of special measurements can be used to evaluate training materials. The article deals with monitoring the evaluation of the form of presentation of educational material. For example, learner can count the number of interactive and multimedia objects, available in the e-course. However, more complex procedures, such as methods for measuring interest in learning. Using these algorithms, one can identify the influence of various forms of presentation of educational content on the degree of its interest with side of the students. The data obtained can help teachers and developers online courses to adjust educational content [10, 11, 12].

Using the described tools, monitoring the e-learning system allows learner to assess the current state of the educational process, make decisions about the future development of the system, plan activities to improve the pedagogical effectiveness of the educational process. Considering the monitoring of electronic learning materials using the example of assessing two groups of test questions. The first group - questions to which everyone answered correctly students. The second group - questions for which not a single correct answer was given response. This situation requires further analysis. Concerning the questions of the first group, it can be concluded that they are too easy or the topic is assimilated by students on 100%, regarding the questions of the second group - there is an excessive complication the wording of the question or topic is not assimilated by the students. Thus, it was revealed that the problem is that the test results are interpreted ambiguously [1, 2].

One of the ways to check the development of competencies is also a case task. Each competence corresponds to certain knowledge, skills and abilities, therefore, to determine the degree of development of a particular competence, teacher need to set the level of knowledge, skills and abilities corresponding to this competence. To determine the formation of the competence, it is necessary to decompose on knowledge, skills and proficiency. The author proposes the following components, broken down by levels of development - optimal, acceptable, critical (Table 1).

*Table 1 – Level of competence*

| Competence | Optimal | Valid | Critical |
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| the ability to solve the standard tasks of professional activity based on information and bibliographic culture using information and communication technologies and taking into account the basic requirements of information security | Knows: methodology for solving professional problems by means of information technology; a methodology for finding information in a heterogeneous environment, relevant information in texts, relevant documents based on ontologies, search robots, intelligent agents; basic information security requirements. Able: to solve standard tasks of professional activity with their application; search for information in a heterogeneous environment, relevant information in texts, relevant documents based on ontologies, search robots, intelligent agents; provide information security in the context of the application of information and communication technologies. Owns: methodology for solving professional problems by means of information technology; a methodology for finding information in a heterogeneous environment, relevant information in texts, relevant documents based on ontologies, search robots, intelligent agents; the main ways to ensure | Knows: modern technical and software for the implementation of information processes in professional activities; the main ways of finding information in a heterogeneous environment based on search robots and intelligent agents; basic information security requirements, including information security tools. Able: to use the basic functions of information systems to solve professional problems; search for information based on search robots and intelligent agents; use the basic approaches to ensuring information security in the application of information and communication technologies. He owns: skills in using the basic functions of information systems to solve professional problems; information retrieval skills based on search robots and intelligent agents; skills of using the basic approaches to ensuring information security | Knows: individual approaches to the use of technical and software information processes in professional activities; individual methods of searching for information in a heterogeneous environment based on search robots and intelligent agents; individual approaches to ensuring information security in the context of the application of information and communication technologies. Able: to use the individual functions of information systems to solve professional problems; apply separate methods of searching for information in computer networks; use separate approaches to ensuring information security in the application of information and communication technologies. He owns: skills in using certain functions of information systems to solve professional problems; the skills of using individual |

| | information security. | in the application of information and communication technologies | methods of searching for information in computer networks; the skills of using individual approaches to ensuring information security in the application of information and communication technologies |
|---|---|---|---|
| | | | |

Based on the specified knowledge and skills, as well as skills, a verification test, which includes questions on the disciplines "Computer and peripheral equipment", "Introduction to the profession", "Internet technologies". The length of the test is 28 tasks. The test consists of two parts. First part: homogeneous test - 26 tasks. The maximum score for each task is 1 point. The weighting factor is 2. The maximum score for the test is 52 points ($26 \times 2 = 52$). The second part contains 2 case tasks. The maximum score for each case is 6 points (two tasks in each case, each task 3 points). The weighting factor is 4. The maximum score for all case tasks is 48 points ($12 \times 4 = 48$). The final maximum score for the entire work is 100 points.

In accordance with the percentage scale, the satisfaction of scientific and pedagogical employees by the conditions of organization of the educational process according to the program and satisfaction of students with the quality of the provision of educational services in in this area is 84%, which corresponds to the degree of "complete satisfaction."

## III.    Research results

Any scientific experimental research is unthinkable without its methodology. This applies to the organization and conduct of work on quality monitoring of education. When assessing the quality of mastering knowledge, skills and abilities of students, the point-rating system of estimates. Before studying the discipline, the student must check out the following components:
- the total number of topics and their specific content;
- recommended educational and methodical literature;
- criteria for evaluating the work of a student (in points) for the performance of laboratory work, filling out a portfolio, work in practical classes, etc .;
- deadlines for completing each task.

Assessment of the degree of preparedness of a student in a discipline can be objectively determined by the rating system. An important factor in improving the quality of education is feedback in system "student - teacher", "student - educational organization", "teacher - educational organization".

## IV.    Discussion and Conclusions

Based on the results of the pedagogical experiment, the following conclusions can be drawn:

1. To determine the level of knowledge, skills and abilities (development competencies) it is advisable:
- develop means for assessing the formation of competencies;
- apply classical and innovative forms of assessment;
   - control the level of mastering knowledge by students during the entire academic process.

During the experiment, test tasks were developed and tested for establishing the level of formation of the competence in specialized subjects for students. The results were as follows: average score was 76 out of 100, which corresponds to the assessment of "good". Transfer developed a system for monitoring knowledge, skills and abilities in profile disciplines can be adapted to the requirements of the Educational Standard. To improve the quality of the educational process, it is necessary to periodically conduct surveys among participants in the educational process on the topic of compliance real learning conditions to their expectations. Conducted survey of scientific and pedagogical workers and students that participating in the educational process in the direction "Applied Informatics", showed the complete satisfaction of the participants with the quality of organization and provision of educational services.

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