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FORMATIVE ASSESSMENT OF EDUCATIONAL ACHIEVEMENTS OF STUDENTS IN PRIMARY EDUCATION: TEACHER TRAINING

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Abstract

Assessment should help the student in the development of his educational independence, the ability to learn. Formative assessment is fully consistent with modern educational values and objectives. It has been proven that formative assessment improves the quality of education. However, many teachers do not use methods that help students learn. What is it about formative assessment that is daunting or difficult for teachers? What are the strategies for building the related competence of teachers? The purpose of the study is to propose a strategy for preparing student teachers for their use of formative assessment procedures in the classroom. Research hypothesis: this strategy is to introduce formative assessment into the process of professional education of student teachers. The study is aimed at identifying the connection between formative assessment and research-reflective independence of students, as well as the development of techniques for formative assessment. Methods used: constructive-genetic, modeling, analysis of the experience of university teachers in the use of formative assessment, an experiment in Moscow pedagogical universities. Diagnostic techniques: questioning, analysis of technological maps of lessons. Indicators and scales of competence levels have been developed, including knowledge, performance, and creativity. Experimental teaching has shown a positive dynamic in the formative assessment competence of future teachers. The teacher applies formative assessment in the classroom if he is convinced of its effectiveness. The strategy for preparing student teachers for the use of formative assessment in the classroom is to involve them in the procedures of formative assessment in the process of professional education.

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Keywords: Teacher training, formative assessment, assessment competence.



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1. Introduction

At the centre of modern primary general education there is an educational concept based on placing the student's personality at the centre of the educational process, realizing such training (or teaching) in which the student becomes its subject. The leading goal is to teach how to learn, that is, the development of educational independence of the student. The components of this skill include: the ability to set educational goals, the ability to assess one's own educational progress and to detect deficiencies. The discovered deficiencies are a navigator for an individual educational trajectory, which guide the student's activities. A deficiency is a trigger for setting new educational goals.

Hence, it follows that the old form of assessment runs counter to the new practice of teaching and learning and does not accommodate their changed content. Assessment should help the student in the development of his educational independence, the ability to learn. At the same time, the assessment system should be naturally built into the lesson and be flexible, adapt to the educational situations and educational needs of each student. All this is fully realized in the technologies of formative assessment. The formative assessment is a new pedagogical tool that fully meets modern educational values and objectives (Zemlyanskaya, 2016).

2. Problem Statement

The considerable experience of Russian and foreign schools using the formative assessment allowed us to summarize some results.

Formative Assessment and Assessment for Learning are synonymous. The first term "got accustomed" in Russian literature. In Russian pedagogy, the concept of "mark-free teaching" (Zemlyanskaya, 2019), which has been compulsory for the first grade of school since 1998, is close to the concept under consideration.

The terms Formative and Summative assessment were proposed by Michael Scriven in 1967 to explain the two different roles that assessment could play in the learning process: Assessment for Learning, or Formative assessment, and Summative Assessment, the latter of which is carried out for the purpose of classification and reporting, and therefore is often interpreted as a final assessment (Zemlyanskaya, 2016).

Today there is strong evidence that the introduction of formative assessment improves the quality of school education. The conclusion was based on a review of more than 15 articles published by researchers from several countries (Ainsworth, 2009). The importance of exploratory behavior for enhancing learning motivation has been studied and proven (Black, Harrison, Lee, Marshall, & Wiliam, 2004). In numerous journal publications, teachers share their experience of using certain assessment techniques (Heritage, 2010).

However, it turns out that many teachers do not plan lessons and do not engage students in classroom dialogue in ways that would help them learn. The research problem can be formulated as follows:

What are the strategies for fostering value-based teacher attitudes towards the use of formative assessment in their classroom? What is it about formative assessment technologies that is daunting or difficult for teachers? What is the content of preparing teachers for the transition to formative assessment in the classroom?

3. Research Questions

The research problem and the main research questions were clarified in the process of a pilot survey organized by us with the participation of students of the Moscow Pedagogical State University in 2017-2019, which involved 210 teachers from 120 primary schools in Russia. The survey demonstrated that in most schools the teacher was the only “measure” of learning outcomes, and the tools of formative assessment were not used enough. The practice of grading assessment prevails, which tends to emphasize competition rather than personal improvement. Assessment methods and techniques that teachers use are inefficient in increasing student motivation in learning. Teacher evaluative judgments are more likely to focus on performance deficiencies, so comments on evaluations often have a negative impact, especially on low-performing students who tend to think they "can't do it" and therefore cannot learn.

It was found that teachers do not pay enough attention to the design of educational situations of assessment in the lesson and their special organization. Teachers prefer to use scores, grades, or other graphic symbols, and do not make detailed comments on the educational achievements of students. A number of teachers from time to time invite students to evaluate their own work or arrange for peer-review of students' work with each other. However, teachers do not plan and do not discuss the results of such assessment in class with students and devote little time to this in the lesson.

Teachers believe that commenting on the work, organizing discussions, and clarifying surveys on the work of students requires additional work and time from them.

Teachers' competence is low: firstly, their own educational experience dominates, in which there was no place for formative assessment. Secondly, in the educational programs of universities there are no separate courses devoted to the theory and practice of formative assessment, the retraining courses for teachers are informative, not practice-oriented.

When designing a lesson, working teachers are guided by standard tools from teaching guidelines and manuals, which provide average (standardized) recommendations that are not always adequate to the characteristics of the class and individual students. Teachers lack the motivation and competence to design and stage such situations and procedures.

Thus, the main research question can be formulated:

What changes should be made to the system of training or retraining of teachers to form their motivation and competence in using formative assessment in their classroom for teaching?

4. Purpose of the Study

Object / area of study: professional pedagogical education (formal and non-formal).

Subject of research: the process of training teachers for the effective use of formative assessment in the classroom.

Purpose: to propose a strategy for training teachers to use formative assessment procedures for assessing educational achievements of schoolchildren in primary general education.

Research hypothesis: one of the strategies in training student teachers and practicing teachers for the use of formative assessment of the educational achievements of schoolchildren is to build tools and

procedures for monitoring their educational achievements based on the methodology of formative assessment.

Research Objectives:

- To identify the procedures of formative assessment that can be applied in classroom lessons with university students - future teachers and in lessons with practicing teachers in refresher courses.
- To organize and conduct experimental work on the use of formative assessment procedures during classroom studies at the university.

5. Research Methods

5.1. Research methodology

To prepare this research article, a constructive-genetic method was used and modeling of elements of educational programs was applied. The experience of university teachers in the use of formative assessment techniques was studied and analyzed (Cansiz & Cansiz, 2019; Chandra & Baikina, 2018; Zemlyanskaya, 2020).

As a result, the following procedures were identified and the method of their use in the process of classroom studies was described in detail:

- mutual evaluation of work in groups and organization of educational and professional discussions;
- preparation by students of reflective self-reports;
- presentation by teachers of detailed comments on the work of students;
- formative use of final tests and evaluation means of intermediate tests.

To carry out the required experimental work, we organized cooperation with a group of teachers who shared our assumption about the effectiveness of using new forms of assessment in the process of teacher training and were ready to introduce these procedures into the pedagogical process (a total of 9 university teachers participated).

Experimental teaching was carried out at pedagogical universities in Moscow; it was attended by undergraduate and graduate students studying in the areas of Pedagogical Education and Psychological and Pedagogical Education focusing on the Primary education. In total, 10 experimental groups and the same number of control groups participated. The experiment also involved 4 groups of trainees of advanced training courses for primary school teachers.

Each teacher participating in the experiment independently chose the groups of students and the discipline to apply formative assessment in the process of teaching. The following disciplines were subject to experimental teaching: "Pedagogical technologies of developing education", "Pedagogy of primary education", "Modern system of continuous education for children of preschool and school age", "General pedagogy and the foundations of general didactics", "Pedagogical design", "Pedagogy".

For each experimental group of students, the teacher defined a control group. In some cases, it was a parallel group taught by the same teacher this year or the previous year. In the latter case, the statements and ratings of the previous year were "reviewed", and the participants in the experimental work controlled possible differences in the levels of educational achievements of students using the scores of the past years.

In some cases, a control group was a group of another teacher, who implemented the same discipline in parallel.

Since the educational programs of universities provided for various forms of intermediate attestation in selected disciplines and various scales, the level of improvement in educational results of students was determined in different ways: on the basis of assessments on the final exam for a module (15-point scale); or using the final examinations in the discipline (5-point scale), or based on point ratings obtained at the intermediate certification in the discipline (100-point scale). To compare the numerical data, the Cramer-Welch test was used. The reliability of the differences in the characteristics of the compared samples for 11 out of 14 groups of student teachers participating in the experiment (confidence level 95%).

An increase in the competence of a student-pedagogue or a practicing teacher in the formative assessment of the educational results of schoolchildren in the experiment was measured using the following methods: a) questioning; b) analysis of technological maps (scenarios) of lessons developed by students. The questions of the questionnaires made it possible to identify the following indicators: the cognitive basis of competence (understanding the essence of formative assessment); value-semantic attitude to the use of formative procedures in the classroom; readiness to update competence (motivation and experience of use). The analysis of the lesson scenarios was carried out on the basis of three indicators: the presence of formative assessment in the educational situation of the lesson scenario, its design in accordance with the algorithm of the formative assessment, the logic of the choice of tools and inclusion in the lesson structure. 198 students from the experimental groups and 172 people from the control groups participated in the tests. Scales of competence levels were developed: knowledge-based (36%), performance-related (48%), and creativity (16% of the number of students in experimental groups) (table 01).

Table 01. Level-based characteristic of the competence of student teachers after the experiment (%)

Competence levels	Knowledge level	Performance level	Creativity level	Total
Experimental groups	36	48	16	100
Control groups	58	34	8	100

6. Findings

6.1. Mutual evaluation of work in groups and the organization of educational and professional discussions

In the classroom lesson, students were asked to split in groups of 4-6 people and discuss each other's completed work by lot or "by chain". The system of evaluation criteria and indicators concretizing them was previously discussed collectively. It was proposed to prepare a general opinion from the group, highlighting the best works, typical mistakes, ways of correcting the work performed.

The initial methodological basis of this procedure is the hypothesis of Vygotsky's cultural-historical theory that, by and large, any teaching is a transition, or translation of what is accumulated in the activities and communication of people into the consciousness of the student. The scientist wrote: "the task of analysis is to show how an individual reaction arises from the forms of collective life" (Vygotsky, 1983, p.146). That is, in various situations of interaction, for the reflection to occur there must be difficulty in the orientation of "I and the other", since reflection of this type makes it possible to develop pedagogical activity

through reflection of pedagogical experience. This makes it possible to form a reflexive attitude of the student-pedagogue to the professional action being mastered - the formative assessment. Discussions with other students and the teacher regarding the conditions and ways of improving the action of formative assessment allows not just to appropriate it, but also to understand it in the space of professional opportunities, that is, to carry out professional and ideological generalization. The methodology for organizing educational discussions in professional education is discussed in detail in our works (Zemlyanskaya, 2020; Zemlyanskaya & Sitnichenko, 2015), in the classic works of Robert Slavin, as well as in a number of other works (Colby, Lambert, & McGee, 2016; Moradi, Faghiharam, & Ghasempour, 2018).

"The teacher did not check our laboratory work herself and offered to evaluate them in micro-groups "in a chain". We were surprised and decided at first that she did so because she did not have time to prepare for the lesson. When I read Vera's work, I realized that she focused on the work much more thoroughly than I did. Her laboratory work contained detailed observations of children, and this allowed her to draw important conclusions about children. My conclusions were not sufficiently substantiated. I withdrew my lab work and asked the instructor for permission to submit it in a week. I will redo it (Lena S., Bachelor of Primary Education)."

"After the evaluation of my draft lesson by other students, it is easier for me to admit my mistakes. I hope that not only I learn as a result of the project, but also those listeners who evaluated it. Next time I will have to argue my work more clearly, as they said: "It is difficult to understand ...", "For what purpose was this done?", "Why is this teaching method chosen?" I will rework my draft lesson to make it clear. (N.G., primary school teacher, student of the advanced training program)"

6.2. Reflexive self-reports of students

The increase in motivation and the semantic orientation of student teachers in formative assessment was carried out from the standpoint of a reflexive approach (N.G. Alekseev). The influence of reflection on learning is revealed in works (Beregovaya et al., 2018; Fullan & Quinn, 2016; Walahoski & Suzanne, 2012). The student's reflexive activity, his self-analysis of his own achievements and failures is set as a trigger for the formation of his request for the further progress of professional education, as well as self-determination in professional activity (Wong, 2016). Students' reflexive self-assessment of works was actualized based on the following techniques.

Use of "know - want to know - learned" tables.

Self-reports on one's own participation in formative assessment situations as a learner. For this, the teacher of the discipline at the university for the initial, current or midterm assessment of students to the maximum extent uses the ideology and algorithms of formative assessment of educational achievements in combination with the standard format of summative testing in the discipline (the so-called intermediate assessment). The experienced sensory experience of such an assessment of his own achievements then allows the student-pedagogue to predict the likely responses and reactions of his students to the situations of assessment.

Self-reports on practices. Preparation of detailed answers to questions such as: "How does the assessment situation I have organized affect the students?", "Do I act correctly in the assessment situation

from the perspective of my general principles?", "How does the student perceive my comments or lack of them?", "What is the motivation of my activity?" (Zemlyanskaya, 2015; Zemlyanskaya, Galyamova, & Bezborodova, 2018) and others.

Comparison of model and real assessment situations. The subject of reflexive introspection was the difference between the model of formative assessment, mastered in a model situation in the classroom at the university and in real conditions of professional activity. The failure or ineffectiveness of such an action was analyzed, and the action was corrected based on self-determination in the profession, personal preferences and personality orientation, and subjective experience. We believed that the motivational-value attitude to the use of formative assessment will be realized only if each student-pedagogue finds his own ways of implementing his procedures, which have developed based on his own practice in the classroom.

6.3. Presentation by teachers of detailed comments on the work of students

Obviously, comments become the effective means of feedback if students use them to guide their future work. Providing comments to students helps them focus on learning objectives rather than trying to challenge a score or grade. When developing methodological recommendations for making comments by a teacher, we proceeded from the following provisions:

The commentary should be based on the criteria for evaluating the work, which were developed in advance and agreed with the students; comments should only relate to key elements of the study.

The teacher's evasion of explanations, the uncertainty of the assessment, use of stereotyped comments is viewed by students extremely negatively, since it disorganizes the student, does not orient him towards self-education and development.

The commentary should not be only critical and point out deficiencies in the work.

At the beginning of the commentary, the strengths of the work and the individual progress of the student should be pointed out.

The commentary should end with a clear prescription of what exactly should be improved by the student, indicate the forms and deadline for completion.

It is inappropriate to use templates for composing a comment (for example: "The work is done completely / incompletely / partially"). They are perceived by students as a formality and are not used by them to improve their work. Comments should be personalized.

Additional time should be allowed for in class. Before completing the assignment - for a detailed discussion or even development, together with students, of criteria and indicators for evaluating the work. After the completed and graded assignment - to rewrite some parts of the work in the classroom (Platonova et al., 2017).

Teacher V.A.: "I have always commented on students' work, but I did it verbally in the classroom. When I began to use written comments on student work, I discovered the following. Students stopped demanding an explanation of why a particular point was given for the work. They began to respond to written comments, to take my comments into account in their subsequent works. Apparently, oral commentary in class was perceived by them painfully, and was considered as a personal reproach, rather

than as a guide to learning. When I was making written comments, I saw that some of the assignments were composed by me incorrectly, with unclear wording, so there was a need to redo the assignment. "

6.4. Formative use of final tests or review questions. The following procedures were used

Students were presented with a list of didactic units of a discipline or topic and were asked to mark them with traffic light signs (red, yellow and green) or other signs. For instance: (V) a "tick" marks something that no longer causes difficulties; (-) a minus sign marks something that is not clear; (+) a plus sign indicates something that can help other students; (?) "question mark" is put if something is unclear, or a question arose. Then the teacher instructed several students in the group to collect and summarize the results of the marking. After that, working groups of students were formed to refine the unclear or incomprehensible.

Students got into groups of 4 - 6 people and they were asked to draw up a mental map (knowledge map, mind maps) on the topic / section. Maps designed by different groups of students were compared and analyzed in the class.

Students were asked to independently formulate test questions on a specific topic / section set by the teacher. The tests were then mixed up and presented to other students in the group to be sure they could answer the questions.

The formative significance of these and other procedures is explained by the actions that the student must perform, namely:

- outline for yourself the boundaries of this topic (if necessary);
- structure information and practical experience in the context of the topic;
- make up a statement, related to the topic, in the form of a question / task;
- comply with the proposed test format;
- predict correct and incorrect answers, while the latter should outwardly be similar to correct ones,

etc. (Zemlyanskaya, 2015).

"The teacher suggested that we work in the microgroups to develop tests for certification. It seemed to me strange and unnecessary: how can I, a student, know what exactly I need to learn? We started writing tests. I had to read lectures several times. After one lecture, other students and I could not make tests, it became clear that we did not understand the content. To understand the topic, I had to go to the Internet, and the teacher explained something. When the tests were prepared, it became clear that in this way the teacher forced us to work through the material. When I work with children, I will definitely take this technique into service! (Alisa V., undergraduate student "Primary education")".

7. Conclusion

The teacher's competence in using formative assessment in the classroom includes: a) the motivational aspect; b) the cognitive aspect (awareness, understanding of the purpose and content of formative assessment procedures); c) experience in participating or organizing formative assessment in a variety of standard and non-standard situations; d) value-semantic attitude (importance, materiality, significance); e) emotional-volitional regulation in the process and as a result of participation in formative assessment (obtaining satisfaction, adhering to etiquette and norms, manifesting one's own initiative, the

ability to bear responsibility). Thus, one of the strategies for preparing students-pedagogues and teachers for the use of formative assessment of the educational achievements of schoolchildren is the organization of current monitoring of their progress based on the methodology of formative assessment.

The teacher begins to use formative assessment in the classroom only if he is convinced of the effectiveness of this toolkit. Semantic conviction is formed if the teacher himself, in his own preparation, is involved in the procedures of formative assessment as a student.

As a result of the study, the following procedures were identified and the methodology for their use in the process of classroom studies was described in detail:

- Mutual evaluation of work in groups and organization of educational and professional discussions;
- Preparation by students of reflective self-reports;
- Presentation by teachers of detailed comments on the work of students;
- Formative use of final tests and evaluation means of intermediate tests.

The educational experience acquired by the student-pedagogue, his reflexive activity, self-analysis of his own achievements and failures, participation in educational and professional discussions on assessing the results of his learning, are set as the starting mechanism for forming his request regarding the further progress of professional education, as well as self-determination in his professional activity.

Experimental teaching in universities using the selected procedures has shown a positive dynamic in the formation of the competence of future teachers to use formative assessment.

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