Assessment in mathematics classes: reflections from teachers' perspective

ABSTRACT

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TThis qualitative article seeks to analyze the assessment process conducted by teachers, from their narratives, identifying elements which characterize the formative assessment. The participants were eight teachers from the educational network of Espírito Santo. Data were collected through a formulary with open-ended, and a semi-structured recorded interview. Overall, the results reveal that teachers comprehend the assessment process as the application of tools to verify learning. However, it shows signs of formative assessment practice in continuous development of their mathematics classes.

KEYWORDS: Formative assessment; Assessment practice; Mathematics teachers.

Avaliação em aulas de matemática: reflexões a partir da perspectiva dos professores

RESUMO

Este artigo, de cunho qualitativo, busca refletir sobre o processo de avaliação realizado por professores. Os sujeitos foram oito professores da rede estadual de ensino do estado do Espírito Santo. Os dados foram produzidos a partir de um questionário com perguntas abertas e uma entrevista semi-estruturada, gravada. A análise se baseia na perspectiva da avaliação formativa, para a formação crítica dos estudantes. Os resultados revelam que, em geral, os professores compreendem o processo de avaliação como a aplicação de instrumentos de verificação da aprendizagem. No entanto, quando instigados a descrever aspectos de sua prática, encontramos indícios de uma prática avaliativa formativa no contínuo do desenvolvimento de suas aulas de matemática, apesar de os estudantes não ocuparem um espaço significativo nesse processo.

PALAVRAS-CHAVE: Avaliação Formativa; Práticas avaliativas; Professores de matemática.

INTRODUCTION

Assessment is a practice inherent to education in different spheres that comprise the educational system. In the classroom, teachers are required to carry out "learning assessment" to verify what the student has learned and if they are ready to progress to the next grade or level.

From the experience we have acquired over the years, we have observed that assessments are often related to interruptions in learning activities to evaluate students' learning. In this regard, assessment is linked to the quantity of the product resulting from educational actions, that is, learning outcomes. In general, this reveals its grading, certificatory, and punitive nature (Buriasco, Ferreira, Ciani, 2009; Luckesi, 2002; Esteban, 2009; Gonzaga, 2020), characterizing a decontextualized process of educational actions and individual student learning (Esteban, 2009).

What happens, in many cases, is confusion between the practice of assessment and the act of taking an exam. Thus, certain days, practices, and assessment systems are established which, according to Luckesi (2022, p. 84), persist because "[...] we are betrayed by habits that have passed into our unconscious, and we act automatically, without questioning the true meaning of what we are doing. Unconsciously, we 'examine', but we say that we 'assess'." The author notes that it is necessary to promote a break with this form of assessment used in school settings to make room for genuine assessment experiences.

In opposition to this scenario, we understand that assessment for learning, from a formative perspective, aims to support students throughout their learning journey and to provide information that supports their progress. This type of assessment presents investigative characteristics, as it recognizes and values multiple paths, knowledge, facts, information, and relationships throughout the process (Buriasco, Ferreira, Ciani, 2009). It is essentially dialogic, as it presupposes being open to others in order to seek information that enables the overcoming of barriers and the establishment of connections to assist students in learning (Esteban, 2003; 2009). It must serve as a space for inclusion, multiplicity, and the social formation of subjects (Esteban, 2009; Esteban, Pina, 2021), as well as a space for the struggle against failure and inequalities (Jürgensen, 2022).

In light of these points, we raise the question: How are assessments for learning approached by teachers to help students in the learning process?

Therefore, this essay, qualitative in nature, aims to reflect on the development of formative assessment in basic education at public schools in Espírito Santo. Specifically, we intend to analyze the conceptions of assessment held by mathematics teachers, identify the students' role in the assessment process, and discuss communication that can be articulated to formative assessment.

ASSESSMENT FOR LEARNING

We understand the expression "assessment for learning" as a process in which assessment serves learning; that is, the organization of educational actions aimed

at monitoring and supporting students throughout their learning journey. It is a shared activity between teachers and students that needs to be dynamic, systematic, and continuous in order to support the teaching and learning process. Thus, learning activities are constituted as assessment activities, since assessment becomes an intrinsic part of the teaching and learning process (Buriasco, 2002; Dalto, Silva, Borssoi, 2022). When teachers obtain information about students' learning situations, they can make decisions that contribute to student learning.

Assessment encompasses all educational actions, enabling adjustments based on data collection and the identification of difficulties presented by students (Hadji, 1994; Pedrochi Junior, 2018). In this sense, it is an intervention tool to regulate students' learning activities, characterizing formative assessment which aims to, according to Hadji (1994, p.63), "[...] contribute to improving ongoing learning, informing the teacher about the conditions in which learning occurs, and guiding the learner in their own journey, their successes, and their difficulties." Formative assessment has become a space to redefine teacher evaluation, as students also assume responsibility for the teaching and learning process (Marino, Antunes, Mendes, 2018).

Considering this, formative assessment is promoted to continuously conduct a survey of evidence about students' learning, favoring analysis and reflection on students' learning journey, decision making, and adjustments of educational actions. Students actively participate, as the learning objectives are shared with all participants, and the aim is to collaboratively plan the course of activities that can lead to learning (Pedrochi Junior, 2018). The student receives information during the process, allowing self-reflection on their actions and adjustments of activities for learning.

This way of assessment contrasts with the quantitative perspective, which focuses on the measurement and classification of students (Esteban; Pina, 2021), where exams and tests are applied, and students' answers and responses are converted into numerical values to uphold the myth of assessment, that is, to measure and classify students (Buriasco; Ferreira; Ciani, 2009).

Luckesi (2002) considers that assessment focused on the measurement and classification of students is promoted by teachers who confuse assessment with the practice of administering exams, thus attributing to grades the status of evaluation. They talk about giving new opportunities, even though they have already made their judgment based on grades. These teachers use evaluation instruments such as tests, exams, and essays. According to this logic, the instruments and procedures are used with the intention of measuring knowledge and producing information for classifying students, without considering the teaching and learning process (Esteban, 2009).

In this respect, the assessment we advocate is characterized as a practice of investigation that requires the teacher to recognize that students can follow multiple paths, and that these paths can lead to learning. This practice allows the teacher to uncover students' learning journeys and to participate in them (Oliveira et al., 2021). In this sense, "[...] assessment as a practice of investigation aims to provide answers to the teaching and learning process and, in this function, the focus is not on finding answers, but rather on asking about the ways, trajectories, and paths that originated them" (Buriasco; Ferreira; Ciani, 2009, p. 76). It is a

process that can facilitate decision making and create opportunities for intervention and learning (Ferreira; Buriasco, 2022).

It is an environment of inquiry and investigation where the teacher must look for evidence of students' potential to deal with new learning situations, to learn, and to approach these situations critically (Buriasco; Ferreira; Ciani, 2009), as well as seek information to reflect on possible interventions that can support students in response to these learning situations.

In this sense, it presents dialogic and reflective characteristics, because understanding the information revealed through students' actions is only possible through interaction with others, via dialogic interaction.

For the authors, students' errors and different ways of learning, which are elements of pedagogical work, recognize "the path taken by students, their knowledge (often unacknowledged), experiences, and culture," and require dialogue (Esteban; Pina, 2021, p. 430). Dialogic interactions, thus, take on the function of regulating learning, which can occur in the immediate moment of dialogue with students (Marino; Antunes; Mendes, 2018).

The dialogue can lead teachers to reflect on the differences that manifest in educational settings and be open to others in order to gather information for conducting the assessment. Therefore, teachers position themselves as learners alongside their students, dismantling barriers, fostering connections, and linking territories in pursuit of "[...] a dialogic orientation that presupposes inclusion and multiplicity" (Esteban, 2003), transforming assessment into a moment of learning (Romão, 2005). This enables the sociocultural identification of students, including their potentials, difficulties, projections, ideas, and expectations, allowing teachers to better understand students and contribute to the transformation of individuals and contexts (Romão, 2005).

In view of this, assessment is

> [...] A dialogical, critical, reflective, and participatory exercise that fosters the problematization of produced outcomes, lived learning journeys, and the knowledge that intersects them, while also highlighting perceived limitations, the knowledge deemed necessary, and the factors that drive the ongoing movement of teaching and learning (Esteban; Pina, 2021, p. 430).

Assessment conducted from a dialogic perspective is based on an environment of problematization, reflection, and critical analysis of the teaching context, the individuals involved in the process, and, above all, the students' expectations, engagement, and aspirations.

In this context, the power relationship embedded in grading and punitive assessment becomes a relationship centered on knowledge through a shared process that values differences. These pedagogical practices must be connected to social dynamics in order to transform reality (Esteban, 2009). In light of this, assessment "presents itself as a process especially meaningful because it is produced at multiple frontiers: it is simultaneously inter- and extra-school, while preserving school values and incorporating social products" (Esteban, 2009, p. 132).

Assessment, thus, constitutes a process of collective reflection on the teaching and learning dynamic carried out by the subjects involved. Promoting

dialogue and the participation of those who experience the teaching and learning process is one of the key elements of their performance in specific contexts" (Esteban, 2009, p. 133). In this regard, the subject and their social place of enunciation become significant in giving visibility and space for participation in the organization of the learning environment.

RESEARCH METHODOLOGY

This study is characterized by a qualitative approach that uses, as its main data production resource, communication between the researcher and the research participants, in this case, mathematics teachers from the state education system (Alves, 1991).

We used questionnaires and interviews with open-ended questions as instruments for data collection, aiming to describe teachers' pedagogical assessment practices. The questionnaire addressed how assessment is understood, its intended objectives, and how the process is carried out. To further explore the issues raised in the questionnaires, we conducted interviews in which teachers were encouraged to talk about formative assessment, focusing on the collection of information about learning throughout the process, student participation, and the interventions that result from reflections on the data produced.

The interviews were recorded and transcribed. For data analysis, we used the teachers' experiences (Sidi; Conte, 2017), which allows for a question-and-answer exchange aimed at knowledge production.

For this study, teachers enrolled in a continuing professional development course on Mathematical Modeling were invited to participate through a questionnaire sent via a messaging app. Additionally, a semi-structured interview was conducted, in which teachers discussed some aspects of their mathematics teaching practices through open-ended questions. The choice of this group was justified by the ongoing contact and dialogue between the researchers and these teachers. Seven teachers from the course accepted the invitation. In addition, one teacher who was not enrolled in the course also participated in the study.

All teachers have a Bachelor's degree in Mathematics, although Bruno holds a PhD in Mathematics. They all work in schools located in a disadvantaged area of the city of Vila Velha, Espírito Santo, where the students come from highly vulnerable social backgrounds. Bruno, Gael, Régis, João, Emanoel, and Ana work at the same school. Bruno and Gael passed a civil service exam for teaching positions and are currently in a probationary period. For Gael, this is one of his first experiences as a teacher; Bruno previously worked as a substitute teacher at a federal institution. Emanoel, João, Ana, and Maria are temporarily contracted teachers. Emanoel has three years of experience in the state education system; João has worked as a teacher before but recently returned to the classroom after exploring other activities. Ana and Maria have worked as contracted teachers for more than eight years. Régis has a technical education background, and Mathematics is her second teaching degree. She also works as a contracted teacher for subjects within the technical course.

The State Department of Education provides guidelines about the assessment process from a formative perspective. However, there is pressure regarding students' approval. In this sense, teachers are instructed to use at least three instruments of "assessment" to infer students' progress. Besides that, Mathematics teachers need to deal with a large scale of external evaluations and also with learning monitoring evaluations, provided by the State Department of Education and applied from the 9th grade of elementary school to the senior year of high school.

The teachers were instructed to answer the questionnaire based on their own practice, addressing the assessments carried out in the classroom. Subsequently, the professionals were asked to describe their actions in class, aspects related to students' learning during the lessons, student participation in this process, and the communication established between them.

This approach was adopted to identify signs of the adoption of formative assessment in contrast to summative, certificative, and punitive assessment. According to Sidi and Conte (2017), hermeneutics enables the analysis of teachers' narratives within a historical and social context.

The interviews were recorded after obtaining informed and free consent from the participants, and the audio recordings were transcribed. The analysis is fundamentally based on a hermeneutic perspective, in which dialogues from human experiences are discursively analyzed to produce knowledge through reflection, aiming to understand our experiences in relation to the world (Sidi; Conte, 2017).

With this approach, we seek to understand "[...] phenomena, attitudes, and human behaviors, texts, and words" (Sidi; Conte, 2017, p. 1946), related to pedagogical practices and assessment, because it presupposes that the subjects' actions are intrinsic to their beliefs, perceptions, feelings, and values, and that behaviors reveal meanings that are not immediately visible and need to be unveiled (Alves, 1991).

The data discussed in this manuscript are part of the first author's doctoral research approved by the ethics committee on October 20, 2023, approval number: 6.438.178, CAAE: 71706523.3.0000.5072.

RESULTS AND DISCUSSION

The teachers Bruno, Emanoel, Gael, Ana, João, Régis, and Maria (fictional names to preserve their anonymity) shared their perspectives about assessment in educational settings through a questionnaire and described their pedagogical practices in interviews, highlighting aspects related to formative assessment.

All of them have a Bachelor's degree in Mathematics. Maria and Ana started teaching approximately fifteen years ago. João worked as a teacher last year but pursued other paths in the private sector, returning to teaching this year. Emanoel has held a temporary contract for about five years. Régis has a technical background in Economics and a licentiate degree, working in technical subjects. Gael has been working as a teacher for the past two years, since he assumed a permanent position in the state education system. Bruno holds a master's and

doctoral degree in Technology; he gained his first experience as a substitute teacher and obtained a tenured position in the state education system in 2023.

The first question was "What do you understand by assessment?" "And learning assessment?" Below, we selected excerpts that present the understandings of these professionals:

> **Régis**: [...] used to measure learning, progress and students' performance. It is a continuous and systematic process that aims to measure students' performance in relation to educational descriptors.

> **Gael:** [...] idea in the sense of verifying if what is being transmitted is also being learned.

> **Emanoel**: It would be verified if there have been improvements in performance, in how the received information is applied. Learning assessment is to identify any difficulties and, if they exist, to apply a method to address these gaps in learning.

> **Maria**: Assessment means the Action of evaluating, assigning a determined or deserved value.

> **João**: Assessment is an instrument of testing academic achievement. Learning assessment is used to verify, throughout the teaching process, if students are achieving the previously proposed objectives.

> **Ana**: Assessment, in educational context, can be understood as a systematic process of data collection and analysis of information about performance, abilities, knowledge, attitudes and student progress;

In the selected excerpts, the certificative and grading perspective of assessment becomes evident, as assessment is often conducted to measure students' learning or to verify whether students show improvement in their performance. This perspective involves making value judgments about what students demonstrate, as pointed out by Maria, and focuses on what is missing, based on the evaluating teacher's expectations, as described by Emanoel (Buriasco, Ferreira; Ciani, 2009). To change this scenario, it is necessary to shift both the conception and practice of assessment to one that highlights what students can do and what they know, rather than only revealing what they do not know (Buriasco, 2002).

Esteban (2009) criticizes the practice of producing standardized data, which reduces data interpretation to a single standard, carrying out assessment in a decontextualized manner that separates the subject who knows from the object of knowledge. Thus, it disqualifies the student as the subject of learning, to the point that "[...] the student is neither the subject nor the object of learning, but a marginal element in the debate that permits an enunciation of school discourse" (Esteban, 2009, p.130). In this sense, students do not participate in the process of proposing educational actions. Individual characteristics that could reveal learning paths different from those expected by the teacher are not incorporated into interventions, nor are the records and productions of students throughout the process. Assessment is reduced to an isolated event of administering tests and exams to certify and classify who is eligible or not to proceed.

We observe, however, evidence of a different perspective on assessment in the selected excerpts, for example, João, who describes assessment as a continuous process of verifying the achievement of outlined objectives. This corroborates Romão (2005), who discusses the starting point of assessment as reality itself, aiming to organize reflections that can potentially lead to interventions promoting changes in the process towards the achievement of action objectives.

Considering this, Ana argues that assessment is a systematic process of collecting and analyzing information about students to support future interventions. Bruno, in turn, broadens the perspective on assessment when he describes it as "the process through which it is possible to extract information regarding an action."

During the interview, we revisited the question based on a hermeneutic perspective, which presupposes a question-and-answer exchange in search of answers about human experiences (Sidi; Conte, 2017). We asked the teacher which actions and types of information he considered relevant. Teacher Bruno explained that the actions refer both to the students' actions and those of the teachers, since from records of students' actions it is possible to obtain information about how the teachers' actions contribute, that is, how the interventions helped students in their learning process. Moreover, these records can reveal how a student is learning. Regarding this information, the teacher clarified that it can be collected from classroom discussions, students' notebook entries, and even by observing how the student handles the activity.

Therefore, it reveals characteristics of formative assessment, which aims to support the teaching and learning process and allows for the possibility of reorienting the process by the teacher (Mariano; Antunes; Mendes, 2018). It approaches assessment as a practice of investigation, since the teacher is inclined to seek information that enables reflection on students' learning. Moreover, it recognizes the multiple paths that students can take to arrive at an answer, as Ana pointed out when asked how she obtains information about students' learning in daily math classes. She said this occurs "through an activity, sometimes the way that you arrived at the answer is not the same as your classmate's, but the answer is correct."

This practice provides conditions for decision-making by both students and teachers (Ferreira; Buriasco, 2022). Unlike isolated events linked only to the application of assessment instruments, as seen in certification and grading assessments, it allows continuous monitoring and reorientation of students' learning based on their actions, work, and the relationship they establish with the teacher.

The paths taken and the different interpretations of the same situation by the students are recognized and valued (Buriasco; Ferreira; Ciani, 2009). The different ways of solving the questions are related to the historical, cultural, and social constitution, which need to be understood as a fluid and transitory composition, in other words, social processes that lead to development and new experiences (Esteban; Pina, 2021).

The objective of promoting assessment in the classroom environment differs between two perspectives. The certificate and grading perspective seeks to

measure and quantify students' learning (Esteban; Pina, 2021). On the other hand, the formative perspective aims to guide the teaching and learning process as well as to assist the student throughout this process (Buriasco; Ferreira; Ciani, 2009). The teachers presented the following objectives for promoting assessment when asked in the questionnaire: "Why and/or for what purpose do you promote assessment in the classroom environment?"

> **Régis**: To measure how much students are learning in relation to established educational objectives.

> **Emanoel:** To verify if the student understood and learned what was taught in the classroom and, besides that, check how my work is contributing or hindering the student's learning.

> **Maria:** To diagnose each student 's level of knowledge. If we need to review certain content or teaching methods.

> **João:** To verify whether students are achieving the previously set goals.

> **Ana:** To diagnose: to identify the student's needs and difficulties. To monitor progress: To track development over time. To certify: to verify whether students have achieved the educational objectives. To guide teaching: to adjust pedagogical methods and strategies.

> **Bruno**: To identify weaknesses in the approach used in the classroom.

We observed a certificatory perspective when Régis proposed measuring students' learning in relation to educational goals, and when Emanoel sought to verify whether the content taught in the classroom had been learned. Although Emanoel reflects a certificatory view, he also demonstrates elements of formative assessment by expressing concern about the effectiveness of his teaching. This indicates a reflective approach toward the impact of teaching on the learning process, suggesting the potential for reorienting his practice based on this analysis.

Even so, Emanoel's account remains linked to a grading perspective, as it validates only the knowledge presented by the teacher. Based on this excerpt, we infer that there is little room for students to express their own knowledge, misunderstandings, or ways of thinking in response to what is taught (Esteban & Pina, 2021). Although the teacher expresses concern about the impact of his actions on students, assessment is still centered on the identification of errors from the teacher's perspective, without allowing students to discuss or propose alternative ways of representing the situation or answering the questions.

Emanoel's excerpt prompts reflections on an assessment practice that aims to support students in their learning process. We agree with Luckesi (2002), who states that teachers often develop their evaluative practices to certify and classify students unconsciously, as these practices are intrinsically tied to their teaching experiences. In light of this, we infer that Emanoel adopts elements of formative assessment to monitor and support student learning, while also employing methods and strategies aimed at certification and classification, as required by the educational system.

Maria also presents evidence of formative assessment when she expresses concern about the impact of her interventions on student learning and the possibility of making adjustments. In the interview, when asked how she assesses each student's level of knowledge and what leads her to change her teaching strategies, she responded:

> "With exercise sheets and tests, I can see which questions were answered incorrectly, which ones everyone got wrong, who made the most mistakes, and then I can assess the overall level. If most of them got it wrong, I know I need to change my teaching method, because the students are not understanding the content the way I'm presenting it, so I need to make a change"

On the other hand, Bruno promotes assessment with a focus on teaching practices, aiming to identify weaknesses in order to make potential adjustments. During the interview, the teacher explained that the analysis of information gathered from students directly influences his practice, stating: *'When students present some difficulty, I need to seek strategies to address the issue. If a student does not complete an activity, I need to understand why and find ways to help them engage in the activity and develop."* In this sense, assessment takes on a new meaning, it is no longer conducted solely on the student, but also on the teacher, contributing to the learning and development of both (Buriasco, Ferreira, & Ciani, 2009).

Teachers were asked how they perceive assessment within the educational environment. The responses revealed a certain confusion between the concept of learning assessment as a process and the instruments used to gather information for that process. Régis responded, "Exams, individual assignments, group work, and student performance," focusing primarily on measuring student learning. Gael stated that assessment is carried out through various tests and activity sheets throughout the term, with the results being compiled at the end. Esteban (2009) argues that this type of assessment isolates students, undermines dialogue, solidarity, and cooperation, and promotes competition.

Bruno presents a formative and investigative perspective on assessment when he clarifies that every moment of the lesson is evaluative, as it is possible at each stage to gather information about what students are doing, how they are doing it, their doubts and difficulties, and how his work can support their learning. He values, for the purpose of obtaining information, collective and individual discussions in dialogic classes, the solving of exercises, and the critical reading of students' responses to tests and exams—not limited to the answers themselves but interpreted based on each student's individuality. In the interview, Bruno clarifies:

> "[...] I analyze this data to understand how the student is learning and how I can help them progress. The grade does not interest me; it does not tell me anything about learning. For instance, whether the student scores a 6 or 7 is irrelevant, as I have no information on how I can assist. I assign grades because the system requires it."

In this statement, the teacher makes evident the reflective and dialogic dimensions that need to be strengthened, according to Esteban (2009).

When questioned about the instruments they use for assessment, the teachers mentioned a variety of tools, including tests, exercise sheets,

assignments, research activities, mock exams, and games. Gael mentioned "assessment" itself, confusing the instrument for gathering information with the evaluation process, as discussed by Luckesi (2002).

Among the instruments used in the assessment process, as reported by these teachers, participation, student behavior, and questioning drew our attention. When asked about participation, the teachers stated that students are valued primarily if they complete the assigned tasks. In most teachers' accounts, it was not clear that student participation could provide meaningful information about their learning or enable interventions to support them in this process. Generally, this valuation is tied to the assignment of a grade, that is, giving value to participation mainly as a factor that can contribute to future grading.

However, from a formative, investigative, and dialogic assessment perspective, student participation can provide important information about how students are engaging with tasks. If students are not completing tasks or are experiencing difficulties, this participation enables the teacher to intervene, aiming to understand the student's context and offer appropriate support.

Another instrument is behavior, which raises the question: Is behavior linked to a student's engagement in completing activities, considering their individuality as suggested by Esteban and Pina (2021), or is it a determining and punitive factor? In other words, if a student does not complete the activity or does not behave as expected, are they penalized through evaluation? Through question-and-answer exchanges aimed at understanding the teachers' intentions, following the hermeneutic approach (Sidi & Conte, 2017), it became evident that behavior is associated with a punitive aspect. Students who do not follow the rules established by the teacher or fail to complete assigned tasks are penalized through the evaluation process.

This reflects an approach to assessment that views students in a uniform way, disregards cultural diversity, and is not attentive to the development of a democratic school. This is because, when

> [...] difference (the characteristics of human life) is taken as evidence of impossibilities and a justification for inequality (which, as a social construction) inevitable contributes to the consolidation, in everyday school experience, of discriminatory practices that stigmatize individuals, knowledge, processes, outcomes and normalize exclusion" (Esteban; Pina, 2021, p.426).

Considering this, it is necessary to bring visibility to the subtle and hidden aspects of the learning environment that underpin power relations among individuals, in order to establish dialogical relationships and promote the sharing of diverse knowledge. The aim is to enable the development of individuals based on their uniqueness rather than through a homogeneous process (Esteban, 2009). However, this transformation does not occur suddenly. Educational change requires time and maturity for reflection, reconsideration, and action, as proposed by Oliveira et al. (2021).

Questions, as instruments in the assessment process, can provide indications of formative and dialogical assessment when the teacher seeks, through problematization, to establish contact with students by listening to different points of view and ways of solving problems. This is evidenced by Bruno, who related his strategies for obtaining information about student learning -*"to gather*

information that goes beyond yes or no, true or false, and to promote reflection among students through dialogue." For him, promoting these discussions is a well-defined strategy to obtain information about student learning and their difficulties. He suggested that" *asking questions like 'Why do you think this is the answer?' or 'How did you solve this problem?' is a way to quickly obtain information, which can help the teacher in reorienting the teaching and learning process."*

In this sense, the teacher can encourage discussions and interviews about students' problem-solving processes, as suggested by Buriasco, Ferreira, and Ciani (2009). Thus, assessment is understood as a process of collective reflection on the dynamics of the teaching and learning process, promoted by the individuals who make up the school community (Esteban, 2009).

However, Régis and Ana believe that it is only possible to evaluate students' learning if they have recorded the resolution of a mathematical question, for example. Ana states that students "[...] need to have practice. The student needs something that provides information about what they have learned, such as an activity or a challenging question." Régis believes that learning is associated with repetition, since a student may be able to solve a problem today but forget it by tomorrow.

Regarding dialogue as a support in assessment, which was addressed during the interview, Régis says it is possible to use dialogue by asking students whether they understood what was explained and/or demonstrated. In this sense, if students respond affirmatively that they have learned the content, the question-and-answer exchange serves as evidence of learning.

The "dialogue" proposed by Régis characterizes a question-and-answer exchange that does not encourage reflection. A student's affirmative response about having learned what the teacher presented does not necessarily indicate actual learning. It may, above all, be associated with the student's desire to gain the teacher's approval. In other words, if the student says they have learned, it shows participation, a behavior that reflects valued criteria in the certification and grading evaluation process. Given this, dialogue is used to reinforce the certification and grading perspective. However, it is necessary to guide dialogical interactions so that students speak about themselves and their learning experiences as active participants in the process (Esteban, 2009

When asked about students' participation in the assessment process, six teachers understand it as participation through completing worksheets, exams, and assignments. This reinforces a certificatory and classificatory perspective, as students do not actively engage in the assessment process but are subjected to tests and exams designed to demonstrate what they have learned in order to be graded. Buriasco, Ferreira, and Ciani (2009) acknowledge the importance of written records as a tool for teachers to reflect on students' learning processes and their own interventions; however, they also point out that relying solely on this resource is insufficient to fully capture the entire dynamic.

In this sense, Emanoel relies on communication when he says, "They participate directly because, through daily classroom discussions, I can observe what each student is able to develop," thus characterizing active participation in the assessment process. Through communication, the teacher obtains and shares

information that can guide students' actions. The teacher does not limit assessment to isolated moments of tests and exam applications.

Bruno considers that students participate in the assessment process by completing the proposed tasks and discussing their solutions and difficulties. He adds: *"They complete all the proposed tasks."* Information related to assessment provided to students includes errors, correct answers, and individual feedback. Ana also provides ongoing feedback to guide and encourage students in the learning process: *"Motivate students: provide feedback that encourages continuous improvement."*

According to Bruno, student involvement in the assessment process occurs during moments of information sharing. We observe that students' errors are not treated as punitive elements but as learning opportunities. As noted by Esteban and Pina (2021, p. 429), *"[...] errors are, beyond non-standard responses, indications of different ways of thinking, understanding, relating, and elaborating, as well as an invitation to go beyond what is already known. Therefore, the different responses highlight valid knowledge and ways of knowing that are important for the learning process, even if they fall outside the standards expected by the teacher."* Sharing information about these responses can promote systematic reflection, creating privileged moments of learning for both students and the teacher (Ramão, 2005).

CONCLUSIONS

The study analyzed the reports of seven teachers regarding assessment in the educational context and their practices in mathematics classes within the public school system of the state of Espírito Santo, seeking evidence of formative assessment.

We observed that teachers use different instruments to gather information, which at times are mistaken for the assessment process itself. These instruments allow inferences about student learning from a certification and grading perspective, as outcomes of the assessment process, and also from a formative perspective, aimed at guiding and supporting students in their learning journey.

Teachers adopted two perspectives on assessment: certification and formative. Bruno, Emanoel, and Ana demonstrated, both spontaneously and consciously, the adoption of the formative perspective. The others, however, revealed characteristics of this approach during the interview through the question-and-answer exchange, as we sought information about teaching practices that indicated aspects of the assessment process.

We infer that the certification and grading perspective, mainly conducted through the administration of exams, tests, and quizzes, is highly prevalent in the mathematics classes of these teachers, due to the overemphasis on this practice by education departments, which limit, influence, and prescribe the teachers' classroom practices.

However, formative assessment is practiced by teachers with the aim of obtaining information about students' learning and their own pedagogical

practices, enabling the reorganization of teaching methods and guiding students throughout the learning process.

In this sense, the study showed that, generally, in teachers' discourse, assessment is understood as a classificatory and certificatory process of learning, carried out through isolated moments in which students are subjected to "assessment" instruments. However, when prompted to describe aspects of their practice, we observed indications of a desire for a formative approach, where the teacher demonstrates concern for gathering information about learning throughout the process, allowing for timely interventions.

Although student participation in the assessment process was not a prominent feature, we observed that the dialogues and discussions fostered around the records and perceptions of individuals have engaged students, making them active participants in the teaching, learning, and assessment process.

The research provided moments of reflection for teachers on the meaning of the assessment process, which should not be solely linked to obtaining a grade to meet the demands of the education system, but rather aimed at informing teacher interventions and supporting students in their learning journey. Based on the data, we infer that the teachers moved away from unconscious habits of assessing merely to quantify learning and began to envision the possibility of a formative, dialogical, and inclusive assessment.

Given the aspects of the learning assessment process presented in this text, we emphasize the need to develop an assessment process that supports students throughout their learning journey, fostering valid knowledge for their empowerment and the promotion of equity (Esteban, 2009).

The assessment process must be inclusive, valuing differences and ensuring that all students have opportunities to actively participate in the teaching, learning, and assessment processes, thereby promoting their development.

It is essential to break away from the classificatory and certificatory perspective, which tends to be exclusionary because it is based on the homogeneity of knowledge and the reproduction of ready-made answers. This exclusionary approach significantly impacts students' lives, especially in mathematics learning. Many students already perceive mathematics as a difficult subject, and pedagogical practices disconnected from reality, focused solely on the repetition of ready-made answers, do not contribute to their formation and development as citizens.

Given the results presented, we consider it essential to include discussions about the formative assessment process in initial and ongoing teacher training programs. Furthermore, the school environment should guide its pedagogical interventions with the aim of promoting learning based on diversity and differences, rather than relying solely on numbers and outcomes.

NOTA

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