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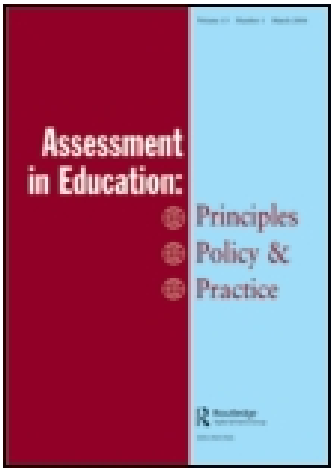

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Elementary teachers' formative evaluation practices in an era of curricular reform in Quebec, Canada

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This study examines the formative evaluation practices of 13 experienced elementary school teachers in Quebec, Canada at the level of teacher–student interaction. The qualitative study is based on both semi-structured and stimulated recall interviews as well as videotapes of classroom activities. The participating teachers were found to be using formative evaluation in a spontaneous, informal way and focussing more often on the product rather than the learning process, although differences were seen between approaches used by teachers of grade one students as opposed to approaches used by teachers of older elementary students. The study demonstrates a link between teacher conceptions and their evaluation practices, and raises questions about how experienced teachers interpret and integrate formative evaluation in their classroom routines.

Keywords: formative evaluation; teacher practices; elementary school

Introduction

The reformed curriculum recently introduced at the elementary level in the province of Quebec, Canada requires teachers to transform their approach to evaluation to focus on the learning process and assessment for learning, rather than solely on the product of learning activities for a final grade. This paradigmatic shift has significant implications for future evaluation practices in elementary schools because, as Desjardins (2006) has stated, formative evaluation is only just beginning to be understood and adopted by teachers in the province. This paper explores the theme of formative evaluation through an analysis of the practices of 13 experienced elementary school teachers who have already integrated some changes in evaluation into their routines. It intends to further our understanding of ways in which teachers may interpret the possibilities for using a formative evaluation approach through an examination of their interview responses and of their classroom practices.

Research problem

A number of studies have shown the links between certain evaluative practices and student learning. The review of the literature by Black and Wiliam (1998) indicates that an increase in formative evaluation practices produces a measurable and significant increase in learning on the part of students. The research in

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reading carried out by Galand and Grégoire (2000) demonstrates that students exposed to individualised evaluation practices aimed at increasing learning performed better than those who were evaluated using more traditional means focusing on performance. This same study also indicates that, from the students' point of view, a learning-based approach to evaluation correlates to all aspects of self-esteem (academic and non-academic), aspects directly related to school success. Laveault, Leblanc, and Leroux (1999) show the relationship between a self-evaluation strategy used directly by students, and the control that these students then have over their learning.

Recent curricular reforms in many western countries such as Belgium, Switzerland, and Scotland (Kirton et al. 2007) have led to new directions leading to a transformation in evaluation orientation. Some changes are related to the overall programmes of study in these countries, while others are more closely related to a specific discipline. The most significant changes imply new ways to describe learning, such as constructivist and socio-constructivist approaches and authentic learning situations. According to Newman (1997), these situations must permit the student to accomplish a task that has certain significance in terms of overall human achievement; a task that is the result of effort using intellectual skills. This explanation of the term authentic learning situations best illuminates what is meant by teaching practices that include formative evaluation, because, as is frequently indicated, evaluation must be integrated in learning (Gouvernement du Québec 2002). Recently, a number of studies of teachers' evaluative practices in primary schools have provided important insights into classroom interactions and their effects on learning (Tunstall and Gipps 1996; Winterbottom et al. 2008; Brown et al. 2009; Webb and Jones 2009).

The underlying research questions of this study are:

(1) How do experienced elementary school teachers interpret and put into practice formative evaluation practices into their classroom routines?
(2) In what ways are they able to articulate an understanding of their own practices?

Evaluation of learning and teacher practices

Bru (2001) clearly shows the pertinence of focusing on research of teacher practices by reminding us that the study of new practices takes on a great importance during the introduction of curricular reforms. Despite the interest in research on evaluative practices in schools, several studies rest very closely tied to specific subject areas (Rea-Dickins 2001), and to certain school contexts (Allal and Mottier Lopez 2005). Other studies, using large sample sizes, are able to go beyond these specific circumstances but the small number of characteristics examined also constitute important limits (Chouinard et al. 2005).

Conceptual framework

Teaching practices and the conceptions on which they are based

Inspired by Altet (2002), the concept of teaching practice in which the end result is student learning is defined in this study as the combination of observable and non-observable individual acts of the teacher, as well as the signification given to these

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acts by that professional. Teacher practices include a behavioural dimension (observable acts) and a cognitive one (mental acts). These acts are put into place in the presence or absence of students, during school time or outside of it, individually or collectively (with colleagues or other people). Finally, teacher practices include those actions which are undertaken during the pre-active (planning), interactive (action in the presence of students) and post-active (evaluation of the action) stages (Gauthier et al. 1997). Teacher practices include the signification that an individual gives to his or her professional actions (Harris and Brown 2009). This signification is that which is directly related to the specific action. It is therefore the 'reading' which a person gives to the elements of a context that he or she considers important.

Some authors believe that teacher practices cannot be considered apart from the conceptions, representations and beliefs of teaching, learning and evaluation on the part of the professional (Brown 2004; Gipps 1994). In general, recent research on the implementation of innovation shows the role of reflection on the part of the teacher in the change process (Borko et al. 2000). Certain studies indicate that the modification of beliefs or conceptions is a prerequisite for change (Buck and Trauth-Nare 2009), while others show that changes in practice have an influence on beliefs or conceptions (Ertmer et al. 1999). In a study involving teachers, Franke, Fennema, and Carpenter (1997) conclude that beliefs and practices evolve in parallel. A more recent study in England supports this model, although it also shows that contradictions between teacher beliefs and existing school culture complicate the process, and indicate a need for greater support of teachers' conceptual understandings of evaluation in order to enable changes in classroom practice (Webb and Jones 2009). Other research from England, Hong Kong and New Zealand has similar findings (Brown 2004; Brown et al. 2009; Harris and Brown 2009; James and Pedder 2006).

Formative evaluation practices

The connection of formative evaluation to teaching and learning was first proposed by Bloom, Hastings, and Madaus (1971), who link the term to improvement of the process of learning (117). Scallon (1999) defines formative evaluation as a process of continuing evaluation with a goal to assure the progression of each individual in a learning process, while modifying, if necessary, the parameters of the learning situation or the rhythm of the individual's progress in order to attain this goal. According to Allal and Mottier Lopez (2005), formative evaluation is a process of collecting and analysing information which permits a decision on the progress of the student, and subsequent actions on the part of the teacher and student, in order to benefit the student. This process is most often put into place by the teacher, but it should have as a goal to bring the student to take charge of a stage of this process, in order that eventually it can be done without external help (Laveault 2004).

An overview of the broad theoretical perspectives on the objectives targeted by evaluation shows that the emergence of cognitive theories has contributed to a concentration on student processes and the elaboration of a perspective which considers regulation as an internal process underlying all systems (Torrance and Pryor 1998). A behaviourist approach suggests a focus on student responses and the behaviours that students show. Finally, a constructivist approach has opened a space for the notion of viability. For example, we can consider that a concept is viable for

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someone when it permits him or her to understand the collection of situations that he or she faces on a daily basis.

More specifically, we found that several authors (for example, Black and Wiliam 1998; Nunziati 1990; Shepard 2000) attribute the following goals to formative evaluation:

- identify the strengths and weaknesses of the student in order to be able to guide his or her schoolwork;
- assure the regulation, adaptation and differentiation of teaching;
- furnish information to students to permit them to regulate their own processes; and
- help students become more autonomous learners.

In addition, formative evaluation includes a process that:

- implies feedback and regulation (Black and Wiliam 1998; Hattie and Timperley 2007);
- can be inserted into a context of communication and interaction (Sadler 1998);
- is found in the structure of a learning activity (Allal 1989);
- is at the same time retrospective and prospective (Black and Wiliam 2005); and
- can be of different levels of formalisation (*on-the-fly, planned for interaction, embedded*) (Martinez and Martinez 1992).

The importance of the regulation process

This study focuses on the cyclical process by which students and their teachers take part in information gathering and interpretation in order to be able to make judgements about student learning. The information collected by teachers through observation and questioning can be used in feedback to the student so that he or she can play an active role in the regulation of his or her learning. This information also permits the teacher to adapt his or her actions. Perrenoud (1998) defines the regulation of the learning process as: 'the set of meta-cognitive operations on the topic, and its interactions with the environment which reorients the processes of learning to fit in with a defined objective to be mastered' (102, author translation). Following Tardif (2006), we distinguish between external regulation and internal regulation or self regulation. External regulation implies that an additional person is involved in helping the student make the necessary adjustments to his or her actions or thought processes. This person is usually the teacher but could be another student, a parent, etc. It follows that internal or self regulation is done by the student on his or her own. Often a combination of the two types of regulation is happening simultaneously, although a constructive approach implies that regulating learning can only be done by the student; the teacher is indirectly involved. Allal (1988) recognises that teachers carry out three types of regulation: feedback (in terms of a learning sequence), interactive regulation (all along the learning process), and proactive regulation (the moment of engaging the student in a new activity). With regards to the self-evaluation that students carry out on their own learning process, researchers show that teacher interventions can help students succeed at this process

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(Doly 1997; Perry et al. 2002; Zimmerman, Bonner, and Kovach 1996). It is therefore crucial that an analysis of evaluation practices take into account the type of regulation used by the teacher, as well as the actions taken to support the self-evaluation of learning of the student.

The study described here is only concerned with external regulation provided by teachers in elementary classrooms, and no data was collected on student self regulation of learning, although the research does consider the tools the participating teachers created to measure student self regulation.

Methodology

Context

In Canada, education is entirely a provincial jurisdiction, meaning that each province has complete control over programme development, implementation of programmes and both pre-service and in-service teacher education. Quebec, the largest province in Canada, undertook a large-scale curricular reform, beginning in 2001, of all of its educational systems, including primary and secondary schools. The main philosophical thrust of this reform was to introduce a competency-based socio-constructivist approach with the end goal of promoting educational success for as many students as possible. This reform was implemented, in part, as a reaction to the previous highly traditional approaches in place up until the 1970s due to the strong influence of the Catholic and Protestant churches on education in Quebec. In fact, the Ministry of Education was not created until 1964, so that education was entirely controlled by church-based councils. Traditionally there were three main school systems in place throughout the province: French Catholic, by far the largest, English Catholic and English Protestant. Children who were not Christian generally attended English Protestant schools. In 1997 a constitutional law was overturned, allowing for the reorganisation of the provincial educational institutions along linguistic lines, French and English. As a point of interest, children who do not speak either language are required by law to attend French-language schools.

Like most jurisdictions, Quebec organises schools into elementary and secondary levels. Elementary school begins at age 5 with Kindergarten and goes until grade 6, when children are about 11 years old. Secondary school begins at about age 12 and lasts five years. Public schooling is provided free of charge for all children until the end of secondary school. In 2001 a process of curricular reform began as an attempt to reconcile globalisation, rapid technological change and increasing social complexity with a public education system (Gouvernement du Québec 2001). The major aspects of the reform are that programmes of learning are now competency based, with an emphasis on learning as an active process, and recognition that students learn in different ways and therefore need differentiated learning experiences. Students are expected to develop a series of cross-curricular competencies, including intellectual, methodological, personal and social, and communication related, as well as subject-specific competencies that are interconnected. Teachers are expected to have a high level of professional expertise:

> As mediators between students and knowledge, teachers must stimulate their students, reinforce their intrinsic motivation and encourage them to do their best. They have to

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> create an educational environment that encourages students to play an active role in their learning… encourage them to use resources, and finally, transfer their learning from one subject to another and from school to everyday life. (Gouvernement du Québec 2001, 5)

The changes to the curriculum have been implemented on a year-by-year basis, beginning with Kindergarten in 2001, and continuing to grade 11, the last year of secondary school in Quebec, in 2009.

Along with changes in the programme, radical changes to assessment and evaluation were also put into place. Assessment and evaluation are seen as integral to learning, and:

> … formative evaluation is used throughout the cycles (levels), primarily to support students in the process of learning and to enable teachers to adjust their pedagogical activities. … The focus on the process of learning gives students a greater role to play in evaluation during the learning process. (Gouvernement du Quebec 2001, 6)

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Participants

The study took place in 10 elementary schools located in a small city in Quebec and the surrounding region. Invitations to participate in the study were sent to teachers in three local school districts who were known to have implemented formative evaluation techniques in their classes. For this pre-selection process we consulted pedagogical counsellors from each school district for recommendations of possible candidates. Pedagogical counsellors are senior teachers who have a mentoring role to support colleagues. Thirteen elementary teachers participated in the study, two male and 11 female. All are French language speakers teaching in French, except the English language specialist. The interviews also took place in French and the participants' quotes have been translated into English by the first author.

Six of the teachers taught grades one to three (ages 6–9), and five taught grades five or six (ages 10–12). Another teacher was a second language specialist who taught students from grades three to six, and one teacher worked with students in all grades as a resource room specialist. Two teachers had more than 20 years of experience, seven had between 11 and 20 years of experience, three others had between 6 and 10 years, and one teacher had fewer than 6 years of experience.

A total of 25 one-hour classes were videotaped at times chosen by the teacher, and then analysed in this research.

Data collection

The data collection took place over a period of three years at three different times during the school year. Not all teachers participated in all three sessions.

Table 1 below indicates the data collection dates and participants.

Semi-structured interviews

Semi-structured interviews were chosen to collect the data on the pre-active phase of teaching. The interview was composed of open questions but in a particular order (Patton 2002). This interview was composed of three parts: the first to permit the teacher to describe the context and particular activity and the anticipated learning,

Table 1. Teacher participation by grade and date.

May 2004	December 2004	May 2005
1 teacher, grade 1	3 teachers, grade 1	3 teachers, grade 1
2 teachers, grade 2	1 teacher, grade 2	2 teachers, grade 2
2 teachers, grade 4	1 teacher, grades 1 and 2	1 teacher, grades 1 and 2
1 teacher, grade 5	1 teacher, grades 4–6	1 teacher, grade 5
	1 teacher, grade 5	1 teacher, grades 5 and 6
	2 teachers, grade 6	1 teacher, grade 6

the second had questions on conceptions of evaluation, teaching and learning, and the third part focused on teaching practices. Finally, the teachers were invited to talk about their motivation for the choice of activity to be studied, and anything that they felt was particularly innovative in terms of the formative evaluation planned. The interviews took about 50 minutes and were conducted during the participants' spare time.

Observations

The observations of the teacher in action in the classroom, which were videotaped, gave access to the interactive phase of teaching practices. During the taping sessions, the camera was focused on the teacher and the particular students with whom he or she was interacting. Most often there was only one microphone used, which was worn by the teacher. Each videotaping session lasted one class, usually 50 minutes to one hour.

Stimulated recall interviews (post-observation)

The stimulated recall interview was chosen to collect data in relation to the interactive and post-active phases of teaching. This is one of the techniques that gives access to the thoughts of the participant (Mackey and Gass 2005; Henderson and Tallman 2006). It targets the process of making interactive mental processes explicit (Tochon 2002). This interview took place after the classroom filming was completed, and after the teacher had had a chance to view the videotape and select a segment of about four minutes that he or she wished to discuss in terms of formative evaluation. During the same time, but separately, the research team also viewed the videotapes and selected a four-minute segment that contained a formative evaluation activity. We selected segments where teachers were interacting with students during an activity and providing some form of formative evaluation. In approximately 80% of the cases, the same segment was chosen by both the teacher and the researchers.

The stimulated recall interviews contained questions that invited the teachers to reflect on his or her actions in the classroom in general, and, in relation to formative evaluation, to explain why he or she chose the particular segment, and what he or she had been thinking while the class was taking place. We also asked about any reflections the teacher may have had about taking part in this stimulated recall exercise. The video was replayed during the interview and the teacher was invited to stop the tape at any time to describe what was happening and why. Although we are aware that these self-reported mental actions may or may not

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reveal what the teachers actually had in mind at the time they were videotaped, we believe that the discussion at the time of the stimulated recall interviews is of interest in terms of learning more about how teachers explain their knowledge and beliefs about assessment and evaluation.

Analysis of the semi-structured interviews

The analysis of the contents of these interviews was done from transcripts using a mixed categorical system, that is, a system composed of categories which emerged from the data and various existing conceptual frameworks.

The categories selected permitted a grouping of the responses to each of the questions posed to the teachers with regards to their conceptions of formative evaluation and aspects of their teaching practice. After first identifying the data related to conceptions and to practice, the descriptions of the specific formative evaluation activity that would be filmed were identified.

Analysis of the observation data

The analysis of the data collected during the observation in the classroom was done over two periods. First of all, for each of the activities observed a 'script' was elaborated (Sales Cordeiro and Schneuwly 2004). The script was an initial stage in the analysis which permitted the hierarchical organisation of the components of the activity. The following elements were included in the script:

- the material used;
- the organisation of the students (individual, small groups, whole class activity);
- the types of interactions (teacher–student, teacher–small group, teacher–whole class, student–student);
- the type of exchange (affirmative, interrogative or imperative); and
- the objective of the exchange (teaching objective, discipline, off topic).

The next step was an analysis of the interactions between teacher and student(s) following an action, verbal or non-verbal, by the student(s). Inspired by the work of Butler and Winne (1995), Hattie and Timperley (2007), Mory (2003) and Tunstall and Gipps (1996), this analysis sought to distinguish the object on which the feedback was based, whether it was the process, the learning objective or the student. We focussed on feedback as being a visible and identifiable aspect of formative evaluation, while acknowledging that there are others. This analysis also identifies four parts to a feedback: the description of the behaviour of the student, the comparison of this behaviour to the expected or desired behaviour(s), a judgement of this behaviour, and finally, guidance for proceeding with a task.

Analysis of the data from the stimulated recall interviews

The stimulated recall interviews gave access to the non-observable teacher practices, in other words their mental or cognitive actions (Tochon 2002). The data was

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treated using the transcriptions of the interviews, and the analysis framework led to the identification of the following elements:

- the actions: the mental and observable actions linked to teaching and formative evaluation;
- the knowledge on which the teachers based their actions;
- the goals of the activity;
- the contextual elements: information on the students, the school, etc.; and
- the recall of the activity: the reflective look at the activity (facts, realisations, questions), and any information about what the teacher might want to do differently the next time.

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Results and discussion

Given the large quantity of data and the wide variety of results, this paper is limited to a discussion of the sections of the study which deal with teachers' conceptions of formative evaluation and the observations made of their actions in the classroom. Due to lack of space, the section of the study that deals with the teachers' reflections on their actions has been integrated into the section presenting the results of the semi-structured interviews.

Results of semi-structured and stimulated recall interviews

1. Conceptions of formative evaluation

During the semi-structured interviews the teachers were asked about their classes, their understanding of learning and evaluation, and, specifically related to formative evaluation, the following question: 'When you hear the expression formative evaluation, what does that mean to you?' After an initial response, the participants were invited to elaborate on their responses. The most common general conceptions of the teachers with regards to formative evaluation were found to fit into three dimensions: time, form and the role of the actors. The characteristics found most often among the teachers concern the dimension of time. For the majority of the participants formative evaluation takes place during the learning process: '*teaching and formative evaluation are not two different things that can be separated*' (participant 1). (Note: All participant comments have been translated from French into English by the first author.) Teachers also pointed out the continuing aspect of formative evaluation: '*evaluation takes place as needed during the action*' (participant 2), and: '*it's like a series of photos, not like a specific time, more like a spiral*' (participant 1). Three teachers noted the individualised nature of formative evaluation, as compared to other types of evaluation. For three teachers formative evaluation is characterised by the roles of the teacher and student(s), in particular the interactions between the actors in the class. This can include interactions between students as well as with the teacher: '*the children give lots of comments to each other and I think it is very helpful*' (participant 1). Overall, the teachers' conceptions of formative evaluation were limited to various approaches to giving feedback (see Hattie and Timperley 2007). This may be surprising considering that these teachers were identified as having implemented formative evaluation practices into their classes. At the same time, Quebec has had a history of using very traditional approaches to evaluation, even at the primary level, as compared to Britain, Australia, New Zealand, and even English Canada (Gouvernement du Québec 2002).

1.1. Functions of formative evaluation. The teacher participants evoked four functions of formative evaluation: diagnosis, help or support in learning, recognising competency and motivation of students. These same functions have been noted by Paquay (2002).

Four teachers mentioned the diagnostic aspect of formative evaluation: '*it permits me to check what level the student is at*' (participant 3), '*we can see where the student understands, and at what point he no longer understands*' (participant 4). The majority of the teachers associate formative evaluation with some form of support for learning. This can be by regulating either the learning or the teaching. Some comments were: '*we must help the students understand what they are doing, and then how they can do it differently to correct or better integrate it into what they are learning*' (participant 1), '*it's to modify, to go a bit further into the student's competencies*' (participant 4). The teachers saw this means of formative evaluation as belonging exclusively to them; peers or the student him or herself did not have a role to play. One teacher explains: '*I am always adjusting, if I don't have their attention I stop the activity. If I sense that all is well, then we can go further*' (participant 5). Motivation and recognising the competencies of the student were the least frequently cited by the participants. Only two teachers mentioned these aspects. One of them was concerned with the effect of self-esteem on learning: '*I think that it's important that the students are not always in competition with each other, that they can see the small progress that they make and be proud of it*' (participant 6). Overall, few of the teachers in this study saw formative evaluation as playing a multifunctional role in the classroom, but rather as a means of communication between teacher and pupil to support learning, which is a legitimate but limited conception (Bloom, Hasting, and Madaus 1971).

1.2. The process of formative evaluation. When speaking of the process of formative evaluation, the teachers saw it as primarily a teacher's role. In terms of the process, they talked about their own personal methods of both gathering and dealing with information in the class, and giving feedback to students: '*I have a way of working, I have photos of the children and I use post-its to make little notes for myself*' (participant 7), '*I give my students a chart to fill out every week where I specify what they need to work on, where they need to improve and also what they do well*' (participant 1). The teachers' conceptions of formative evaluation reveal that they have a variety of notions of the concept and are only beginning to implement it in some form in their daily routines.

Results of the analysis of formative evaluation practices of the teachers

This section describes the analysis of the formative evaluation practices of the teachers as observed in the videotapes of the classrooms.

2. Formative evaluation practices

Formative evaluation can take place in two temporal modes, the short term and the longer term. The short term is where the process of collecting, considering and judging the information as well as giving feedback to the student all happens within a few minutes. These short-term formative evaluation loops often occur con-

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tinually throughout a lesson and are most often spontaneous in nature. The long-term type of formative evaluation can take place over several classes, for example one class can provide the teacher with information about students, which can result in feedback at a future date. This type of formative evaluation is more formal, planned and more often uses tools. It may also include a series of short-term formative evaluation episodes. The overall analysis of the participating teacher practices showed that in the sequences observed all the teachers used short-term formative evaluation in their practice, and half also used long-term approaches to formative evaluation.

The short-term formative evaluation was spontaneous, verbal and in the form of teacher-student interaction, with only two of the 13 observed using a tool for gathering or recording information on a regular basis. In terms of collecting information for short-term formative evaluation, the teachers described using observation and listening, with memory of students' past performances playing an important role.

In the episodes of long-term formative evaluation, nine of the 13 teachers used tools such as self-evaluation, peer evaluation and co-evaluation forms. These tools were created specifically for the activity by the teachers themselves. For long-term formative evaluation, some teachers' use of tools was creative and original. One teacher taped her students reading aloud individually, with the intention of listening to the tape with the student to evaluate together his or her ability to read aloud. The other teacher spent an entire period creating a chart for self-evaluation with her students. She plans to use this with a problem-based learning activity, and asked her students to evaluate the work of previous students in order to test their instrument.

When examining the types of interventions that teachers use in their formative evaluation activities, it appears that knowledge of each of their students plays an important role in the decision-making process of the teachers: '*I know that with him, I can go much further right from the start, whereas with her, it's not easy to work with her*' (participant 3). The teachers noted that evaluating students formally was not just about helping them learn content material. It is also about helping them learn to use tools, and to self-evaluate. These types of activities require different interventions.

The data on observation showed the researchers the various ways that teachers gave feedback to students. We observed three possible objectives for feedback (see Tunstall and Gipps 1996 for a typology of classroom interactions of this type):

- the learning process: '*I saw you look at the chart to check whether it was a hard "c" or a soft "c"*',
- the product of the learning: '*You have four correct answers*',
- the student him or herself: '*Bravo! You are really good at that!*'

Hattie and Timperley (2007) discuss this latter type of interaction and why teachers of young children continue to use it, despite the fact that it has been shown to be ineffective, and indeed, detrimental. In this study the researchers make a link between this type of teacher–student interaction and the fact that in the interviews, teachers indicated that they wished to build student self-esteem, but the issue was not explored any further.

When examining teacher–pupil interaction, the analysis chart illuminated different components of the feedback given by the teachers. These are listed below,

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briefly described and accompanied by an example. These interventions could take either affirmative or interrogative forms. The components are:

- a description, which describes what the student has just said or done or an invitation to the student to describe what he or she has done, as in this example: '*How did you do that? What went through your head in order to be able to do that? 11 tens, what did you say in your head?*' (participant 8);
- a comparison, which consists of making a parallel, or encouraging the student to do so, between what has been observed and what is expected, as in this example: '*you did a multiplication here for this problem, but you must also integrate an addition*' (participant 4);
- a judgement, which a teacher makes on the performance of a student, or brought about by a question from the teacher: '*you have made all of your* "*liaisons*"' (participant 1); and
- a guiding question, which consists of an intervention on the part of the teacher giving instructions to help the student identify the next thing to do, for example: '*what can help you in your toolbox?*' (participant 8).

In the analysis of the pupil–teacher interactions, the researchers chose to focus on what was happening in each class in terms of the majority of the types of interactions and teacher feedback that were taking place in each of the 25 classes that were videotaped. Rather than focusing on individual teachers, which is problematic for ethical reasons, this approach provided an overall picture of pupil–teacher interactions related to formative evaluation in a variety of elementary classes. Overall, the majority of the feedback given to students in each of the 25 classes analysed was concentrated on the product of the learning (23 classes), as opposed to the process (2 classes). However, the researchers did observe feedback on the process, and in these cases we found that the teachers used primarily guiding questions to communicate with students. When the feedback was focused on the student, the statements most often took the form of judgement. The following tables show the breakdown of the types of statements as identified above for each of the levels, grades 1 and 2 and grades 4–6, in relation to the feedback given by teachers during the 25 classes that were recorded for the study. Unfortunately there were no grade 3 teachers participating in the study, so this level does not appear. The numbers in the tables refer to the number of classes where the majority of the feedback given by all teachers at the specified level fell into one of the categories described above. For example, out of 15 classes recorded at the grades 1 and 2 level, in four of them the teachers used a majority of descriptive statements. In organising the findings in this way the researchers were able to gain an overall idea of the types of feedback that pupils are likely to receive in classes at a particular level (see Table 2). This was done so as to avoid creating feedback profiles of the individual teacher participants, and to focus on building a larger picture of the current situation in elementary schools in Quebec.

Table 2. Observations on types of teacher feedback on the product.

	Description	Comparison	Judgement	Guiding questions
Grades 1–2	4/15	0/15	6/15	5/15
Grades 4–6	3/10	0/10	2/10	5/10

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Table 3. Observations on types of teacher feedback on the process.

	Description	Comparison	Judgement	Guiding questions
Grades 1–2	1/15	0/15	0/15	14/15
Grades 4–6	0/10	0/10	0/10	10/10

Table 4. Observations on types of teacher feedback on the student.

	Description	Comparison	Judgement	Guiding questions
Grades 1–2	1/15	0/15	14/15	0/15
Grades 4–6	2/10	2/10	6/10	0/10

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These observations reveal that teachers in grades 1–2 made a number of judgemental statements about the products that pupils were asked to produce. Despite a professed interest in a constructivist approach articulated in the interviews, the teachers appeared to have a clear goal for the intended product and they used a variety of statements and questions (judgemental, guiding and descriptive) to direct the students toward this goal. Teachers at the higher levels were more likely to use guiding questions on the student products, with some description and less judgement (see Table 3).

There was less focus on giving feedback on the process of learning than on the product, but for both groups of teachers the types of feedback used when interacting with students during the process were overwhelmingly in the form of guiding questions. Teachers at both levels used questions to guide the student towards the next step of the process: '*What does it mean to improve a story? What could you do to improve your story?*' (participant 7).

Feedback on the student was present most often in grades 1 and 2 and almost entirely in the form of judgement (see Table 4). The numbers shown here for grades 5–6 are for comparison basis only as they represent very few utterances on the part of the teachers as a group. The majority of the feedback given directly on the students was given by the second language teacher, who spoke about the importance of building self-esteem in relation to formative evaluation during her interview.

Limits of the study

There are numerous limits to this study. The small number of participants, the fact that they were recruited on a volunteer basis and that some participants were interviewed and filmed only once, others twice and still others three times over the course of just over a year all have an impact on the findings. The study was limited to examining teachers' conceptions and practices of formative evaluation and did not take into account students' or administrators' conceptions. During the videotaping the camera was focused on the teacher, limiting the available material for analysis. Any study that is based on interviews about beliefs and understandings, and particularly ones where participants are asked to recall and self-report mental actions, can never be accurate. Finally, the stimulated-recall interviews,

where participants are invited to watch themselves on a video while responding to questions, are intimidating to some and may limit the responses they are inclined to give.

Conclusion

In the context of a major reform in education and a complete paradigm shift in mandated evaluation practices, a study of the formative evaluation practices initiated by elementary school teachers gives insights into their conceptions of the term, and their subsequent pedagogical practices. The interest of this research is in the opportunity it provides for researchers to more clearly understand the connections between teachers' conceptual understandings and classroom practices (Bru 2001), particularly with regards to evaluation (Alal 1988; Webb and Jones 2009). As Brown et al. (2009) point out, '... teachers are a key factor in turning assessment information and processes into improved learning. Thus, it is important to understand what teachers think about assessment and how they make use of it' (348). Overall, this study found that the participating teachers in the province of Quebec, who were recognised by their peers to be innovative in terms of implementing formative evaluation practices in their classrooms, were doing so primarily in an informal, spontaneous way. They were using tools infrequently to direct the formative evaluation process or record observations, and when they did so, it was with tools that they themselves had created for a specific purpose. The comments made tended to be judgemental (grades 1 and 2) or guiding (grades 4–6) and focused on the product being created in class. Teachers of younger students made more comments on the student, rather than on the product or problem.

Formative evaluation was almost entirely teacher directed as students were not observed making comments related to self or peer evaluation unless given a tool and a requirement to do so. This finding co-relates with the teachers' conceptions of formative evaluation as being primarily concerned with the teacher, as was revealed in the interviews. One conjecture is that some of the difficulties faced by teachers who have implemented the use of formative evaluation practices in their classes are created by the lack of a well-developed, accurate language for talking about learning with young students. This may be symptomatic of an overall lack of conceptual understanding of evaluation that would allow for the implementation of new classroom-based approaches in formative evaluation (Franke, Fennema, and Carpenter 1997; Webb and Jones 2009). Borko et al. (2000) indicate strong co-relations between conceptual and reflective processes on the part of the teacher, and the implementation of classroom innovations. Child-centred, constructivist approaches to teaching and learning as well as formative evaluation practices are relatively recent innovations in elementary schools in Quebec, and teachers do not have a wealth of experience on which to draw for implementing these approaches. There is less material intended for teachers available in French, and no financial incentive for teachers to pursue graduate degrees. All of this points to the implementation of formative evaluation practices as being a long-term process that will require certain vigilance on the part of the ministry in terms of ongoing professional development.

The fact that some of the participants were unable to articulate their understanding of a procedure or problem and the necessary learning processes to carry out the procedure or solve the problem clearly indicates that in-service professional development is essential for the implementation of formative evaluation practices

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in any significant way, a recommendation echoed by a range of researchers in this field (Brown 2004; Ertmer et al. 1999; Winterbottom et al. 2008). Teachers need opportunities to try out formative evaluation in supported ways in order to understand the profound impact on their perceived roles that adopting such practices would require. However, rather than simply mandating changes in practice, the researchers advocate a process that would permit teachers to access and appropriate research findings that would permit them to transform this information into something they can use in their own classrooms. Pre-service teacher education now includes instruction on formative evaluation, regulation, and feedback as part of the curriculum, but implementation will be slow until student teachers can also experience these approaches in a classroom setting. A study such as this, which paints a portrait of current practices in formative evaluation at the elementary level in Quebec, provides a benchmark for the measurement of future progress towards assessment for learning.

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