

# Monitoring the Validity of Formative Assessment: Tools and Methods

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## Abstracts

The relevance of the study is related to the need to increase the validity of formative assessment in classrooms, which is a factor in improving the quality of education and the development of students. The purpose of the study is to determine the criteria for the validity of formative assessment, which will allow gaps in its implementation in national schools and provide professional support to teachers to improve practice. The research methods used were lesson observation (the analysis of teachers' approaches to formative assessment of students' achievements) and a questionnaire, which revealed similarities and differences in the views of teachers and students on the practice of formative assessment. The results showed that the experience of formative assessment of teachers is associated with their knowledge and skills of implementing formative assessment. However, it also became known that the knowledge and views of teachers about formative assessment does not always correspond to their practice. The results of the study will allow us to develop guidelines for the implementation of formative assessment and ensuring its validity, which will contribute to improving the quality of education in schools in Kazakhstan.

**Keywords:** formative assessment, assessment, validity of formative assessment, assessment for training, assessment practice.

## 1. Introduction

Modern research shows that formative assessment is becoming increasingly popular in educational systems around the world (Babinčáková, Ganajová & Bernard, 2023; Yan & Chiu, 2023). Research demonstrates the ambiguous effectiveness of its application, highlighting the need for a deeper understanding of its nature and the factors influencing its outcomes. Formative assessment is a key component of the educational process, which is aimed at improving the quality of education and the development of students (Antoniou, & James, 2014; Brookhart, Moss & Long, 2010).

Its main purpose is to collect information about the current level of knowledge and skills of students to provide them with feedback and recommendations for improvement.

Among its distinctive features and advantages, it is noteworthy that, first, formative assessment is conducted throughout the lesson, allowing for real-time monitoring of progress and adjustment of teaching. Second, students actively participate in goal setting, result analysis, and the development of improvement strategies, thereby increasing their awareness of their own learning. Third, it helps students understand their objectives and the impact of their actions on achieving them.

In the process of formative assessment, teachers use a variety of methods and tools: oral questioning, written assignments, projects, self-assessment, peer assessment, discussions, and more.

Data from assessment should be informative for teachers and students, helping them to identify next steps and improve the educational process. These data serve as a basis for adjusting instruction.

The key to using assessment results effectively to improve learning is open dialogue and collaboration between teachers and students.

While formative assessment is intended to actively support the educational process, it does not always achieve this goal. Its effectiveness depends on various interconnected factors, such as: 1) task alignment, meaning systematic assessment does not guarantee alignment of tasks with educational program goals; 2) limited observations, as single observations of similar tasks do not provide a complete picture, requiring additional analysis and context; 3) inaccurate interpretation, where limited data can lead to incorrect conclusions about student learning or abilities.

As a result of these factors, unjustified conclusions may be drawn (early assessments of achievement or abilities may be inaccurate), and feedback may be distorted (poorly thought-out analysis and interpretation of data can lead to erroneous feedback and incorrect educational decisions).

The key to the effectiveness of formative assessment, its impact on the quality of education and student development, lies in ensuring validity, meaning alignment of the purpose and content of formative assessment practice with its concept.

The analysis of studies shows the diversity of concepts of formative assessment, which leads to

ambiguity in understanding its validity.

This study is aimed at determining the essence and validity criteria of formative assessment as tools for evaluating its effectiveness.

Formative assessment is considered in three aspects, as a tool, process, and function (Peter Yongqi Gu 2020; Shepard, 2009; Lyon, 2023). These aspects can be considered as criteria for the validity of formative assessment (Table 1).

Table 1. Formative assessment validity criteria

Components	Criteria
Content	- alignment of the content of the tasks with the learning objective
Procedural	<ul style="list-style-type: none"> <li>- data collection about students' learning;</li> <li>- interpretation of information.</li> <li>- feedback.</li> <li>- actions of the student and teacher to improve learning.</li> </ul>
Functions	<ul style="list-style-type: none"> <li>- informing.</li> <li>- forming.</li> </ul>

Validity is considered as a comprehensive characteristic that encompasses all three aspects of formative assessment.

So, let's analyze the criteria.

The substantive aspect indicates that the assessment content should accurately reflect what students are supposed to learn and measure the achievement of learning goals.

The procedural aspect involves using diverse methods to collect information about student learning, objectively and accurately analyzing information in line with learning objectives, providing constructive and useful feedback based on information interpretation, and engaging in collaborative efforts between teachers and students to enhance learning (Peter Yongqi Gu, 2020). The validity of formative assessment in the procedural aspect assesses the alignment of the procedure for implementing formative assessment by the teacher in the classroom with the aforementioned elements.

Most studies focus on the functional nature of formative assessment, which includes the functions of informing and forming (Table 1). Validity is primarily related to how the information received is interpreted and applied in the evaluation process (Stobart, 2012; Shepard, 2009).

The validity of formative assessment is achieved when all three aspects (substantive, procedural, and functional) are interconnected and aligned with each other.

The validation process involves systematic research aimed at confirming the validity of formative assessment, including verifying the alignment of assessment interpretations with educational goals; assessing how assessment results can be used to improve learning; gathering evidence of validity using various methods.

However, it should be noted that not all studies consider all three aspects of validity. In school practice, formative assessment is often used for grading rather than for improving learning.

This model can be used to develop and implement an effective formative assessment system in schools in Kazakhstan.

Validation is an integral stage that ensures the correctness and appropriateness of using formative assessment. It ensures that the data obtained are truly informative, accurate, and useful for supporting the learning process.

The success of validation largely depends on teachers' level of preparation, their knowledge, and skills in formative assessment (Andersson N., 2017; Monteiro V., 2021).

A competent teacher is a professional educator who understands learning goals and the essence of formative assessment; identifies success criteria that align with these goals; possesses skills in collecting and interpreting student learning data; and organizes actions to improve learning based on received feedback.

Validation is not just a check but a continuous and comprehensive process that helps:

- 1) identify and address deficiencies in the formative assessment system;
- 2) enhance its effectiveness and impact on improving learning;
- 3) ensure alignment of formative assessment with educational goals and objectives.

It is important to note that validation is not a one-time procedure but a systematic process that should be conducted on a regular basis.

A key condition for successful formative assessment is a clear understanding of specific learning goals and criteria by both teachers and students, against which their achievement will be assessed.

This aspect plays a fundamental role in interpreting assessment results, allowing comparison of student progress with predetermined educational standards and expectations.

Mutual understanding of educational goals and success criteria is essential for accurate and qualitative interpretation of formative assessment results and their subsequent use in pedagogical practice.

Expert knowledge in this field ensures coherence between learning goals, assessment methods, and achievable educational outcomes.

The effectiveness of formative assessment directly depends on the clarity of learning goals - the cornerstone of valid assessment.

Incorrect or unclear goal formulation, inappropriate choice of information collection tools, erroneous interpretation of results, inaccurate feedback, and unjustified decisions can all be detrimental to the entire assessment process.

Consider a foreign language lesson. A teacher's knowledge of curriculum standards, confidence in their language proficiency, and understanding of criteria for successful language task completion influence assessment much more than the assessment method itself.

A clearly formulated goal is the foundation of all formative assessment. A vague or inappropriate goal leads to misunderstandings and errors in interpretation of results.

Thus, understanding and clearly defining learning goals are fundamental to valid formative assessment.

Validation is an integral part of effective formative assessment, which must be carefully and systematically conducted at the classroom level.

Ideally, teachers should actively engage in assessing and validating their own formative assessment processes as they implement them in their classrooms.

This allows them to understand how well their assessment tools align with learning goals, assess whether these tools actually help students in their learning process.

However, teachers should constantly expand their professional networks, creating communities of assessment practitioners both within and beyond their school, which will enable them to exchange experiences, analyze assessment results, and discuss strategies for improving formative assessment.

Colleagues' perspectives and discussions can bring new ideas and approaches to formative assessment.

In the validation process of formative assessment, it is crucial to involve researchers from universities or educational research centers.

Their expertise in this field can be invaluable, especially if they conduct research in the field of formative assessment.

Researchers can enrich the process with theoretical and empirical knowledge and provide teachers with support and resources.

Periodic participation of researchers in communities of formative assessment practitioners allows them to offer their analytical perspective and assist in improving formative assessment.

Thus, validation of formative assessment is a collaborative process in which teachers, colleagues, and researchers actively interact, ensuring the effectiveness of formative assessment in the classroom and improving the learning process.

### Kazakhstan's Criterion-Based Assessment System: Experience and Perspectives

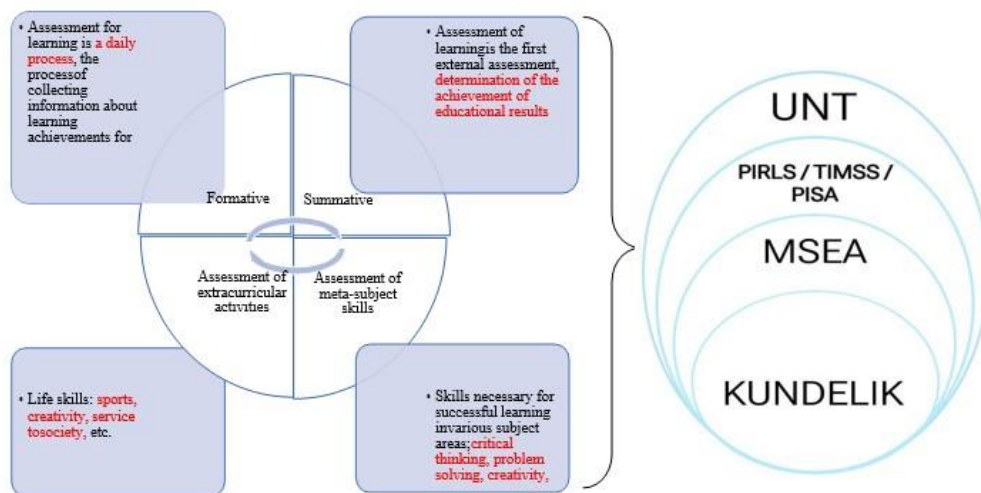
The criterion-based assessment system (CBAS), implemented in Kazakhstan since 2017, has become part of the update of secondary education content.

The development of CBAS was based on educational programs and the state compulsory education standard.

Its goals include ensuring accessibility of education, enhancing transparency of learning, and developing students' independence.

Criterion-based assessment is considered a system of both internal and external assessment, taking into account various aspects of students' educational activities, not just their academic achievements (Fig. 1).

**Figure 1. The system of internal and external assessment of students**



The internal assessment system (Fig.1) assumes the development of students not only academic knowledge, but also the skills necessary for successful study in various subject areas and in everyday life, which is further reflected in the external environment, for example, when enrolling in other educational institutions, international studies PIRLS, TIMSS, PISA or in the definition of professional activity.

To develop the necessary skills, the internal assessment system assumes consideration of the following actions on the part of teachers and students:

1) Formative and summative assessment or assessment for training is a daily process of collecting information about the achievements of students. This process turned out to be the most difficult for both teachers and students, since it required a systematic approach and the development of self- and mutual assessment skills, providing constructive feedback by the teacher and students, developing evaluation criteria and descriptors, as well as raising questions to determine the level of awareness and training.

The study of these assessment methods was difficult and lengthy, because it required the development of systemic skills, such as the clear formulation of instructions for tasks, for example, instead of the previously used “read the proverbs and determine their topic”, teachers

began to formulate as follows “read the proverbs and think about what they say?”, to motivate students and make a decision, or instead of “answer the suggested questions”, teachers suggest “what questions are available and logical for you” to evaluate not only academic knowledge on the topic of discussion, but also the life skills and creativity of the student. Teachers should rebuild not only the assessment system, but also the teaching system, thus changing their role and purpose in modern education.

The system of internal assessment should develop transparency and transparency in the activities of the teacher and the student, to show the level of achievement of educational results of students for a certain amount of studied material or time. In this regard, students should be ready for any evaluation scale (numerical from 1 to 5, verbal (criteria, descriptors), discrete from 0 to 2, where 0 means that the criterion is not met, 1 – partially completed and 2 – fully completed, continuous – an unlimited set of values, where 0 – the task was performed unsatisfactorily, 100 – perfect. In this regard, to determine the level of achievement of learning objectives, learning achievements of students (low, medium, high) and mastery of learning material introduced a numerical scale to calculate grades in the form of 10 points, which is reflected in the electronic journal (Kundelik) for the student and their parents. Further the numerical scale is converted into a traditional five-point scale according to the definitions:

- 1 – unsatisfied
- 2 – satisfied
- 3 – good
- 4 – well
- 5 – excellent

This scale allows students and parents to decide on further education.

2) Monitoring of students' educational achievements (MSEA) reveals the level of mastering of educational programs by students and shows problems in training and the development of measures to eliminate them, as well as to determine the formation of meta-subject and life skills through the analysis of strengths and weaknesses of teaching and learning according to testing on specific topics, sections of curricula or subjects. Comparison of their results with the results of other students to assess their level relative to other students. This process allows to draw the learner's attention to the question and answers that were proposed by different learners and to decide on the development of further skills: enhancing strengths or improving weaknesses. Monitoring of Students' Educational Achievements (MSEA) is an effective tool for developing specific learning skills. But the objective reason for this assessment is to increase or encourage motivation to learn and achieve better results.

The system of internal assessment is closely related to external assessment, since the assessment of meta-subjects skills (critical thinking, problem solving, creativity coupled with academic knowledge) and life skills (determining one's position, creativity) is determined upon admission to the next stage of education or admission to a university (UNT) and international research (PIRLS, TIMSS, PISA). The internal assessment system should be firmly formed and worked

out so that students clearly understand what level they can achieve if they transfer all their knowledge and skills to any assessment scale to obtain an objective assessment regardless of the teacher or school. It is important for students to understand the essence of external evaluation and its advantages, since it is conducted by independent organizations that use standardized assessment criteria and procedures.

## **2. METHODOLOGY**

For the research, 10 schools from one region of the country were selected as the experimental base. This base includes both urban and rural schools, general education schools, and specialized schools for gifted children. The primary reasons for selecting these schools were their willingness to participate in the study and the feasibility of conducting experimental work on assessment.

The data collected in this study are part of a broader investigation into the impact of formative assessment on the outcomes of summative assessment and external evaluation of students' academic achievements.

The research sample, consisting of 29 teachers, was formed based on diverse criteria, such as gender (female - 86.2%, male - 13.8%), education level (higher education - 79.3%, postgraduate - 17.2%, vocational education - 3.5%), and teaching experience (up to 5 years - 34.5%, 6-15 years - 13.8%, 16-25 years - 10.3%, 26 years and more - 41.4%). This sample allows for the examination and analysis of various teacher characteristics that may influence formative assessment and assessment practices overall.

For the study, 103 students were randomly selected from the schools (53.4% girls, 46.6% boys, ages 10 to 16) whose teachers were part of the research sample.

A comprehensive methodological approach was employed in the study, including observation and surveys of both teachers and students.

Teacher surveys aimed to identify the level of self-assessment regarding their formative assessment practices. Student surveys were conducted to evaluate their perceptions of teachers' formative assessment practices and to verify teachers' self-assessment of their formative assessment practices.

Classroom observations of teachers' formative assessment practices were carried out to identify how teachers implement formative assessment of their students' academic achievements. Additionally, the observations aimed to compare teachers' and students' views on formative assessment practices with the actual assessment practices observed in the classroom (Cohen, Manion & Morrison, 2007). The observations also facilitated the testing of criteria for evaluating the validity of formative assessment in the classroom to identify challenges in the implementation of formative assessment.



### 3. RESULTS

This study is dedicated to formative assessment in the classroom and its impact on students' learning and development.

It emphasizes the importance of assessment in the learning process.

Assessment is a tool that allows teachers and students to make conclusions about learning achievements based on the obtained information, and to make decisions to improve this learning. Assessment can help teachers enhance their teaching methods and enable students to track their progress in mastering skills and achieving results over time.

The study focuses on examining the perceptions of formative assessment by teachers and students. This research is important because teachers' views and beliefs about their formative assessment practices significantly influence how they evaluate students' learning and achievements. Students' perceptions of assessment matter, as their beliefs guide and define their learning.

The main goal of this study is to compare students' and teachers' perceptions of formative assessment with the actual practice of its implementation. This research contributes significantly to understanding the relationship between perception and practice in the context of formative assessment, which can have far-reaching implications for educational practice.

Surveys of teachers and students were conducted to analyze how they perceive the practice of informing students about their achievements. The survey results show that 93% of the surveyed teachers confirmed that they discuss students' progress with them; only 54% of the students confirmed that teachers discuss their progress with them; 96% of the teachers indicated that they provide students with opportunities to demonstrate what they have learned during the lesson. This was confirmed by 76% of the students.

One of the challenges in implementing formative assessment is the predominant focus on identifying students' weaknesses in learning. Therefore, the survey inquired whether teachers inform students about their strengths in learning. The results showed that 86% of teachers stated that they emphasize students' strengths, 7% of teachers noted that they do not inform students about their strengths, 63% of students responded that they receive information about their strengths in learning, and 14% indicated that they had not received such information from teachers.

An essential part of informing within formative assessment is the teachers' recommendations for improving students' learning. Survey results show:

- 93% of teachers responded that they provide recommendations to help students enhance their academic achievements;
- only 66% of students confirmed that they receive such recommendations from teachers.

Despite more than 90% of teachers indicating that they inform students about their progress and strengths:

- only 76% of teachers indicated that they can determine whether students have achieved learning goals;

- the remaining teachers noted that they face difficulties in this aspect.

The next question in the survey was: Does formative assessment have a formative nature? In other words, does it ensure actions by the teacher and student aimed at improving teaching and learning? Survey results show:

- 98% of teachers noted that they discuss ways to address learning weaknesses with students;

- only 59% of students confirmed that this happens;

- 89% of teachers indicated that they encourage students to think about how to improve their learning;

- only 57% of students responded that teachers involve them in reflecting on improving their learning.

Survey results demonstrated that teachers' and students' perceptions of formative assessment in the classroom differ. As previously mentioned, this is due to the discrepancy between teachers' perceptions of their assessment practices and the actual practice. Students' perceptions of formative assessment directly depend on the assessment practices used by their teachers. At the same time, it is important to note that the survey results also showed that educators understand the tasks and significance of formative assessment, and formative assessment is reflected in their teaching practice. However, it should be emphasized that the connection between teachers' and students' responses remains relatively weak.

Thus, the survey results showed that teachers implement the function of informing and involve students in this process. However, it should be noted that the informing primarily focuses on identifying students' learning weaknesses and is partially negative in nature.

Observation of the formative assessment process in the classroom revealed that teachers place more emphasis on informing students about their learning. The formative function of formative assessment, aimed at actions by the teacher and student, is weakly implemented in teachers' actual practice. The observation of formative assessment in lessons was conducted according to criteria for assessing its validity (Table 1). Experts visited 12 lessons.

Experts noted that 24% of teachers face difficulties in ensuring the validity of assessment tasks, reflected in the insufficient alignment of developed tasks with the set learning goals. These tasks are aimed at assessing higher-order thinking skills or lower, sometimes theoretical in nature.

Collecting information about students' learning does not cause difficulties for teachers. However, interpreting these data, related to determining the level of students' achievement of learning goals, poses difficulties for 79% of the teachers observed.

Experts noted that formative assessment in the classroom is more informative in nature. Teachers inform students about their academic achievements and weaknesses.

19% of the observed teachers implement the formative function of assessment, i.e., they adjust their teaching to improve students' learning, organize student activities to correct weaknesses, and provide recommendations for improving progress.

#### **4. DISCUSSION**

The research conducted in this study focuses on formative assessment in the classroom and its perception by both teachers and students, as well as the validity of formative assessment.

The study revealed that teachers and students have different perceptions of formative assessment and its implementation in the classroom. Teachers generally perceive formative assessment more actively as a means of informing students about their learning, whereas students often view it in terms of being informed about their weaknesses in learning.

Teachers, in most cases, inform students about their progress and weaknesses in learning. However, it should be noted that the perception of this information can differ between teachers and students.

Despite the high level of student awareness about their learning, formative assessment in the classroom often does not fully realize its formative function. Teachers are less likely to involve students in adjusting their learning and summarizing their academic achievements, and they do not always provide recommendations for improving progress.

Observation of formative assessment in lessons revealed that teachers face certain difficulties in ensuring the validity of formative assessment tasks. This may indicate a mismatch between the tasks and the learning goals, and insufficient focus on assessing higher-order thinking skills.

Based on these findings, the study concludes that despite the presence of informing students and teachers' efforts in implementing formative assessment, there is a gap between the perception and practice of this assessment. This gap may be due to various factors, including insufficient knowledge and understanding by teachers of the goals of formative assessment, as well as limitations in resources and methodologies.

Furthermore, the study emphasizes the importance of ensuring a more active role for formative assessment as a tool for shaping learning, rather than merely informing about successes and weaknesses. In practice, this requires more active involvement of students in the process of adjusting their learning and summarizing their academic achievements.

The study also highlights the necessity of training teachers in more effective methods of formative assessment and ensuring their practical implementation, in order to improve educational practice and the quality of learning.

#### **5. CONCLUSION**

The study dedicated to the validity of formative assessment in Kazakhstani schools has led to the following key findings:

Formative assessment plays an important role in the educational process, as it aims to improve the quality of learning and the development of students. It involves collecting information about students' current knowledge levels and providing them with feedback to enhance their learning.

The validity of formative assessment depends on the alignment between the assessment's goals and content, as well as the correct implementation of the assessment process. The study found that the practice of formative assessment does not always align with its conceptual foundations.

There is a difference in the perception of formative assessment practices between teachers and students. Although most teachers claim that they inform students about their progress and strengths, students' feedback often does not match these claims.

Observation of the formative assessment process showed that teachers focus more on informing students about their learning, while the formative function of assessment is weakly implemented in practice. It was also noted that teachers experience difficulties in interpreting assessment data and adjusting teaching based on this data.

The study highlights the need for further development of formative assessment practices, including improving teachers' understanding of assessment goals and criteria, and fostering active collaboration among teachers, students, and researchers to enhance the effectiveness of formative assessment.

Overall, the study underscores the importance of formative assessment as a tool for improving the quality of learning and student development. It also identifies key problems and directions for its improvement and further research.

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