ENSURING THE VALIDITY OF FORMATIVE ASSESSMENT IN KAZAKH SCHOOLS

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Abstract
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 observation of lessons was used to determine how teachers implement the formative assessment of students' academic achievements, the survey of teachers and students was used to identify similarities and differences in the views of teachers and students about the assessment of the practice of formative assessment of teachers. 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 his 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 practice.
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). At the same time, different studies show different effectiveness of its use. The problems with definition and the lack of consensus on formative assessment indicate the need for a deeper understanding of its nature and the mechanisms affecting its effectiveness (Lui & Andrade, 2022).

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 in order to provide them with feedback and recommendations for improvement.

Formative assessment is carried out throughout the lesson, and not only at the end of the lesson (Buldu & Öneren Şendil, 2023). This allows teachers and students to continuously monitor progress and adjust learning in real-time. The main advantage of formative assessment is the involvement of students in the process of evaluating their academic achievements. Students are actively involved in setting their learning goals, analyzing their results, and developing improvement strategies. Due to this, formative assessment contributes to the development of

students' awareness about their learning (Andersson & Palm, 2017; Kingston & Nash, 2011). Formative assessment helps students understand what goals they set for themselves and how their actions affect the achievement of these goals (Cauley, & McMillan, 2010).

Within the framework of formative assessment, teachers use a variety of methods and tools to collect information about students' learning. These can be oral surveys, written papers, projects, self-assessments, mutual evaluations, discussions, and others. This data should provide teachers and students with the information necessary to determine further steps and improve the educational process. The data collected as part of the formative assessment is used by teachers to correct learning. Formative assessment involves active interaction between teachers and students. Open dialogue and cooperation help to use assessment results more effectively to improve the learning process.

2. Literature review

2.1 The essence and validity criteria of formative assessment

Formative assessment, in its essence, is designed to actively support the educational process (Reed, Binning, Jemison & DeSalle, 2023; Stobart, 2012). However, it is important to understand that not every practice of formative assessment necessarily leads to an improvement in the quality of learning. The impact of the practice of formative assessment on the results depends on many factors that interact with each other.

For example, even if formative assessment is carried out systematically, the tasks being evaluated may be inconsistent with the goals of the educational program that is taught and studied (Andrade & Cizek, 2009). Single observations of the performance of similar tasks by several students may not give a complete picture and require additional analysis and context. Interpretation of training data based on limited information can be both correct and inaccurate.

Consequently, early conclusions about students' academic performance or abilities may not be sufficiently substantiated. The feedback provided and subsequent educational decisions may be distorted if the analysis and interpretation of data are carried out thoughtlessly. Therefore, it is important to consider the context and many factors in the formative assessment to ensure the accuracy and effectiveness of this practice.

For formative assessment to contribute to improving the quality of education and the development of students, it must be valid (Kingston & Nash, 2011).

The validity of formative assessment is characterized by compliance with the purpose and content, the practice of implementing the process of formative assessment of its concept (Kong, Farnsworth, Canaca, Harris, Palley & Sussman, 2012).

The study of modern research has allowed us to determine that the concepts of formative assessment differ in different studies, which also affects the differences in the understanding of the validity of formative assessment.

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	Characteristics
Informative	- compliance of the content of the tasks with the learning objectives and assessment criteria	- determination of the level of achievement of the learning goal, identification of the level of knowledge and skills in accordance with the requirements of the educational program
Procedural	- collecting information about the training of students; - interpretation of information; - feedback; - actions of the student and teacher to improve learning.	- data on the level of knowledge and skills of students in accordance with the learning objectives and assessment criteria (Pat-El, Tillema, Segers, & Vedder, 2013)
Functional	- informing; - forming.	- determination of the validity of the tasks of the implemented formative assessment in the class to its functions

It should be noted that despite the fact that in most studies formative assessment is not considered as a tool, but in the practice of schools, formative assessment is often of a regulatory nature and is used for grading in order to increase student responsibility. Formative assessment in the aspect of the tool is reflected in diagnostic tasks or tests. Tasks are used to determine the level of formation of educational achievements of students (Table 1).

In this aspect, the validity of formative assessment determines how accurately it measures the knowledge and skills that it should measure in accordance with the learning objectives (Peat & Franklin, 2002). That is, the question is to what extent the assignment and of course the assessment will really reflect the level of educational progress of the student in accordance with the learning objectives.

Formative assessment as a process (Table 1) represents the unity and interrelation of its following elements, such as

1) the collection of information or evidence about the training of students

2) the interpretation of information in accordance with the objectives of the training program or evaluation criteria

3) feedback based on the interpretation of information that characterizes the strengths and weaknesses of the educational program. Student's activities and recommendations for their improvement

4) actions of the student and teacher to improve learning in accordance with the feedback provided (Peter Yongqi Gu 2020). The validity of formative assessment in the aspect of the process characterizes the compliance of the procedure for the implementation of formative assessment by the teacher in the classroom with the above 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).

Formative assessment in this aspect should provide evidence of students' learning in accordance with the learning objectives of the educational program, that is, to demonstrate data on the gap between the current state of knowledge and skills of students for the purpose of learning (Gu, 2021; Bennett, 2011). An important point here is also the need for feedback and actions aimed at improving learning.

In the context of formative assessment, validity can be considered as the degree of conformity of interpretations and use of the obtained assessment data to the actual learning situation. In other words, the validity of formative assessment means how accurately and correctly the results are interpreted and how effectively they are used to support the educational process.

The criteria for the validity of formative assessment presented in Table 1 are based on the principles of complexity and integrity in the organization and implementation of formative assessment characterize the comprehensiveness of the assessment of the validity of formative assessment, integrity reflects the unity of both substantive (what are we evaluating?) and procedural (how are we evaluating?) and functional (what are we evaluating for?) aspects of formative assessment.

The validation process of formative assessment is a systematic study, during which the interpretations and practical application of the data obtained as a result of formative assessment are determined, justified and confirmed. This process includes checking the conformity of assessment interpretations with educational goals and objectives, as well as substantiating to what extent the assessment results can be used to improve learning and educational decision-making.

Thus, the validation of formative assessment is an important stage aimed at ensuring the correctness and expediency of its application in the context of the educational process. This process makes sure that the assessment data is really informative, accurate and useful to support the learning process.

It should be noted that the exact interpretation and correct use of the results of formative assessment largely depend on the level of knowledge and skills of the implementation of formative assessment by teachers. The teacher's knowledge in this area includes an understanding of learning goals and formative assessment, the ability to determine success criteria related to achieving these goals, skills in collecting and interpreting data on student learning, organizing actions to improve learning in accordance with feedback.

This means that teachers and students should clearly understand what specific learning goals are set for students, and what criteria are used to determine the success of achieving these goals. This aspect plays an important role in the interpretation of assessment results, as it allows us to assess how students meet pre-defined educational standards and expectations.

Thus, understanding the goals and criteria of success in education is a key element for a qualitative and accurate interpretation of the results of formative assessment and their subsequent use in pedagogical practice (Zulliger, Buholzer & Ruelmann, 2022; Martin, Mraz & Polly, 2022). Expertise in this area helps to ensure consistency between learning objectives, assessment methods and educational outcomes.

It should be emphasized that the correct formulation of the purpose of formative assessment, the choice of appropriate tools for collecting evidence of learning, as well as the correct interpretation of this evidence, providing accurate feedback and making informed decisions at each stage of the assessment process can be disrupted if the teacher does not have a clear understanding of the learning goals or if these goals are defined incorrectly.

For example, imagine a situation where a formative assessment is carried out as part of the educational process of learning a language. The teacher's knowledge of the curriculum standards, their beliefs in their own language competence and in the process of learning a language, as well as their understanding of the criteria for the success of language tasks used to collect evidence of students' learning, are of great importance. These aspects may be even more important than the evaluation methods themselves.

This is due to the fact that the correct definition of the learning goal is the foundation for all formative assessment. If the goal is not clear enough or unsuitable, this can lead to misunderstandings and incorrect interpretation of the results of the formative assessment. Thus, understanding and clearly defining learning objectives are key aspects of valid formative assessment.

Validation of formative assessment in the classroom is an important process that must be carried out carefully and systematically to ensure its effectiveness. Ideally, teachers themselves should be actively involved in evaluating and validating their formative assessment process as they use it in their classrooms. This process allows them to understand how their assessment tools meet the learning goals and really help students in their learning process.

However, it is important not to remain isolated. Teachers should also build communities of assessment practitioners both inside and outside their school (Monteiro, Mata & Santos, 2021; Hondrich, Hertel, Adl-Amini & Klieme, 2016). This allows them to exchange experiences, analyze evaluation results and discuss strategies for improving formative assessment. The external view of colleagues and discussion with them can bring new ideas and approaches to formative assessment.

It is also possible and important to include scientists from universities or research centers in the field of education who are competent in this field and may even conduct research in this field in the validation of formative assessment (Cagasan, Care, Robertson & Luo, 2020). They can contribute theoretical and empirical knowledge, as well as provide support and resources for teachers. Scientists can periodically join communities of formative assessment practitioners to

provide their analytical perspective and help improve formative assessment (Cai, Yang, & Yao, 2022).

Thus, validation of formative assessment is a collective process in which teachers, colleagues and researchers actively interact to ensure the effectiveness of formative assessment in the classroom and improve the learning process.

2.2 Implementation of formative assessment (Kazakhstan context)

In the practice of assessment in Kazakh schools, increased attention is paid to formative assessment as a tool. Tasks are used to determine the level of formation of educational achievements of students and affect the results of summative assessment. The peculiarity of the implementation of formative assessment in Kazakh schools, it is a mark and the educational achievements of students are evaluated by a 10-point school and its results affect the final assessment of students in the school subject. Teachers, when planning a lesson, devote enough time to the question of compliance of tasks with the learning goal so that they allow assessing the knowledge and skills regulated by the educational program of the school subject.

2.3 Assessment in Kazakhstan education

Kazakhstan's experience of the criteria-based assessment system begins in 2017 together with the updating of the content of secondary education. In this regard, the criteria-based assessment system was developed based on curricula and the state mandatory standard of education to provide students with access to education, transparency (Black & William, 2009) of training and the development of students' independence [1,2].

The criteria-based assessment system is considered as a system of internal and external assessment and considers various aspects of students' educational activities, and not only their academic results (Fig. 1).

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

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UNT

PIRLS / TIMSS / PISA

MSEA

KUNDELIK
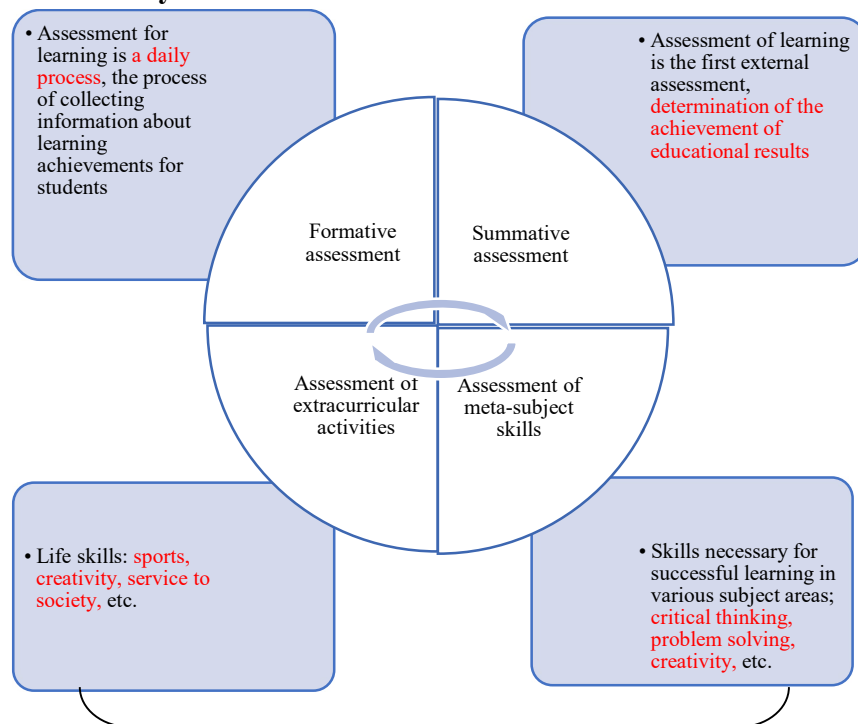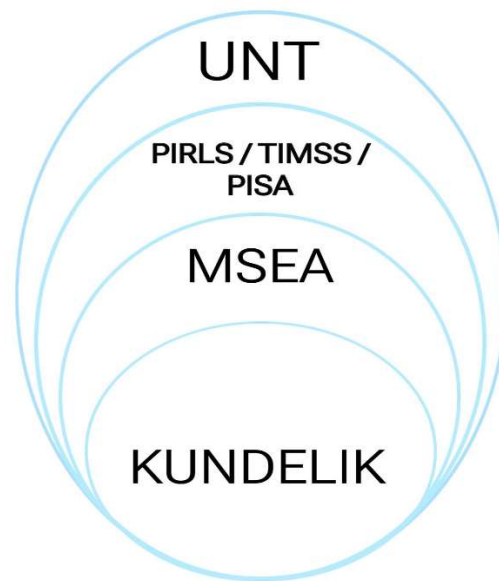
The internal assessment system (Fig.1) assumes the development of students not only academic knowledge, but also the skills necessary for successful study in various subject areas and in everyday life, which is further reflected in the external environment, for example, when enrolling in other educational 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 done

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 you to draw the student's attention to the formulation of the question and the answers that were offered by different students and decide on the development of their further skills: strengthening strengths or improving weaknesses. 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-subject 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 the student to understand the essence of external evaluation and its advantages, since it is conducted by independent organizations that use uniform evaluation criteria and procedures.

3. Research methodology

10 schools of one region of the country were selected as an experimental base for the study. The experimental base includes both urban and rural schools, general education schools and specialized schools for gifted children. The main reason for choosing these schools was the possibility of conducting experimental work and the desire of schools to participate in the evaluation study.

The data collected in this study is part of a broader study on the impact of formative assessment on the results of summative assessment and external assessment of students' academic achievements.

The sample for the study, consisting of 29 teachers, was formed based on various criteria, such as gender (women-86.2%, men-13.8%), education (higher education-79.3%, postgraduate-17.2%, secondary vocational -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 will allow us to consider and analyze various characteristics of teachers that may have an impact on formative assessment and assessment in general.

For the study, 103 students were randomly selected from schools (53.4% - female, 46.6% - male, aged 10 to 16 years), who are taught by teachers included in the study sample.

During the study, a comprehensive methodological approach was used, including observation and questioning of teachers and students.

The survey of teachers was conducted to identify the level of self-assessment of teachers' perception of their practice of formative assessment. The survey of students was conducted to assess the perception of the practice of formative assessment of teachers, as well as to verify the assessment of the perception of their practice of formative assessment by teachers.

The observation of the practice of formative assessment of teachers in the classroom was carried out to identify how teachers carry out a formative assessment of the educational achievements of their students, as well as to compare the views of teachers and students on the practice of formative assessment with the actual practice of assessment in the classroom. The observation also allowed us to test the criteria for assessing the validity of formative assessment in the classroom to identify difficulties in implementing formative assessment.

4. Findings

Formative assessment in the classroom has become the subject of this study due to its potential to influence the improvement of learning and student development (Polly, Wang, Martin, Lambert, Pugalee & Middleton, 2017). The focus is on the importance of evaluation in teaching and learning processes. Assessment, as a tool, allows teachers and students to draw conclusions about learning based on the information received and make decisions about its improvement. These actions can contribute to the improvement of teaching and learning or show a picture of the progress of a student's skills or achievements over time.

The research is focused on understanding how teachers and students perceive the practice of formative assessment. The importance of this study is since teachers' beliefs about their practice of formative assessment significantly influence how they evaluate the learning and achievements of their students. Similarly, students' perceptions of assessment matter because their beliefs guide and define their learning.

The main purpose of this study is to identify the correspondence or discrepancy between the perception of students and teachers of formative assessment and the practice of teachers. This research makes an important contribution to understanding the dynamics between perception and

practice in the context of formative assessment, which can have far-reaching implications for educational practice.

The survey of teachers and students allowed us to analyze how teachers and students perceive the practice of informing students about their learning. 93% of the teachers surveyed confirmed that they discuss their progress with students, but only 54% of students confirmed that teachers discuss their progress with them. 96% of teachers indicated that they give students the opportunity to show what they learned in class, which was confirmed by 76% of students.

One of the weaknesses of the implementation of formative assessment is the focus mainly on identifying weaknesses in the educational activities of students. Therefore, one of the questions of the questionnaire is whether teachers inform students about their strengths in learning. 86% of teachers indicated that they focus on the strengths of students and 7% of teachers noted that they do not inform students about their strengths. 63% of students answered that they receive information about their strengths in learning and 14% indicated that they did not receive such information from teachers.

In informing within the framework of formative assessment, a significant place is occupied by the recommendations of teachers on improving the teaching of students. 93% of teachers answered that they give recommendations to help students improve their academic achievements, this was confirmed by only 66% of students.

Even though over 90% of teachers indicated that they inform students about their progress and their strengths, only 76% of teachers indicated that they could determine the achievement of learning goals by students, the rest of the teachers noted that they have difficulties in this aspect.

The next task of the questionnaire was to determine whether formative assessment has a formative character, i.e., whether it ensures the actions of the teacher and student aimed at improving teaching and learning.

98% of teachers noted that they discuss ways to eliminate learning weaknesses together with their students, but only 59% of students confirmed this. 89% of teachers showed that they offer students to think about how to improve their learning, but only 57% of students said that teachers involve them in thinking about improving their learning.

The results of the survey showed that even though teachers' and students' perceptions of formative assessment in the classroom differ and this is due, as previously noted in this article, to the discrepancy between teachers' perception of their assessment and practice. Since students' perception of formative assessment is directly related to the practice of evaluating their teachers. However, it should also be noted that the results of the survey showed that teachers understand the tasks and importance of formative assessment and it is reflected in their practice, since there is a weak connection between the answers of teachers and students.

Thus, the results of the survey showed that teachers implement the function of informing and involve students in this process, however, it should be noted that informing is aimed at identifying mainly the weaknesses of students' learning and is partly negative.

Observing the process of formative assessment in the classroom allowed us to determine that teachers focus more on informing students about their learning. The formative function of

formative assessment aimed at the actions of the teacher and the student is poorly implemented in the real practice of teachers.

The observation of formative assessment in the classroom was carried out in accordance with the criteria for assessing its validity (Table 1). Experts attended 12 lessons.

Experts note that 24% of teachers have difficulties in ensuring the validity of tasks for evaluation, which is reflected in the insufficient compliance of the developed tasks with the set learning goals. These tasks are focused on assessing skills of a higher level of thinking skills or lower, sometimes they are theoretical in nature.

Collecting information about the training of students does not cause difficulties for teachers. However, the interpretation of these data related to determining the level of achievement of learning goals by students causes difficulties for 79% of teachers who were monitored.

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

19% of the teachers visited implement the formative evaluation function, i.e., adjust their teaching to improve student learning, organize student activities to correct weaknesses and give recommendations for improving progress.

5. Discussion

The research conducted within the framework of this work 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 showed that teachers and students have different perceptions of formative assessment and its implementation in the classroom. Teachers, as a rule, perceive formative assessment more actively as a means of informing students about their learning, while students often evaluate it in connection with informing 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 may differ between teachers and students.

Despite the high awareness of students about their learning, formative assessment in the classroom often does not fully realize its formative function. Teachers, to a lesser extent, involve students in the correction of learning and in the generalization of educational achievements, do not always provide recommendations for improving progress.

The observation of formative assessment in the classroom revealed that teachers face certain difficulties in ensuring the validity of tasks for formative assessment. This may indicate that the tasks do not correspond to the learning goals and lack of focus on evaluating higher levels of thinking skills.

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

Further, the study notes the importance of ensuring a more active role of formative assessment as a tool for shaping learning, and not just informing about successes and weaknesses. In practice, this requires more active involvement of students in the process of correcting learning and generalizing their academic achievements.

The study also highlights the need to train teachers in more effective methods of formative assessment and ensure their practical implementation to improve educational practice and the quality of teaching.

6. Conclusion

A study on the validity of formative assessment in Kazakh schools led to the following main conclusions:

Formative assessment plays an important role in the educational process since it is aimed at improving the quality of education and the development of students. It includes collecting information about the current level of knowledge of students and providing them with feedback to improve learning.

The validity of a formative assessment depends on the conformity of the purpose of the assessment and its content, as well as on the correct implementation of the assessment process. The study revealed that the practice of formative assessment does not always correspond to its conceptual foundations.

There is a difference in the perception of teachers and students of the practice of formative assessment. Even though most teachers claim that they inform students about their progress and strengths, student feedback often does not coincide with these statements.

Observation of the process of formative assessment showed that teachers are more focused on informing students about their learning, and the formative function of assessment is poorly implemented in practice. It was also noted that teachers have difficulties in interpreting assessment data and correcting learning based on these data.

The study points to the need for further development of formative assessment practices, including improving teachers' understanding of assessment goals and criteria, as well as active interaction between teachers, students and researchers to improve the effectiveness of formative assessment.

In general, the study emphasizes the importance of formative assessment as a tool for improving the quality of learning and student development and identifies key problems and areas for its improvement and further research.

7. Acknowledgement

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