Formative Evaluation in a Context of Pedagogical Renewal: Practices at the Service of Success

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In the context of the Peruvian pedagogical renewal, the appropriation by teachers of the prescribed changes in the evaluation plan requires the dissemination of exemplary practices, since several investigations show that observing examples favors the learning of new teaching practices. Therefore, the objective of this research, carried out in 2017, has been to characterize the formative evaluation practices of primary school teachers. The qualitative approach and both ethnographic and case study designs were applied. Data was collected about the planning of the activity with an interview with 13 volunteer teachers; on the actions of teachers and students through the observation of 25 learning-teaching activities; about the significant segments of the activity recorded through an interview with the teachers. The practices of teachers have been analyzed in their behavioral and cognitive dimensions. The results show that the participants integrated into their practices many characteristics of the formative evaluation, recommended by the Ministry of Education, and that their main challenge consists in sharing the responsibility of the regulation processes with the student.

Keywords: formative evaluation, teaching practices, professional development

INTRODUCTION

In recent years, the matter of school success has been increasingly at the center of social debates in Peru. The Peruvian basic education training curriculum links school success to the school's quality mission (Peruvian Ministry of Education, 2016). Hadji (1999) considered that evaluation should become a powerful lever to increase school success. For this purpose, most of the research on learning evaluation states that it is necessary to break with practices that tend to place evaluation at the end of learning (Rosales, 2003). Hence, the importance of a formative evaluation, in conjunction with learning. Black and Wiliam's (1998) review of classroom evaluation research, was a milestone, finding that efforts to improve formative evaluation yielded benefits greater than one-half of a standard deviation. In other words, formative evaluation, effectively implemented, can do as much or more to improve achievement and attainment than any of the more powerful instructional interventions, such as intensive reading instruction, tutoring, and similar.

In turn, the research of Solé (2001) shows that, in reading, students exposed to assessment practices focused on supporting learning and individual progress tend to be more learning-oriented than students

exposed to assessment practices focused on performance. The same study shows that, in students, a learning orientation is positively related to all components of self-concept (scholastic and non-scholastic), components related to school outcomes.

In case studies of two locations, Australian and English, Klenowski (1995) shows the relationship between a self-evaluation strategy implemented by students and their control over their learning. Klenowski's (1995) data support the previous assertion made by Wiggins (1992) that having students analyze their own work gives them ownership of the evaluation process and "makes it possible to hold students to higher standards because the criteria are clear and reasonable" (p. 30). In a collaborative work context, research by Cohen, Lotan, Abram, Scarloss and Schultz (2002) indicates the direct effect of a strategy of communicating evaluation criteria to the work group on the nature of the group and on group performance.

Based on these findings and the National Curriculum for Basic Education, the Ministerio de Educación del Perú (2016) required teachers to modify their evaluation practices in order to emphasize evaluation for learning. This provision had important implications for initial and continuing teacher training, since, at the time when the curricular reform was proposed, a summative evaluation with criteria-based interpretation prevailed in evaluation practices, and when evaluations were carried out during learning, the formative function was absent. Picaroni (2009) states that, implicitly or explicitly, most of the Peruvian teachers interviewed make at least some allusion to the basic functions of evaluation, distinguishing between summative and formative evaluation. However, the minority of the teaching staff is not aware of carrying out the actions that the latter should give priority to: providing students with concrete, clearly understandable information, so that they can become aware of their achievements and mistakes, as well as the possible ways to overcome them.

Regarding student self-evaluation, the Organisation for Economic Cooperation and Development (2014), in TALIS 2013, reported that it is a method used less frequently in teaching practice: 35.1% of teachers in the OECD average report that it allows students to assess their own progress, and just over three out of five in Chile (68%) say they frequently use this method to evaluate students. It would be very desirable to promote this type of evaluation in Peru, since it favors analysis and reflection on the teaching-learning process by students and teachers, which can translate into an improvement in the overall performance of students.

As Wilson y Berne (1999) emphasize, changes prescribed by a curriculum and directives do not automatically change practices. Some authors, among them Fletcher, Foorman, Denton y Vaughn (2006), consider the lack of opportunities for teachers to observe the practices to be implemented as an obstacle to change. Windschitl (2002), who addresses the difficulties of adopting some teaching practices, argues that teachers need to know the history of peers who succeeded in implementing new practices. The study made by Garet, Porter, Desimone, Birman y Yoon (2001) shows that participation in learning activities, including the possibility of observing expert teaching practices, is one of the characteristics of continuing education programs with positive effects.

Regarding initiatives to support cooperation among teachers, according to TALIS surveys, an average of 64% of management staff report adopting these ideas, with a view to developing new teaching and assessment techniques. In Chile, Malaysia and Romania, between 80% and 98% of school management staff report that they regularly support cooperation among their teachers to develop new practices, while in Denmark, Estonia and Japan more than 50% of school management staff report that they never, rarely or occasionally do so (OECD, 2014). Peruvian school leaders can provide opportunities for teachers to participate in professional development activities related to improving their teaching practices. These activities should include collaboration and mentoring in the school itself (Picaroni, 2009).

To summarize, the pedagogical renovation introduced in Peru prioritized formative evaluation practices, which represented a change for the teaching staff. As several rigorous investigations show that the observation of examples can favor the learning of new teaching practices, the objective of this research was to characterize the formative evaluation practices of elementary school teachers who incorporated the evaluation characteristics prescribed by the Peruvian Ministry of Education. The qualitative approach and both ethnographic and case study designs were used. This research was conducted in cycles III, IV and V

of elementary education in the educational institution Corazón de Jesús in the city of Puno - Peru, during the second semester of the year 2017.

In this article, first, the concepts of teaching practice and formative evaluation are defined. Then, the methodology used is explained, which included qualitative tools to obtain the necessary data for the analysis and construction of knowledge in the area. Subsequently, the results of the research are presented through a general overview and another focused on the examples extracted from three cases. To conclude, some clues related to continuing education are identified.

THEORETICAL REFERENCE

This investigation of formative evaluation practices is in line with research on teaching practices, which allows for a better understanding of teaching work. It aims to propose a framework for clarifying the relationship between formative evaluation and the regulation of learning.

Teaching Practices

In developing a state of evolution of the studies regarding the analysis of teaching work, Altet (2014) reported that, at the beginning, a behaviorist current focused on the observable actions of teachers; later, another current called process-product oriented the work towards the effect of teaching practices on student learning. Thereafter, the influence of cognitivist models centered interest on the cognitive processes underlying teachers' behavior (teacher thinking), (Kagan, 1990) seen as exclusive factors controlling practices. Casalfiore (2000), in this regard, highlights a phenomenological current that insists that metaphors, personal and circumstantial images produced by teachers function as the cognitive organizers of the activity. Finally, ecological and interactionist models reintroduced the variables of situation and context into the study of practices.
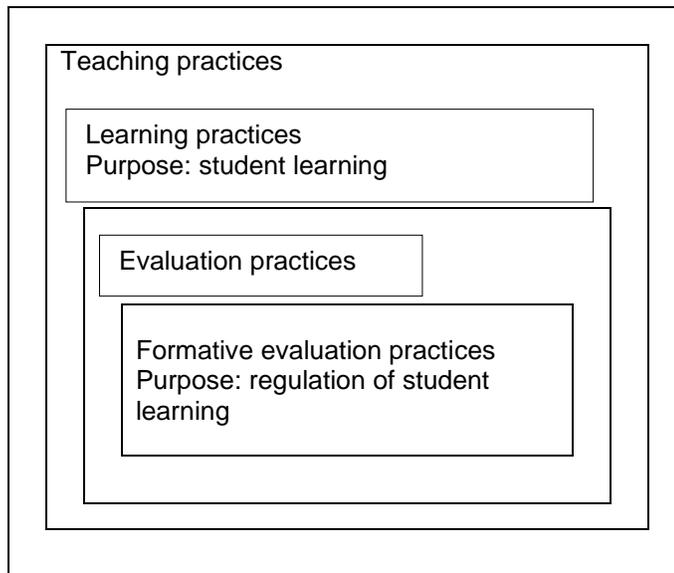
As proposed by Paquay (2004), although these currents have been seen in the past as exclusive, particularly the behaviorist and cognitivist currents, the behavioral and cognitive dimensions of teaching action should be simultaneously considered, taking into account the context. Additionally, research is increasingly defining teaching practices as a situation-based action, which Altet (2002) defines within a constructivist and interactionist framework.

A survey of different definitions regarding the concept of teaching practice (Altet, 2002) indicates that these usually take into account a behavioral dimension (observable implementation processes of the activity) and a cognitive dimension (choices and decision making). These actions concern a singular person in a given situation.

Research on teaching practices leads us to favor the concept of teaching practices, a less inclusive concept. Teaching practices include, on the one hand, teaching practices and, on the other hand, other practices carried out outside school hours, in the absence of the students, including meetings of colleagues in teams and meetings with parents.

Thus, inspired by Beillerot y Mosconi (2014), the concept of teaching practices, whose purpose is student learning, is defined in this research as the set of acts of each professional, observable or not, as well as the meanings she or he gives them. Teaching practices thus include a behavioral dimension (observable acts) and a cognitive dimension (mental acts) (Figure 1). Regarding the meanings given to these acts by each teacher, they are directly related to the situated action, contrary to the conceptions, which are general. These acts are implemented in the presence or absence of students, during school hours and outside school hours, individually or collectively (with peers or others). Finally, teaching practices include the actions carried out in the proactive (action planning), interactive (action in the presence of the students) and postactive (action evaluation) phases of the intervention.

FIGURE 1
TEACHING PRACTICES, EDUCATIONAL PRACTICES, AND FORMATIVE EVALUATION PRACTICES

Teaching practices

Learning practices
Purpose: student learning

Evaluation practices

Formative evaluation practices
Purpose: regulation of student learning

Source: own preparation, 2017

A Definition of Formative Evaluation Practices

The review of formative evaluation practices requires a definition of this concept, clarification of the central concepts of learning regulation and authentic situation, and a clarification of the place that formative evaluation practices occupy in teaching practices.

Allal y Mottier-Lopez (2005) show the evolution of the formative evaluation concept from Bloom's initial neobehaviorism conception. At the origin, under the teaching staff's control and taking place exclusively at the end of a learning sequence, formative evaluation, in its extended conception, is experienced at every moment of the learning process and gives an active role to the students.

This enriched vision of formative evaluation has led Allal (1988) to distinguish different types of external regulation, essentially according to the time at which it takes place. Proactive regulation happens when the collection of information makes it possible to adjust the teaching, at the beginning of the teaching and learning process, with respect to a given object in order to take into account the differences among the learners. Interactive regulation occurs in the course of interactions between the student and the components of the situation (peer group, teacher, material that favors self-regulation, etc.), which allows for continuous adaptations during the learning process (adaptation of objectives, criteria, tools, etc.). Regulation is considered retroactive when it is carried out at the end of a teaching and learning sequence to identify the learning achieved or not achieved by the students. It involves the selection of means and approaches to correct or overcome learning difficulties(Allal y Mottier-Lopez, 2005).

Based on the work of Black y Wiliam (1998), in this research, formative evaluation refers to the cyclical process through which students or their teachers carry out the gathering (collection and recording) and processing (analysis and interpretation) of information in order to make a judgment on learning. The information gathered can be used as feedback for each student to activate internal processes and self-regulate their learning. The information gives reasons about the adequacy of the teaching in relation to the different students; then, it can guide each teacher to regulate his or her own action. Formative evaluation can be spontaneous and informal or planned or formal. In addition, a constructivist perspective highlights the fact that the regulation of learning can only be achieved by the student body, while the teacher can only intervene indirectly in this regulation (represented by the dotted line in Figure 2). As proposed Tardif (2006), external regulation or co-regulation will be distinguished from internal regulation or self-regulation.

FIGURE 2
THE FORMATIVE EVALUATION CYCLE

Source: own preparation, 2017

Among the important concepts presented by different authors who have dealt with formative evaluation are those of authentic situation and learning regulation. According to Wiggins (1998), an authentic situation is characterized by the fact that it can be experienced in real life; that it demands judgment and innovation from students; that it reproduces or simulates the characteristics of a real context in accordance with the objectives, roles, situations, ambiguities and limitations; that it assesses students' ability to use a set of knowledge and know-how; that it provides opportunities to practice and consult resources; and, finally, that it allows for feedback.

Regarding the notion of learning regulation, it has been treated, in the last decade, from the angle of learning self-regulation, a concept consistent with the constructivist perspective, which is preserved here. Several models, such as those of Butler (2006) and Zimmerman (2005)allow its study, but considering the objective of this research, the works that deal with interventions or practices that support the self-regulation of student learning have been retained. Perry, VandeKamp, Mercer y Nordby (2010), who analyzed teacher-student interactions to support self-regulation of learning, established the following characteristics: giving different students opportunities to make decisions, controlling the challenges they face, evaluating their own and their peers' outputs, providing support to different students in transferable aspects from one learning situation to another, ensuring that formative evaluation takes place in a non-threatening climate, and that interventions are focused on mastery of learning rather than just on performance.

Thus, as shown in Figure 2, teaching practices based on formative evaluation constitute a subset of evaluation practices defined as the set of the singular acts of each professional, as well as the meanings that the latter gives to the proactive, interactive and postactive phases. These acts, observable or not, have the purpose of regulating learning by each student (self-regulation) through the regulation of teaching. These actions include the collection and processing of information about the learning of different students, a judgment about this learning, and feedback to the student to support his or her self-regulation Based on Bru (2013), we present the variables to be taken into account when studying formative evaluation practices, grouping them into three sets: process variables (communication dynamics, teacher and student roles, learning dynamics, external or internal regulation processes), device-related variables (tools used,

organization of time and space) and content-related variables (choice of learning objects and activities, and the structuring of content).

The purpose of this research was to characterize the formative evaluation practices of elementary school teachers according to the three categories of variables listed above.

METHODOLOGY

Approach

In this research, the qualitative approach has been employed in the field of formative evaluation practices of elementary school teachers, and both ethnographic and case study designs have been adopted to address teacher and student interactions in a set of evaluation activities. The scope is descriptive and interpretative, since it specifies the observable dimension of formative evaluation practices and interprets the unobservable dimension of such practices, i.e., the mental acts of each teacher.

Participants

This research has included the intentionally selected teachers of cycles III, IV and V of elementary education in the educational institution Corazón de Jesús in the city of Puno-Peru. The inclusion criteria to take part in the research were the following: teachers who have incorporated the evaluation characteristics established by the pedagogical renovation, as well as who expressed their willingness to participate. This research was developed in the second semester of 2017.

In accordance with the inclusion criteria defined in this study, thirteen elementary school teachers, recognized in their environment for their evaluation practices corresponding to the requirements of the Peruvian Ministry of Education, freely decided to participate by signing a consent form. Among those who participated, five worked in the third cycle, two in the fourth cycle and six in the fifth cycle. Two teachers had more than twenty years of experience; seven had between eleven and twenty years of experience; three others had between six and ten years; and only one person began his or her career less than six years ago.

A set of 25 learning and teaching activities were observed. These activities, which took approximately 50 minutes, are part of a sequence, defined as a set of teaching activities focused on learning specified by the teaching staff. Each of the 25 activities focused on formative evaluation was chosen by each teacher in a curricular area of his or her choice.

Collection Techniques

Data were collected during two interviews and one video observation. The data collection began with an open structured interview (Patton, 2002) that allowed collecting data mainly on the planning of the chosen activity (object, process and formative evaluation tools), on its place in the broader learning-teaching sequence concerning a given topic, as well as on the conceptions of learning, teaching and formative evaluation.

Then, the classroom activity was observed and filmed, while focusing on the actions of each teacher in the visual and sound planes. Also, two microphones were used to capture the interventions of any student.

Finally, this filmed observation was followed by a stimulated recall interview (Henderson y Tallman, 2006), which took advantage of the type of stimulus questions of Vermersch (2010); namely, initializing, focusing, clarification, and regulating interview questions. The stimulated recall interview was conducted based on the visualization of video segments of the observed activity, considered significant in terms of formative evaluation. Half of these segments were chosen by each teacher and the other half by the research team. The entire set of excerpts took approximately four minutes to complete. During the interview, each teacher was invited to interrupt the viewing to name what was observable on the videotape and verbalize their concomitant mental actions.

Analysis Processing

The data collected were processed in two ways, the first provided an accurate analysis and the second allowed for a more global analysis. The latter was selected for the purposes of this article. This selection,

which imposed important limits on the examination of processes, has led to the retention of some indicators that have abandoned their dynamic aspect. The approach used at this analysis level is inspired by Bru (2013) and Paquay (2004). Based on the data from the open structured interview and the filmed observation, the global analysis sheet, presented in Annex 1, took into account the process variables (items 1 and 5), the variables related to the devices (items 2, 3, 4 and 8) and the variables related to the content (items 6 and 7). Thus, the global analysis sheet includes the following items:

- The temporality of the formative evaluation (micro or macro) (item 1): when the formative evaluation activity was recorded in the long term, it was coded as macro, even if it also included the formative evaluation cycles, which characterize the short term, while another that was only in the short term was coded as micro.
- The role of the teaching staff in the activity (item 2): depending on whether or not they make use of the information collection and processing, judgment or feedback tools, and depending on the conception of these tools made or not made by the teaching staff (item 3).
- The ways of organizing the work of students (item 4): observed in the different moments of the activity: class group, small teams or individual contact.
- The function of formative evaluation (item 5): observed when considering the retroactive, interactive and proactive regulations in the sequence described by each teacher.
- The type of activity regarding the learning objects (item 6): six potential types were distinguished based on the cross-reference between the authentic or non-authentic nature of the activity and three possible learning objects (competence, components, essential knowledge).
- The objects of formative evaluation according to the learning domains (item 7): transversal or disciplinary competencies, their components and essential knowledge.
- The role of the students (item 8): depending on the student's assumption of one or another of the stages of the formative evaluation process, the minimum role refers to a specific participation rather than taking charge.

The global analysis focused on the self-regulation of learning by examining certain characteristics of the activity that could support this self-regulation. From the observation data, it was discussed in relation to the students, their role (challenge control, self-evaluation and peer evaluation during or at the end of the task) and the characteristics of the proposed task (openness of the task, importance of social interactions to succeed in the task and the practice of self-regulatory actions). Also, in relation to teachers, their role (cognitive modeling, request for verbalization of their processes to any student, proposition or reminder of objectives and formative evaluation criteria) was addressed.

RESULTS

The results are presented in terms of each of the three categories of variables listed above: processes, devices and content. For each of these categories, we first report the results of all the activities studied and then proceed to an analysis based on the cycles and learning areas.

Process Variables: Timing of Evaluation, Roles of Teachers and Students, and Type of Regulation
The global analysis carried out in the set of activities shows that, in all cases, formative evaluation was done within the spontaneous interactions of teachers and students through which the micro-sequences of "collection-processing-judgment-feedback" took place. In half of the cases, the evaluation was only conducted in the short term (12/25) (see summary of the global analysis in Annex 1, item 1 - micro), while in the other half, it was conducted in both the short and long term (13/25, item 1 - macro). In terms of tools, of the twelve activities that were only placed in the short time, ten did not use specific tools for formative evaluation (we will return to the tools in the section on devices). This situation is reversed in the activities located in the long term (macro), since in nine of the thirteen cases tools designed for formative evaluation purposes were used (activities classified as instrumented).

Regarding the role of the students, in more than 50% of the activities (14/25, see Annex 1, Item 7), the teaching staff conferred no role or a minimal role in one or another of the stages of the formative evaluation

process. In almost a quarter of the activities (6/25), the teacher gave a more active role to the students, which led them to appropriate formative evaluation tools, such as an evaluation guide of the problem-solving process or an evaluation guide of the cooperative work in a work team. Consequently, it can be argued that, often, different students participated in the evaluative process without assuming a role, which was exclusively in charge of the teaching staff.

In connection with external regulation (Allal, 1988), which can be exercised by any teacher, the analysis of the data (see Annex 1, item 4) indicated that most of the activities observed (17/25) favored interactive external regulation, that retroactive regulation was present in seven activities, and that one activity favored proactive regulation.

As for internal regulation, it was analyzed from the point of view of the characteristics of the activities likely to support the self-regulation of student learning (characteristics of the task and role of each student) and the teacher's role. All the activities observed included a presentation or a reminder of the learning strategies (25/25), and in almost all (23/25), the teaching staff proposed or reminded the objectives and formative evaluation criteria. Cognitive modeling was present in one fifth of the activities (5/25). Concerning the characteristics of the activity and, more specifically, the characteristics of the task, a small proportion of the situations observed were structured around an open-ended task (5/25) or led the students to exercise in the use of self-regulation learning strategies (4/25). In reference to the role of the students, few activities offered opportunities for self-evaluation during the learning sequence (3/25) or peer evaluation (3/25).

Variables Related to the Devices: Instruments and Methods for Managing Student Work

As shown in Annex 1, in most of the cases in which the formative evaluation was conducted only in the micro-sequences, which characterize the short time of the referred evaluation, no instrument known specifically for the purposes of such evaluation was used. These activities have been classified as not implemented in the evaluation plan (10/12). On the contrary, in most of the cases, where formative evaluation was done in the long run, each teacher resorted to the instruments (9/13) they designed (e.g., self-evaluation guides).

Regarding the organization of the work of the students, three modalities emerged during the development of the activities (See Annex 1, item 3): the teacher intervened before a student in the presence or not of the class group (15/25), before subgroups of students (9/25) or before the class group (7/25). The total numbers indicate that in four cases, two modalities alternated in the same activity: the teacher intervened in front of one student and in front of the class group or intervened in front of small work teams and in front of the class group.

Variables Related to Content: Choice of Learning Objects and Types of Activities

A first analysis shows that thirteen of the activities analyzed correspond to language learning, nine to mathematics and three to other areas (social personnel or science and technology). Regarding the learning and formative evaluation objects, according to the synthesis of the global analysis (Annex 1, item 6), the results obtained show that the activities focused on essential knowledge (15/25) and that the components of competencies (12/25) were predominant. Regarding the type of activities (Annex 1, item 5), twenty-two of the twenty-five activities analyzed can be qualified as non-authentic.

Some Examples of Practices Drawn From Three Case Studies

If the global analysis, which shows the results previously presented, provides information on the observable dimension of formative evaluation practices, the case studies, which took advantage of the data collected through the stimulated recall interviews, allow access to the unobservable part of teaching practices, i.e., the mental acts of each teacher. The selected examples reveal the organization modes of the evaluation situation or the modalities of use of the material, which were particularly interesting.

A Busy Day: Rocio

Rocio proposed meaningful activities that fit into a time frame adapted to third cycle students, i.e., a school day. In the morning, Rocio invited her students to choose a photo and write two or three sentences to count them. Rocio corrected during the midday break and grouped the productions of the students according to the type of difficulties: chronology, sentence structure, use of capital letters and the period. In the afternoon, the work teams were formed according to these difficulties. Each student corrected his/her text alone or with the help of his/her peers. Rocio then invited some students to explain the corrections they made and took the opportunity to review with them in the class group.

The formative evaluation processes observed in Rocio were updated both in the macro processes, which took place throughout the day, and in the micro processes, which characterized Rocio's spontaneous interactions with her students grouped in teams. In addition, the analysis of her comments provided insights into the processes of information processing at the micro level, where Rocio engaged in the interaction. This analysis shows a consideration of the context and historicity (time of the school year and duration of the work of the different students), the level of learning object difficulty and the cognitive and affective characteristics of each student. Rocio paid special attention to the non-verbal aspect of the students: she tried to look in their eyes to see if there was a click. Rocio's words also indicated that her representation of her students was continuously constructed through their interactions.

Finally, Rocio's comments provided an interesting insight into the links between macro-processes and micro-processes. The interactions observed between Rocio and her students testified to formative evaluation micro-processes marked by spontaneity. However, according to Rocio, these micro-processes comprised an aspect that was planned under the influence of the formative evaluation macro-processes also present in this activity. These micro-processes, which attest to Rocio's interactions, gained precision by focusing on certain dimensions of student learning in light of the formative evaluation intentions established during the planning of the macro-processes.

A Privileged Meeting for a Shared Evaluation: Luis

Luis had his second cycle students self-evaluate their read-alouds in individual meetings. The student body allowed Luis to perform a co-evaluation. Luis created a particular organization that allowed him to speak individually to each of his students for about thirty minutes, in the absence of the rest of the class. The case study highlights the organization that made this privileged meeting possible, as well as the processing, judgment and decision-making sub-processes inherent in this co-evaluation.

For Luis, in order for each student to become a better reader, it was important for him to become aware of his mastery level of the different components of reading aloud. Thanks to the collaboration of a colleague, a few days before the meeting with Luis, the students had their reading of a text recorded. In order for this meeting to take place, Luis used two organizational modes: he met with the student body during the lunch period or after class. In order to compensate the time spent by Luis in these meetings outside of school hours, the school administration agreed to adjust the school's schedule so that these meetings replace supervision time.

The comments made by Luis clearly indicated the sub-processes of processing, judgment and decision making inherent in this co-evaluation. Luis realized that he was doing the same mental evaluation process as the one he asked each student to go through. While doing this evaluation in his mind, Luis wondered about the feedback he was going to give to the students. This had a twofold purpose: to communicate the results of their own evaluation and to give the students indications so that they could develop their capacity for self-evaluation. Luis found that what he wrote down in the guide also constituted a communication to the parents, as this completed guide was added to each student's portfolio.

In addition, Luis recalled that although his entire evaluation process was supported by an individual standard, "each child was faced with him or herself, not compared to the rest". Luis emphasized the fact that the individual standard was reconsidered in the evaluation scale of the class group: "then, I am sure that I positioned myself in relation to what has been worked on, how it has been worked on, where I hope the student body should be able to reach at this time of the year". In this specific situation of co-evaluation

of any student's reading, the interpretation of the criteria and the judgment were closely related to the whole group's experience over the past months.

Have the Material Manipulated to Observe the Processes: Gabriela

While examining the notebooks of the different students in her second cycle class, Gabriela noticed that the students were having difficulty with 5 or 6 digit numbers. She started the activity with the intention of paying particular attention to Pablo. Gabriela asked her students to solve different operations on the abacus in order to verify their understanding of the four operations with numbers and their mastery of the abacus. She trusted in teamwork so that the student body could help each other in this task. Gabriela's case allowed us to identify the contribution of the learning material, specifically of a manipulative material in mathematics, in taking information about the mental processes of the students. This case also made it possible to illustrate an orientation process that helped a student in difficulty.

The analysis of Gabriela's feedback showed that when she intervened in the learning processes, she did so by guiding the students step by step. This type of intervention appeared precisely in the case of Pablo, who was not familiar with the abacus, but managed to use it successfully thanks to Gabriela's interventions. Also, it was interesting to highlight that Pablo's description of the action was completely assumed by Gabriela: Pablo answered Gabriela's questions by manipulating the material. So, it can be assumed that the learning material helped Pablo to pass a first stage in comprehension, in which he could experience difficulties in describing what he was doing mentally. Therefore, it is considered that the learning material played a triple role: it facilitated Gabriela's observation of the processes implemented by Pablo and of the beginning of the formative evaluation process, while at the same time it favored Pablo's work on mathematical operations and the awareness of his approach.

Discussion

For each of the variable categories, the main findings are summarized, their contribution to the study of formative evaluation practices is highlighted, and clues for interpretation are provided.

Regarding the variable processes, the results mentioned above, which emerged from the global analysis or from the case studies, contribute to support the relevance of the distinction between two time frames of formative evaluation. In fact, the analysis shows that the micro-sequences of formative evaluation, which characterize the short time, are found in all the activities and that the macro-sequences are added to them. The case of Rocio interestingly highlighted the influence of formative evaluation macro-processes on micro-processes.

In addition, the study shows that formative evaluation has mainly an interactive external regulatory function. The practices studied give evidence of a broader conception of formative evaluation, as described by Allal y Mottier-Lopez (2005), and in two ways. Indeed, micro sequences contribute to a continuous integration of formative evaluation into the learning and teaching activities experienced in the classroom. On the other hand, the privileged function of interactive regulation makes it possible to note that when the formative evaluation activity is recorded over time, it is placed in the course of learning rather than at the end, as the initial conception of formative evaluation suggested.

On the other hand, the intervention of the different teachers is characterized in all the activities by the interventions of suggestion or reminder of learning strategies, objectives and criteria of the formative evaluation. Although the case study of Luis provides a good example of an activity aimed at developing student self-assessment, the teaching staff seems less interested in using self- and peer evaluation, and proposes few occasions where different students can implement self-regulation strategies. This fact can be explained by the novelty of the concept for teachers and by the polysemy of the latter, as pointed out by Tardif (2006).

Regarding the variables related to the devices, the results presented indicate less presence of a specific instrumentation of formative evaluation in the short term. This result can be explained by the fact that this formative evaluation is so integrated with learning and teaching that it naturally uses the tools. The Gabriela's case, who observes the use of the abacus by the students, illustrates very well the multiple functions of the learning material. Formative evaluation, which is recorded over time, makes greater use of

information gathering and processing tools, as well as feedback tools that are specific to it. It is logical to think that all these forms of formative evaluation are situated on two axes that refer to two objectives that guide the interventions of the teaching staff: learning and evaluation. Finally, in relation to the variables related to content, the disciplinary domains chosen by each participating teacher correspond to the areas considered basic in the curricular plan: communication in Spanish and mathematics. These subjects play an important role in the work of the teaching staff given the number of hours assigned each week. They also correspond to the learning domains that have been most widely addressed in pedagogical renewal, particularly in the evaluation of learning.

Regarding the evaluation objects, the results indicate an emphasis on essential knowledge, which could be explained in two ways. First, because the evaluated objects remain similar to those of the previous curriculum, where the emphasis was on essential knowledge, the teaching staff might be inclined to trust well-mastered previous practices to gradually introduce new ones. Then, from another point of view, the observed practices reveal one of the important characteristics of formative evaluation, that in the course of learning, it is important to focus on essential knowledge and on the components of competencies.

The type of activities described, i.e. activities of a non-authentic nature, suggest interesting questions: should authentic activities be preferred at all times in a formative evaluation context or should tasks containing different degrees of authenticity and varying complexity, depending on the object to be evaluated, be chosen at different points in the development of a competency?

Furthermore, beyond the approach used for data analysis, it is noted that several of the results illustrate categories that describe the class ecology. Therefore, it can be believed that these categories also allow describing formative evaluation practices at a finer level than that of the classroom, in terms of observable behaviors or mental acts that constitute these practices. Thus, it can be observed:
- the multiplicity of events that occur or the dimensions that must be addressed in order to make a judgment about student learning (Rocio and Luis);
- the immediacy of the verbal and nonverbal data collected when formative evaluation is placed in the short time frame;
- the speed with which the micro-sequences of formative evaluation are developed (characteristic of formative evaluation that is recorded in a short time);
- the visibility of the teaching staff's action which, by providing feedback to the students, also knows that it is in communication with the parents of each student, who will examine, for example, the self-evaluation and co-evaluation guide completed by the students and the teaching staff (Luis);
- the history of the events to be considered in the processing of the information gathered and the judgment made (Rocio).

CONCLUSIONS

This research focused on an analysis of the formative evaluation practices of elementary school teachers at the Corazón de Jesús educational institution in the city of Puno - Peru in order to provide examples of practices that integrate the characteristics likely to support student learning as they appear in the reference approach to the evaluation of learning.

Generally, the results emerging from the analysis of the 25 learning and teaching activities on formative evaluation show that the teaching staff who participated in this research have integrated into their practices many of the characteristics of formative evaluation recommended by the Ministerio de Educación del Perú (2016). The formative evaluation concepts expressed by the teaching staff testify to a broader conception of formative evaluation, which is not only situated at the end of learning, but also during learning, in a continuous manner.

In relation to the formative evaluation practices of teachers, in coherence with their conceptions, all the practices observed include the micro-processes of collection-processing-judgment-feedback, registered in the short time. Observation, listening and memory sustain these micro-processes. In half of the activities analyzed, practices that are recorded in the long term of formative evaluation are also added: self-

evaluation, peer evaluation and co-evaluation based on guides designed for this purpose are observed most of the time. This means that when activities are recorded in the short time, the learning material is used for both learning and formative evaluation purposes, while when activities are recorded in the long time, a material that serves the collection-processing-judgment-feedback process is used.

The teachers showed activities where the essential knowledge and components of mathematics and Spanish competencies are addressed in the context of non-authentic situations. In terms of devices, in many cases, the teaching staff implements strategies that allow them to interact with the student body or in front of work teams.

These activities make possible an interactive external regulation, which is developed during the learning process. The activities have certain characteristics that can support the student's learning regulation. These characteristics refer mainly to the role of the teaching staff. All the activities lead the teaching staff to propose or recall learning strategies; in almost all of them, the teaching staff proposes or recalls the objectives and the formative evaluation criteria. On the other hand, a small number of activities suggest an open-ended task for students, provide opportunities for self- or peer-evaluation during the activity, or opportunities to practice using self-regulation strategies for learning. Few activities lead teachers to engage in cognitive modeling. What characterizes the roles of teachers and students is that the latter participate in the evaluation process under the almost exclusive responsibility of the teaching staff.

Observational data indicate that teachers have occasionally regulated teaching in action; their comments, collected during the stimulated recall interviews, highlight other expressions of regulation and report on reflective processes that emerged during the action or continued afterward. The practice analysis meetings allowed the participating teachers to continue this reflection work already present in the course of action and after the action.

Similarly, concerning the analysis of teaching practices, at the conceptual level, this research has made it possible to locate formative evaluation practices within teaching practices. It has also led to a definition of formative evaluation from a constructivist perspective, showing that only students can regulate their learning. Taking into consideration the observable and unobservable dimensions of teaching practices allows for a more detailed description, which includes the information processing and judgment processes developed by teachers. In addition, although mentioned in the ministerial documents, the two forms of formative evaluation have been extensively described here, by distinguishing two time frames, the long and the short time, comprising the macro-processes and the micro-processes, respectively. It is above all the spontaneous and informal formative evaluation that is emphasized, even valued, in this research.

Regarding the plan to support the critical analysis of the participating teachers, the intervention implemented shows the relevance of strategies for analyzing practices carried out closer to the realities. Three reading guides about the formative evaluation process, feedback and the characteristics of activities likely to support self-regulation of learning led the faculty to a first distancing.

In addition, the description of these practices implicitly suggests some clues for continuing education. The important step taken by part of the teaching staff has been to share with the students the responsibility of the regulation process through the creation of conditions for the students to self-evaluate and self-regulate their learning.

Finally, the limits of the research presented are still important, especially as the process of implementing formative evaluation practices continues. In this regard, the portrait presented here should be seen as partial and punctual, since, in a context of reform, teaching practices are constantly evolving. This portrait is also incomplete insofar as the current study did not attempt to relate teaching practices and student performance. Research aimed at establishing links between certain characteristics of formative evaluation and student performance according to learning domains is of major importance. In addition, the current research focused only on formative evaluation practices, while the literature on learning evaluation includes other dimensions related to summative evaluation, which should be examined. Additional research on evaluation practices is needed to better understand this subset and to better target priority teacher training topics.

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APPENDIX: SUMMARY SHEET OF THE GLOBAL ANALYSIS REGARDING FORMATIVE EVALUATION ACTIVITIES

| 1. Time | Micro | 12 | Instrumented | 02 | Not instrumented | 10 |
| | Macro | 13 | Instrumented | 09 | Not instrumented | 04 |

2. Evaluation instrument	Instrument developed by any teacher	08	Developed by other	03

3. Modalities of student work organization		Start	Activity development	Feedback/ objectification
	Individual	05	15	05
	Small teams		09	
	Class group	20	07	06

4. Role of evaluation in the learning sequence	Proactive regulation	Interactive regulation	Retroactive regulation
	01	17	07

5. Activity type	Authentic	03
	Non-authentic	22

6. Learning domains and transversal competencies	Competence	Component	Essential knowledge
Native language	01	07	06
Mathematics	01	02	07
Social staff			02
Science and technology		01	
Cross-cutting competencies		02	

7. Role of any student in the evaluation of his or her learning or that of others	No role or minimal role	14
	Non-instrumented role (e.g., questioning)	05
	Instrumented role (example: evaluation guide)	06

8. Teaching cycle	3rd cycle	15
	4th cycle	01
	5th cycle	09