

# CONCEPTIONS OF MATHEMATICS TEACHERS' EVALUATIVE PRACTICES IN THE EDUCATIONAL INSTITUTION ESCUELA NORMAL SUPERIOR DE MONTERIA



Concepciones de prácticas evaluativas de docentes de matemáticas en la institución educativa Escuela Normal Superior de Montería

Concepções de práticas avaliativas dos professores de matemática na instituição de ensino. Monteria high school normal school

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## ABSTRACT

This article informs the results of the research “Conceptions of Mathematics Teachers’ Evaluative Practices in the Educational Institution Escuela Normal Superior de Monteria (ENSM)”, conducted by the Master's Degree in Education - SUE Caribe - University of Cordoba, with the objective of interpreting the conceptions of mathematics teachers’ evaluative practices in the context of classroom practices and the problematic competence-based curriculum. The study was qualitative and it had an ethnographic design; structured interviews, participant observation and documentary review were applied and considered in the analysis of the Atlas.ti software (Version 7.5), this tool allowed to organize and triangulate the information. The study concluded that within the characteristics of conceptions of evaluative practices, teachers indicated that: success or failure depends on the intervention of all of the actors in the educational process; they use diverse criteria for the assimilation of learning; the nature of the profession is influenced by processes of mathematical-



## RESUMEN

En Este artículo informa los resultados de la investigación “Concepciones de prácticas evaluativas de docentes de matemáticas en la institución educativa Escuela Normal Superior de Montería (ENSM)”, realizada en la Maestría en Educación - SUE Caribe - Universidad de Córdoba -, con el objetivo de interpretar las concepciones de las prácticas evaluativas de los docentes de matemáticas en el contexto de las prácticas de aulas y el currículo problematizador por competencia; estudio cualitativo con diseño etnográfico, utilizando la entrevista estructurada, observación participante y revisión documental; para el análisis, se utilizó el software Atlas Ti. versión 7.5, que permitió organizar y triangular la información. El estudio concluyó que, dentro de las características de las concepciones de las prácticas evaluativas, los docentes indicaron que el éxito o el fracaso depende de la intervención de todos los actores del proceso educativo; utilizan diversos criterios para la asimilación del aprendizaje; la naturaleza de la profesión está influenciada por procesos del pensamiento



## RESUMO

Este artigo informa os resultados da pesquisa “Concepções de práticas avaliativas de professores de matemática na instituição de ensino Escola Normal Superior de Monteria (ENSM)”, realizada no Mestrado em Educação - SUE Caribe - Universidade de Córdoba -, com o objetivo de interpretar as concepções das práticas avaliativas dos professores de matemática no contexto das práticas de sala de aula e do currículo problematizante por competência; estudo qualitativo com desenho etnográfico, utilizando a entrevista estruturada, observação participante e revisão documental; para a análise do software Atlas Ti. Versão 7.5 que permitiu organizar e triangular a informação. O estudo concluiu que, dentro das características das concepções de práticas avaliativas, os professores indicaram que o sucesso ou fracasso depende da intervenção de todos os atores no processo educativo; eles usam vários critérios para a assimilação da aprendizagem; a natureza da profissão é influenciada por processos de pensamento lógico matemático; eles admitem

logical thinking; they admit responsibility within the learning process; they accept criticism of the process of evaluative practices; they classify teachers as laidback and radical; socio-economic and cultural differences influence the process of evaluative practices; they promote training in values with contextualized competences. At critical points, the absence of teamwork in the mathematics area and the disconnection between theory and practice within the institutional context revealed conceptual gaps. All of the above implies that the lack of conceptual clarity in the theoretical conceptions affects the practical implications.

lógico matemático; admiten responsabilidad dentro del proceso de aprendizaje; aceptan críticas en el proceso de las prácticas evaluativas; clasifican a los docentes en facilistas y radicales; las diferencias socioeconómicas y culturales influyen en el proceso de las prácticas evaluativas; promueven la formación en valores con competencias contextualizadas. En los puntos críticos, la ausencia de trabajo en equipo dentro del área de matemáticas y la falta de conexión entre teoría y práctica en el contexto institucional mostró vacíos conceptuales. Todo lo anterior implica que la no claridad conceptual en las concepciones teóricas afecta las implicaciones prácticas.

responsabilidade dentro do processo de aprendizagem; eles aceitam críticas no processo de práticas avaliativas; eles classificam os professores como fácil e radical; diferenças sócio-econômicas e culturais influenciam o processo de práticas avaliativas; eles promovem a formação em valores com competências contextualizadas; eles promovem a formação de valores com competências contextualizadas; eles promovem o processo de formação de valores com competências contextualizadas; eles promovem o processo de aprendizagem. Nos pontos críticos, a ausência de trabalho em equipe dentro da área de matemática e a falta de conexão entre teoria e prática no contexto institucional mostraram lacunas conceituais. Tudo isto implica que a falta de clareza conceptual nas concepções teóricas afecta as implicações práticas.

**Keywords:** Conceptions, evaluative practices, classroom practices, problematic-based curriculum.

**Palabras clave:** Concepciones, prácticas evaluativas, prácticas de aula, currículo problematizador.

**Palavras chave:** Conceitos, práticas avaliativas, práticas de sala de aula, currículo problemático.

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## INTRODUCTION

This research is aligned with pedagogical practices and its impact in the learning quality of Colombian educational institutions located in the Caribbean. Its general objective was to interpret the conceptions of mathematics teachers' evaluative practices in the context of classroom practices and the problematic competence-based curriculum at ENSM. The study emerged from an underperformance in mathematical competences in external tests between 2013 and 2014 (Pruebas Saber), poor internal academic results (reflected in the institutional evaluation follow-up system), and the lack of reflection by teachers in the educational institution regarding evaluative practices; all of the above led to the proposal of the research problem: **What are the conceptions of mathematics teachers' evaluative practices in the context of classroom practices and the problematic competence-based curriculum?** The interpretation process took the following key concepts into account: conceptions, evaluative practices, classroom practices and problematic-based curriculum.

On the other hand, providing a valid answer to the different problems within the evaluative process which underlay the conceptions of evaluative practices in teachers at ENSM is a challenge that requires greater effort from the different actors that **are part of the teachers' initial training, where the context becomes highly relevant, due to its condition of being responsible for training trainers.**

## THEORETICAL FRAMEWORK

The categories addressed by this research refer to teachers' conceptions concerning evaluative practice, classroom practice and problematic-based curriculum.

In this regard, Marcia Prieto (2008) states that conceptions are influenced by the context in which they are developed. Thus, teachers' beliefs are determined by the socio-economic, cultural and linguistic levels of students and by the school. Moreover, content, instruments and purpose of the evaluation proposed by the teacher change from one school to another and from one student to another. Teachers who work in educational centres with challenging contexts will evaluate bearing in mind that their students have less capacity or are in social disadvantage. The author argues that "their characteristic social and cultural diversity, thus, evaluation, is transformed in the road that determines their path" (p.23). This concept reasserts the fact that the context at ENSM -as a trainer of trainers- affects the initial training of future teachers, and that they are influenced by their teachers' conceptions at the moment of interacting with the evaluative function.

In turn, Santo (2003) affirms that evaluation exposes the evaluator's conceptions, the way he/she understands and practices evaluation allows him/her to deduce the theories on which it is supported. In that regard, the following is a characterization provided by the author:

About the teaching/learning process: The way the teacher evaluates reveals his/her concept of what it is to teach and learn.

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About the nature of the profession: Perceives the teacher as a professional dedicated to aseptic practices, lacking psychological and social dimensions, who will apply an evaluation centered on acquisition of data and on competence proficiency.

On the other hand, Prieto and Contreras (2008) indicate evaluative practices are not just of technical and controlling nature, but that these are complex processes of transforming disciplinary knowledge aimed at didactic presentation which teachers must undertake to ease student comprehension; previously defining evaluation criteria, designing evaluative instruments in connection to the aforementioned and determining how to communicate and follow its results, articulating disciplinary content, its didactics and the way to evaluate it.

Also, classroom practices are a “previously thought way of doing, reflecting and materializing encounters between teacher and students with the intention to explicitly teach and give meaning to the act of learning” (Garcia and Gonzalez, 2011, p.67). Meaning that the teacher who builds his/her classroom experiences based on deep reflections on

theory and practice is committed with the improvement of teaching.

Finally, teaching a problematic-based curriculum intends to appropriate scientific knowledge and to strengthen the methodological process in which the student learns to produce said knowledge, it develops intellectual capacity, activates creativity and interest in seeking knowledge; also, students learn to sort difficulties and problems related to life itself, overcoming their own reality. Therefore, teaching a problematic-based curriculum “allows theoretical inferences that might improve students’ process of creative appropriation of knowledge” (Ortiz, 2009, p.47).

Furthermore, the study followed a theoretical approach of authors with recognised research careers in terms of conceptions: Dilthey (1974), Thompson (1992), Santos, (1993), Pozo (2006), Flores (2010), Prieto (2008); in terms of evaluative practices and classroom practices: Casanova (1998), Sacristan and Perez (1998), Ahumada (2001), Santos (2003); in terms of the basics of the problematic-based curriculum: Majmutov (1983), Magendzo and Donoso (1992), Martinez (1987), Diaz Barriga (2000), Alvarez (2001), Wertsch, (1988), all of which reinforced the theoretical fundamentals underlying the research’s object of study.

## METHODOLOGY

The study was qualitative and it had an ethnographic design, it aimed to describe and analyse the patterns or regularities in teachers' conceptions to explain evaluative practices. Analysis units consisted of five teachers in the mathematics area. The research's categorization was based on the contributions of Santos (2003), who proposes that teachers' conceptions determine the types of evaluative practices they implement in the classroom. Also, contributions by Prieto and Contreras (2008) assure that "if conceptions informing evaluative practices were specified, teachers could realize the heterogeneity of the conceptions to which they orient their evaluative practices and instruments, many of which are usually diverse and, occasionally, opposite" (p.4).

Analytical procedures required the codification of analysis categories; the creation of quotes, code families and semantic networks was conducted using the Atlas.ti software (Version 7.5), with the purpose of organizing and triangulating the information obtained from the instruments, namely, structured participant observation, structured interviews and document review. The qualitative research process required four stages: preparatory, field work, analytical, and informative, as per Rodriguez, Gil and Garcia (1996).

Stage 1. Preparatory: the initial stage was related to the first objective of the research. It started with a theoretical reflection, which determined the

conceptual theoretical framework in order to begin the research. Then, the topic of interest was defined by stating the research question, grounded on daily educational practices and on other researchers' work, articles and reports of research connected with the conceptions of evaluative practices, identifying the characteristics of conceptions and theoretical constructs that substantiate these process at international, national and regional levels. This was followed by research design, planning the activities of posterior stages; the research techniques to collect and analyse data were established as well. Also in this stage, the scenario or context of the ENSM educational institution was identified, accessing the institutional system of evaluation (SIEE, for its Spanish acronym), the institution's curricular approach, and analysing performance results of ninth graders and seniors in mathematics, including academic reports and external tests (Icfes, Pruebas Saber, 2013), (Icfes, Pruebas Saber, 2014).

Stage 2. Field work: it intended to fulfil the first, second, third and fourth objectives of the research. An approximation to the field, beginning with an approach and consent process, took place by establishing contact with teachers and directors, introducing the objectives of the research and processing the requests and consents to enter the educational institution and its classrooms. Afterwards, data collection from the structured interview took place, followed by a structured observation of the class and a document review; lastly came the feedback of the results obtained and

exiting the field. All of the above followed a methodological path from the ethnographic perspective, characterized by the permission to gather information from mathematics teachers in their natural environment, observing their actions in classroom practice development, evaluative practices and listening to their voices.

Stage 3. Analytical: in this stage, a contrast of the information on conceptions of mathematics teachers' evaluative practices took place, as well as its connection with classroom practices and with the institutional curricular approach (collected through the structured interview, structured participant observation of class and document review). Triangulation technique was applied using the Atlas.ti software (Version 7.5), this process covered coding the analysis categories, selecting the quotes for each category, establishing the connections between codes and primary documents, defining code families and lastly, it produced a matrix document to realize interpretative analysis.

Stage 4. Informative: this stage accounts for results obtained in the previous stages. The whole process of the research was compiled, highlighting the achievements as well as the aspects to improve, this also included an assessment of the contributions made by the research and a report of the research and a scientific article which evinced the contributions to the quality of education from the perspective of the conceptions of mathematics teachers' evaluative practices at ENSM.

Categorization of initial analysis units: categorization is based mostly on contributions by Miguel Santos Guerra, considering his extensive professional career, work experience, intellectual production and research contributions to the field of education on the evaluative activity and how it allows to unveil the evaluator's conceptions (identified in Stage 1 or preparatory stage), within a theoretical reflection that led to the conceptual theoretical framework.

Moreover, different studies were referenced in connection with the topic that is the object of the study, these were classified into four categories: i) teachers' conceptions regarding evaluation, used to have a view on the teachers' thought or concept about the basics of evaluation; ii) teachers' evaluative practices, which in this case constitute the main axis to interpret the underlying conceptions in the practices developed by teachers in the classroom; iii) curriculum basics, which led to the connection between evaluative practices and the institutional curriculum; finally, iv) the institutional evaluation system, which helped analyse the legal mandates and institutional organization that govern educational regulations in Colombia.

## *RESULTS AND DISCUSSION*

In mathematics teachers: there is not a single apparent cause for student failure or success in evaluative practices; they state that the success of results obtained relies on a correct or incorrect

intervention of all of the actors involved in the educational practice (teachers, parents and students).

In this regard, it is believed intelligence is conditioned by social, cultural, linguistic and economic factors; that intelligence is something that requires building and is dependent on cultural influxes, and is characterized by the potential to be developed and enriched, it classifies and labels the evaluated subjects and assigns them capacities according to their performance (Santos, 2003, p. 5) . It is inferred that the nature of intelligence is influenced by diverse factors of context, which are in constant educational growth and depend on the evaluated subject's capacities and performance.

Several criteria are used to verify language assimilation in students, teachers mention the use of different strategies and methodologies in the process of evaluative practice, keeping social factors and context in mind. They state that “not just what the student needs to assimilate prevails, the way in which the teacher can help the student achieve that is also meaningful” (Santos, 2003, p.6 ). It can be deduced that teaching is conceived as an automatic process of knowledge transfer, set up in a single direction (teacher-student) and that the evaluative practice will evince if learning has been acquired accordingly.

In their concept, the nature of their profession is connected to the characteristics of their knowledge area: being mathematicians, meaning science with

the influence of logical thinking processes, reflects in the evaluative practice with the use of a variety of tools in contextualized settings for students to acquire competences. It is established that “the teacher is the person in charge of introducing a series of data, concepts, theories and skills into the students head, all of which focuses on the proficiency of competences” (Santos,2003, p.7). An absence of psychological and social requirements can be inferred; the teacher is seen as a professional with disregard for social and moral matters and interpersonal relationships, which would allow different ways of considering the profession, instead of limiting it to data transmission and assimilation to acquire competences.

Teachers admit the responsibility they bear within the students' learning process, which is regulated through evaluative practices and is shared with parents and students. It is established that the evaluator “is aware that part of the learning depends on how it has been taught, is humble enough to acknowledge that students' failures as his/her own. It is not an exclusive responsibility of the student” (Santos, 2003, p.7). It can be deduced that the teacher is aware of his/her responsibility of the students' learning process and that it depends on how it is oriented; teachers admit their incidence on this process' failure and understand that evaluative practices are a way of revealing the students' reach as a measure of teaching.

They also respect students' opinions, accepting criticism of the process of evaluative practice and

taking it into account when reflecting on teaching processes. It is proposed that “the student may express criticism, thought and feelings, and that said information could be used to reflect on or improve the teaching process, thus, evaluative practices” (Santos, 2003, p.7). Evidently, teachers build an environment of respect and healthy coexistence, do not use evaluation as a weapon of power and punishment, but as a stimuli to improve teaching-learning processes.

They demonstrate different ways of thinking, on the one hand, some teachers are interested in enhancing their work to better train students, consulting processes of evaluative practice with peers; while others act independently regardless of the results of said processes, because they think different areas use different methodological strategies that cannot be generalized. Therefore, some teachers “are interested in the students’ resulting training and others follow and individualistic approach depending on their criteria and students, without consideration of peers” (Santos, 2003, p.8). It is established that, consequently, some teachers’ opinions are egocentric, while others express concern regarding the methodologies applied, taking the time to review the students’ evaluative process and inquiring with peers about teaching-learning practices.

Teachers state that students’ economic, social and cultural differences influence the process of evaluative practice but mention that each member

of the educational community must comply with his/her role. It is established that “socially, evaluations are related to rationality but also to justice, are sensitive to the difficulties of the underprivileged in terms of having access to knowledge” (Santos, 2003, p.9). It is mentioned that teachers are aware of the shortcomings and conflicts faced by the disadvantaged to access knowledge, given the social character of rationality and justice of evaluative practices.

Teachers agree on the purpose of evaluative practices in the educational institution, framed within a formative nature, promoting training in values in the pedagogical processes. In this regard, “institutions have the task of helping people grow and fulfil their fullest possibilities” (Santos, 2003, p.9). This proves that they promote evaluative practices aimed at training students, using contextualized competences and emphasizing on valued in the institution, benefiting personal growth and a correct use of potentialities.

Teachers add similar contributions regarding group activities driven by good treatment of others and by values, particularly respect, amidst the differences between all of the members of the educational community, thus encouraging students’ comprehensive training. In the words of Santos (2003): “a profound interaction between people is supported by moral demands, which is why the basic principles of human relationship and a responsible professional exercise cannot be forgotten” (p.9). Teachers worry about a



comprehensive training of humans, emphasizing values and with moral demands that are appropriate with the context and educational role.

They use legal provisions that condition, inspire and regulate evaluative practices, based on the application of curricular guidelines demanded by the educational institution and set forth by the Ministry of National Education (MEN, for its Spanish acronym); as Santos states: “evaluation is conditioned by legal provisions that inspire and regulate it” (2003, p.2). It is inferred that teachers in the institution conduct evaluative practices in accordance with MEN’s legal provisions that are regulated by the institutional directors; this implies that the mathematics area must have a unified guideline on moments, nomenclature and content of evaluations, so teachers don’t have to do the process on their own or following dissimilar criteria. As reiterated by Santos (2003): “the way in which the evaluation is conducted is supervised by diverse agents that safeguard a faithful completion of the rules” (p.2). Evaluative practices are developed according to parameters defined by institutional directors -not individual or personal parameters-, which is coherent with Colombian legislation’s guidelines, indicated in the general law of education and in statutory decrees.

contemplate these pressures, especially due to the interaction between different members of the educational community, parents and students’ opinions are valuable for the process, with the aim of improving school performance.

Within the area, teachers do not implement the same strategies, materials and organizational references in the process of evaluative practice, this fact goes against the guidelines and the institutional curriculum demands and educational policies. This evinces lack of group work in the area. The evaluation “is conducted with specific determinants, such as the organizational culture within the students’ group, available techniques, training received, curriculum demands, among others” (Santos, 2003, p.2). This indicates that in the mathematics area, evaluative practices should be aligned with the demands of the institutional curriculum, following directors’ regulatory guidelines to comply with educational rules, which is not adequately fulfilled.

Classroom practices are all of the actions and activities executed by a teachers within the teaching process which allow to determine the reach of learning, the curriculum’s implementation and the way in which pedagogical processes are valued. In this regard, “teaching practices are actions and activities that enable to value, innovate, go deeper and modify the teacher’s teaching process in the classroom” (Castro, Peley and Morillo, 2006, p.3); also, “evaluative practices derive from a cluster of activities developed in the classroom or in spaces in

which the curriculum in action takes place, the evaluation objective depends on how it is conceived” (Morales, Valverde and Valverde, 2016, p.4). The aforementioned, taking into account teachers’ opinions, is unclear in the mathematics area.

Teachers propose different methodological strategies, including the use of technologies to help improve the teaching process and contribute to better student learning. It is stated that “it should be the wish of every educator to enhance the teaching-learning process, encourage students’ creative and critical thinking, preparing them to understand learning as an act within the social system” (Castro, Peley and Morillo, 2006, p.4), and “evaluative practice is an activity that is developed following certain uses, fulfils multiple functions, is supported in a series of ideas and ways to conduct it, and is the answer to particular conditioning within institutionalized teaching” (Sacristan & Perez, 1998).

Teachers seem to be clear on the concepts of evaluative practices and problematic competence-based curriculum. In this regard “evaluative practices are directly related to conceptions that arise at the moment of planning, executing, understanding, analysing, interpreting and appreciating situations of evaluation; likewise, prior experiences, context, regulations or official curriculums also have an influence” (Vivas and Chacon, 2012); moreover,

“problematic teaching facilitates the integration between theory and practice at the same moment (time) and in the same place (space) of the learning process, which aids the comprehensive training of students involved in the activity, since it entails the process of learning how to learn, learning how to do and learning how to be” (Ortiz, 2009 cited by Garcia and Gonzalez, 2011, p.67).

It is suggested that “it is imperative to understand that problematic teaching must build knowledge based on the problem-solving process, in order to build skills, attitudes and values expressed in knowing and knowing how to do that lead to understand and solve problems in their surrounding” (Magendzo, 1992, cited by Garcia and Gonzalez, 2011, p.65). In that sense, teachers are clear in the way in which they evaluate learning in the curriculum, indicating the pertinence of building knowledge based on problem-solving in contextualized situations to foster students’ acquisition of skills and dexterities within the framework of the competences.

On the other hand, the document review, which took into account the structure and analysis of each referenced document, led to the establishment of the pertinence of each, pursuant to legal regulations and provisions of Colombian educational policies, namely: the General Law of Education, Decree 1860 of 1994 (Article 34. The areas of knowledge defined as mandatory and fundamental), Law 115 of 1994 (Article 23. Mandatory and fundamental areas), curricular guidelines in mathematics (guidance to develop the mathematics area in the country – MEN, 1998); basic standards of language and mathematics competences (progress levels in

the development of mathematics competences – MEN, 2006); Decree 1290 of 2009 (Evaluation system – MEN, 2009); Document N° 11, grounds and guidance for the implementation of Decree 1290 of 2009 – MEN (2009), basic rights of learning (Fundamental mathematics knowledge and skills – MEN, 2015), Decree 1075 of 2015. All of the above, as a critical part of institutional operation, denote conditions that allow regulating the curricular processes, including mathematics teachers' classroom practices and evaluative practices. This fact helps deduce the existence of strengths in the educational institution's organizational, administrative and directive structure.

The aforementioned is coherent with the findings obtained in the analysis of the elements that condition evaluative practices, teachers act following legal provisions and curricular guidelines that are regulated by MEN, adhered to by the educational institution's directors and in function of the problematic competence-based curriculum. Also, in the process of evaluating practices, mathematics teachers consider parents and students' opinions with the aim of identifying situations that may affect students' learning, as set forth by the regulations, Decree 1290 of 2009 in particular.

Finally, and in contrast with the above, the lack of group work in the mathematics area was recognised as a critical point, teachers fail to use the same work strategies, dynamics and methodologies

contrary to the educational institution's organizational conditions (which are specified in the area plan, classroom plan, operational plan, daily activity log and cumulative evaluations).

Structured participant observation led to deduce that 75% of teachers exhibited distinct cognitive and procedural development of the topic and did not display initial traits to formulate problematic situations; the teachers asked questions concerning mathematical processes or knowledge, as per the topic. In terms of content construction and knowledge production, the approach was traditional, with behaviourist elements and few constructivist elements. The same instruments and processes (written, oral, practical and of individual resolution) were used to evaluate learning. Cordial communication and an environment of respect was seen overall.

Yet, 25% of the teachers developed the topic through the formulation of problematic situations, which led to the acquisition of mathematical – communicative skills, reasoning and problem solving; it was evident that the topic was used in a real context; the teachers asked questions of mathematical processes or knowledge according to the developed topic; likewise, content construction and knowledge production tended to exhibit behaviourist and constructivist elements; different elements and processes were used to follow-up on learning.

The aforementioned is consistent with the findings from the analysis of the concepts of evaluative practices and classroom practices (and their connection), revealing confusion or a lack of theoretical and conceptual clarity that impede the teaching practice to be a set of actions that favour and delve into the teaching process in the classroom and the evaluative practice as a set of activities prone to implement the curriculum in action.

Similarly, teachers' performance evinced a lack of proposals and application of varied methodologies aimed at improving evaluative practices and optimizing the development of classroom practices, which could consolidate competences in contextualized settings and depending on educational levels, this idea was proposed by mathematics teachers in the structured interview.

## *DISCUSSION*

A glance at the research's methodological stages allowed to conclude the following: qualitative research (through structured interviews and structured participant observation) was the fundamental basis of this research because it enabled an interpretation of mathematics teachers' conceptions of evaluative practices departing from an inquiry process, framed within the ENSM's institutional context. This was possible by studying the categories of the conceptions, evaluative practices, classroom practices and problematic competence-based curriculum, which led to a description and analysis of the patterns or

regularities in teachers' conceptions that explained their evaluative practices in the institutional context.

In agreement with the above and pertaining the first objective, upon identification of the characteristics of mathematics teachers' conceptions of the evaluative practices, the following were found:

**Regarding the evaluator's conceptions:** in the nature of intelligence, there is not a single apparent cause for students' success or failure in evaluative practices, it depends on adequate intervention by all of the actors of the educational process; in the nature of the profession, it was established that it is connected with the characteristics of the knowledge area (mathematics), influenced by logical thinking processes.

**Regarding the evaluator's attitudes:** toward him/herself: teachers admitted having responsibility in the learning process (shared with students and parents). Toward the students: they respect their opinions and accept criticism of the evaluative process. Towards peers: they exhibited different thoughts, classifying teachers into radicals and laidback.

**Regarding the evaluator's ethical principles:** the social structure and dynamic established that economic, social and cultural differences between students affect the process of evaluative practices and must be considered; the social-rational aspect states that the purpose of institutions is framed within a formative nature, fostering training in

values and the acquisition of competences contextualized in pedagogical processes.

Pertaining the second objective, these typologies contributed to the identification of critical points of the conceptions of evaluative practices, evincing a lack of similar work strategies, dynamics and methodologies in evaluative practices within organizational conditions, this illustrates lack of teamwork in the mathematics area; in contrast with the findings from the document review, which revealed suitable organizational structures and conditions driven by the institution's directors and aimed at unifying criteria, strategies, methodologies and pedagogical dynamics to fulfil the goals set by institutional educational policies, according to national educational policies.

Equally and pertaining the third article, the approach to classroom practices through structured participant observation contributed to analyse the connection between said practices by linking theory and practice in the institutional context; this led to identify a lack of conceptual clarity in the theoretical constructs, which in turn has practical implications because of the disconnection between what is proposed by mathematics teachers to improve evaluative practices and the way in which they undertake it in context.

In terms of the fourth objective, the approach to classroom practices through structured participant observation contributed to analyse the connection between evaluative practices and the problematic

competence-based curriculum; teachers' thoughts showed convergences in the connection between these two aspects, suggesting that it takes place applying different contextualized activities and using problematic questions to develop competences. Similarly, with regard to the ways of evaluating learning in this specific curriculum, mathematics teachers proposed the use of design, formulation and statement of problem solving.

Compared to the aforementioned, poor usage of varied methodologies came across in the structured participant observation, teachers did not display initial traits to formulate problematic situations (which are the basis of the problematic competence-based curriculum that is in place in the educational institution), which again indicates the disconnection between theory and practice in the institutional context, as concluded in the third objective.

As for the document analysis, it reviewed the documents and instruments used in the evaluative practices within the institutional structure and organization in order to establish critical elements in the mathematics teachers' conceptions of evaluative practices, based on the description and analysis of normative aspects implemented in the ENSM educational institution (which have to do with legal provisions regulated by the State from MEN). All of the descriptions and analyses showed how the institutional policies (including directive, administrative and academic management) at ENSM adhere to statutory rules, laws and decrees,

particularly Decree 1290 of 2009 on evaluative practices, and are coherent with the guidelines set by MEN concerning national educational policies.

Given the aforementioned, evaluative practices are definitely articulated somewhere in unlike occupations of the teacher's tasks and are permeated by several aspects, including the political, economic, social, personal, professional, ethical, moral and institutional spheres; these affect every element that comes together in classroom practice, such as: State regulations, availability of resources, relationships among teachers-teachers or teachers-students, group interactions, acknowledgement of the subject in the community, how knowledge is transmitted or assimilated, methods or strategies used, students and parents' interests, and internal or institutional controls, all of which contribute to the educational environment in the pedagogical practices.

Finally, in the structured interview, teachers added crucial elements that enable reflections on the dynamics of evaluative practices at ENSM, these could lead to the formulation and recommendation of further institutional improvement actions.

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