

## **Formative Assessment of Learning: A Review of Publications in French**

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The concept of “formative evaluation” was introduced by Scriven (1967) in an article on the evaluation of educational programmes (curricula, methods, instructional material). For Scriven, formative evaluation aims at providing data that permit successive adaptations of a new programme during the phases of its development and its implementation. Bloom (1968) quickly incorporated the idea of formative evaluation – applied to student learning – into his newly defined model of mastery learning. The characteristics of this function of evaluation were spelled out in considerable detail in subsequent publications (Bloom, 1976; Bloom, Hasting and Madaus, 1971). Over the years, an extensive literature has accumulated in English concerning formative assessment (the term “assessment” having progressively replaced “evaluation” when the object is student learning in the classroom). This literature is well-known to educational researchers in many areas of the world. On the other hand, the work carried out and published in other languages (French, German, Spanish, etc.) is relatively unknown in the English-language community. The present review is aimed at fostering international dissemination of work on formative assessment published in French over the past 25 years.<sup>1</sup>

Our review is based on publications by researchers and assessment specialists in France and in the French-speaking regions of Belgium, Canada, and Switzerland. To carry out the review we constructed a database composed of over 100 journal articles published in the major French-language journal in the area of assessment. We also consulted a number of key books, especially those resulting from conferences organised by the French-language associations on assessment. The review is focused on formative assessment of student learning in elementary and secondary school settings but takes into account developments in other contexts

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<sup>1</sup> We thank Janet Looney for inviting us to prepare this review in the context of an OECD/CERI project on “What works?” in the area of formative assessment of student learning. The development of the review benefited from exchanges we had in Geneva and Paris.

(particularly teacher training and higher education) that have influenced the conception and practice of formative assessment in the classroom. The first part of the review describes the material on which the review is based, its origin and coverage. The second part defines the major conceptual orientations of formative assessment in the French-language literature. The third part presents a classification of the types of empirical research that have been carried out on formative assessment.

### COVERAGE OF THE REVIEW

Our database is composed of articles appearing in the journal *Mesure et évaluation en éducation* (*Measurement and Assessment in Education*).<sup>2</sup> The journal, initially entitled *Mesure en éducation*, was founded in 1978 by professionals in charge of school examinations in Québec. Several years later, university specialists in measurement and assessment took on a major role in the editorial board and the present title of the journal was adopted. In 1986, the editorial board was enlarged to include two sub-committees, one composed of members from universities and research centers in Québec, the other of members from European universities and research institutions in Belgium, France and Switzerland. It is worth noting that *Mesure et évaluation en éducation* is the only international, peer-reviewed journal published in French which specialises in questions of educational assessment.

From the beginning, the journal was sponsored by an active Québec association: the *Association Professionnelle de Mesure en Éducation*, which became the *Association pour le Développement de la Mesure et de l'Évaluation en Éducation*. In 1985, a parallel association was created in Europe: *Association pour le Développement des Méthodologies d'Évaluation en Éducation*. Although the two associations share the same acronym (ADMEE), their names differ in one slight but significant respect: the word *mesure* in the Canadian version is replaced by *méthodologies* in the European version. These choices are a reflection of cultural attitudes toward the concept of measurement in the research communities of the two continents. While in Canada, measurement and assessment (or evaluation) go hand in hand, in much of French-speaking Europe, there is a tendency to prefer qualitative assessment without the operations of quantification associated with measurement (for a discussion of this question, see Allal, 1997). Despite these differences, the two ADMEE associations have closely collaborated in the edition of a common journal. The annual conferences of each association attract a wide range of researchers, professionals and practitioners who work

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<sup>2</sup> In contrast with English where the term “assessment” has replaced “evaluation” when the object is student learning, the word *évaluation* is used in French both for student assessment and for programme evaluation.

in the area of educational assessment, including participants and keynote speakers from the other side of the Atlantic. In addition, several joint conferences between the two associations have been held.

The database used for this review is composed of 105 articles published in the journal *Mesure et évaluation en éducation* between 1978 and 2002.<sup>3</sup> It includes articles that deal directly with formative assessment or that address issues of importance for formative assessment (e.g., articles on observation methods or on new means of summative assessment that have implications for formative assessment). For each article in the database, a summary was made of the theoretical orientations that were presented and the empirical research that was reported. A coding scheme was applied to facilitate identification of various theoretical and empirical dimensions.

In addition, we examined the chapters appearing in six edited books that resulted from ADMEE conferences on assessment: Allal, Cardinet and Perrenoud (1979), De Ketele (1986), Depover and Noël (1999), Figari and Achouche (2001), Laveault (1992), Weiss, 1991. We also consulted two edited books (Grégoire, 1996a; Hivon, 1993) presenting work from symposia on assessment organised by another French-language network (*Réseau Éducation et Formation*), as well as several other well-known books in the field (Allal, Bain and Perrenoud, 1993; Bélair, 1999; Bonniol and Vial, 1997; Cardinet, 1986a, 1986b; Hadji, 1989, 1997; Huberman, 1988; Louis, 1999; Perrenoud, 1998a; Scallon, 2000).

## CONCEPTUALISATION OF FORMATIVE ASSESSMENT

The initial conception of formative assessment proposed by Bloom has been enlarged in several directions by researchers working in French. After a presentation of the main orientations of this enlargement, four successive developments in French-language research on formative assessment will be described.

### *Enlarging the conception of formative assessment*

In the initial conception of mastery learning proposed by Bloom (1968; Bloom *et al.*, 1971), an instructional unit is divided into several successive phases. First of all, teaching/learning activities are undertaken in relation with the objectives of the unit. Once these activities have been completed, a

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The construction of the database was facilitated by the existence of a CD-Rom which contains all issues of the journal from 1978 through 1998. This material was completed by the issues appearing between 1998 and 2002, which is the year corresponding to the most recent issues of the journal.

formative assessment, usually a paper-pencil test, is proposed to the students. The results of the test provide feedback to the teacher and students and are used to define appropriate corrective measures for students who have not yet mastered the instructional objectives. Correctives can take various forms: additional exercises, different types of instructional material (*e.g.*, verbal vs. visual representations), small-group discussions, one-to-one tutoring, computer-based tasks, but in all these cases the aim remains the *remediation of learning difficulties* identified by formative assessment. Each of the phases (teaching, testing, remediation) is planned, prepared and managed by the teacher who attempts to assure that all the students will master the objectives of the unit.

A number of publications in French have contributed to an enlargement of the conception of formative assessment. One of the earliest formulations appeared in an article by Audibert (1980) which proposed a “non-specialist’s” view of formative assessment. Formative assessment, he wrote, “takes place day by day and allows the teacher and the student to adapt their respective actions to the teaching/learning situation in question. It is thus, for them, a privileged occasion for conscious reflection on their experience (*prise de conscience de leur vécu*), for objectivation in action”. (p. 62)<sup>4</sup> Several authors (in particular, Allal, 1979, 1988; Perrenoud, 1998b) have systematically contrasted the characteristics of an enlarged perspective of formative assessment with those of the approach initially defined by Bloom. The major points of contrast are presented in Table 1.

Rather than considering formative assessment as a specific event that occurs after a phase of teaching, the enlarged perspective advocates the integration of formative assessment within each instructional activity. This integration requires a diversification of the means of assessment. In addition to paper-pencil tests, quizzes or worksheets designed to verify whether students understood the content of a lesson, assessment is carried out informally by direct teacher observation, by exchanges among students (reciprocal assessment) at various points during an instructional activity, and by whole-class discussions that allow students to present different ways of understanding a task or of carrying out an activity.

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<sup>4</sup> The French-language quotations in this paper are translated by the authors of this review. We indicate in parentheses expressions in French that are difficult to translate in a fully appropriate way.

**Table 1. Bloom's initial conception vs. an enlarged conception of formative assessment (FA)**

Bloom's initial conception	An enlarged conception
- Insertion of FA after a phase of teaching	- Integration of FA in all learning situations
- Use of formative tests	- Use of varied means of data collection
- Feedback + correction → remediation	- Feedback + adaptation of instruction → regulation
- Management of FA by the teacher	- Active student involvement in FA
- Mastery of objectives by all students	- Differentiation of instruction and, to some extent, of objectives
- Remediation benefits the students who were assessed	- Regulation at 2 levels: for the students assessed, for future students (continuing instructional improvement)

Source: Authors.

In the enlarged perspective of formative assessment developed in French-language publications, the idea of *remediation* of learning difficulties (feedback + correction) is replaced by the broader concept of *regulation* of learning (feedback + adaptation). This transformation emerged initially in a paper by Cardinet (1977) whose conception of regulation was inspired by cybernetic systems analysis. A distinction was subsequently made between three modalities of regulation associated with formative assessment (Allal, 1979, 1988):

1. *Interactive regulation* occurs when formative assessment is based on the interactions of the student with the other components of the instructional activity, that is, with the teacher, with other students and/or with material allowing self-regulated learning. The integration of different forms of interactive regulation within an instructional activity allows continuing adaptations of learning as it takes place. Interactive regulation contributes to the progression of student learning by providing feedback and guidance that stimulate student involvement at each step of instruction.
2. *Retroactive regulation* occurs when a formative assessment is conducted after completion of a phase of teaching and allows identification of the instructional objectives attained or not attained by each student. The feedback from the assessment leads to the selection of means for correcting or overcoming learning difficulties encountered by some students. It corresponds to the notion of remediation present in the initial conception of formative assessment defined by Bloom.
3. *Proactive regulation* occurs when different sources of information allow the preparation of new instructional activities

designed to take into account differences among students. It is linked to concerns with the differentiation of instruction so as to insure enrichment and consolidation according to student needs, rather than focusing on remediation of learning difficulties.

Innovative approaches to formative assessment often combine these three types of regulation. Instructional activities are designed to include several forms of interactive regulation based on informal means of assessment (observation, discussion). More structured means of formative assessment (tests, written productions, oral examination) are introduced periodically to allow for retroactive regulation of difficulties that were not resolved by the informal interactive regulations. In addition, proactive regulation takes into account all available information so as to insure that future activities are better adapted, from the outset, to the needs of the students; in other words, differentiation of instruction is planned, rather than being just added on, after observing difficulties.

In Bloom's initial conception of formative assessment, the teacher (or sometimes, the curriculum developer) assumes responsibility for the planning and management of each assessment operation: preparation of a formative test, analysis and interpretation of the results, proposal of appropriate remediations. In an enlarged conception, external regulation (by the teacher, by the test, by remedial material) is redefined as scaffolding that assists students' development of self-regulation. This means fostering the active involvement of students in formative assessment through procedures of self-assessment, reciprocal peer-assessment, and joint teacher-student assessment (Allal, 1999).

One further point of comparison needs to be mentioned. The basic aim of mastery learning is that formative assessment, followed by feedback and correction, will allow all (or virtually all) students to attain the instructional objectives. In the perspective proposed in the French-language literature, a much greater emphasis is given to the differentiation of instruction. Although it is accepted that basic objectives (*e.g.*, learning to read) must be mastered by all students, questions are raised about the possible adaptation of the objective to better take into account student cultural experiences and personal interests. The idea is expressed, for instance, that there may be several ways of "being a reader", such as reading to act, reading to get the "gist", reading to understand in depth, reading to communicate. In this perspective, formative assessment aims at identifying qualitative differences among students that need to be taken into account in the choice of reading material, in the tasks used for assessment, in the regulations fostered in class. For example, structured activities of peer interaction about a text may allow confrontations among students who have different approaches to reading.

A final direction of enlargement has resulted from work with classroom teachers, and particularly secondary teachers who are often faced with important constraints on the time and resources available for formative assessment (Allal and Schwartz, 1996). In this context it was found useful to differentiate two complementary levels of formative assessment. Level 1 concerns formative assessment that directly benefits the students who are assessed, as proposed in the basic Bloom model. Level 2 concerns situations where formative assessment data are used to inform teacher planning of future instructional activities proposed to *new* groups of students. When teachers are unable to carry out level 1 regulations (*e.g.*, due to lack of time or other obstacles), they should nevertheless be encouraged to carry out level 2 regulations, which in the long run can lead to systemic improvement of instruction.

Since the initial publications by Bloom and his collaborators, the conception of formative assessment has of course evolved in the English-language literature. For instance, in the review by Black and Wiliam (1998), the concept of feedback is described as a “system” that operates with four components:

- Data on the student’s actual level.
- Data on a reference level.
- A mechanism for comparing the levels.
- A mechanism used to alter the gap.

The concept of regulation in the French-language literature includes these four components but emphasises the importance of additional factors linked to the processes intervening in attempts to “alter the gap”. These processes are reflected in:

- The actions actually carried out by the teacher and the students to alter the gap.
- The degree of active student involvement in these actions.
- The uses students make of tools and resources present in the instructional environment to adapt or enrich their learning activity.
- The meaning attributed by students and teachers to the various aspects of assessment.
- The ways in which teachers and students negotiate assessment (talk about criteria, discuss requirements, construct shared understandings about what is expected).

The conceptualisation of regulation as the essential attribute of formative assessment has benefited from the contributions of a large number of French-language publications drawing on a diversity of theoretical perspectives, which are discussed subsequently in this paper (Allal, 1979, 1988, 1993; Cardinet, 1977, 1983; Hadji, 1989; Laveault, 1999; Nunziati, 1990; Perrenoud, 1991, 1993b, 1998b; Scallon, 2000; Schneuwly and Bain, 1993; Vial, 2001; Weiss, 1993).

#### ***Four developments in the evolution of work on formative assessment***

It is possible to identify four major developments in the evolution of the conception of formative assessment in the French-language literature. These developments are presented in the order of their emergence. Each new development has attempted to overcome certain limitations of prior perspectives. It is important to note, however, that new developments have led to successive re-conceptualisations of formative assessment integrating prior contributions, rather than to the disappearance of earlier viewpoints.

#### ***Focus on instrumentation***

French-language researchers initially adopted the focus on instrumentation that characterised formative assessment from the outset. The *Handbook on Formative and Summative Evaluation of Student Learning*, published in 1971 by Bloom and his coworkers, served as a model for the development of instruments for formative assessment (tables of objectives coordinated with formative tests and remediation activities). Several collections of instruments were published in different subject matter areas (e.g., Marchandise and Blampain, 1974; Tourneur, Noël and Honclaire, 1975) and general guidelines for the construction of criterion-referenced tests were established (Racine, 1982). More advanced instrumentation was subsequently developed in the form of computer-based item banks and systems of “tailored testing” allowing diagnostic error analysis (e.g., Dassa, 1988; De Campos, 1990; Leclercq, 1980; Séguin, 1984). The dissemination of these forms of instrumentation helped to transform the conceptions and practices of formative assessment but also raised theoretical questions. Objections emerged about a “technology” of assessment that risked being cut off from theoretical reflection about the processes of learning and teaching (see in particular, Bain, 1988, on the “instrumental illusion” of the classical approaches to formative assessment). In response, Scallon (1988) defended instrumentation of formative assessment and argued that instrument development can take into account the aims and contextual constraints of classroom instruction.

*Search for theoretical frameworks*

At a conference of Swiss and Belgian researchers held in Geneva in 1978, a call was formulated for more in-depth theoretical grounding of formative assessment. The search for theories that can offer conceptual orientation for conducting assessment has been pursued since then in several different directions in the French-language literature.

During the Geneva conference, Allal (1979) outlined the differences between Bloom's conception based on a neo-behaviorist model of learning and a more constructivist approach to formative assessment based on Piagetian and other cognitive theories of learning. Several conference papers and subsequent articles described the implications of a constructivist conception for specific subject matters, such as mathematics (Brun, 1979; Thouin, 1993), French (Weiss, 1979), sciences (Thouin, 1982). Further reflection on this theme was proposed by Crahay (1986) who developed the argument that a constructivist perspective is necessary but nevertheless insufficient for the definition of optimal procedures of formative assessment.

Certain preoccupations of the constructivist perspective, such as the identification of learning processes and strategies that account for observed responses, have received renewed treatment in the light of contemporary theories of cognitive psychology. Implications were drawn from these theories for two major aspects of assessment: (1) the development of diagnostic models of formative assessment based on research on learning difficulties in the areas of reading (Lété, 1996) and of mathematics (Grégoire, 1996b) and the attempt to refine diagnostic assessment by use of Anderson's ACT model of declarative and procedural knowledge (Grégoire, 1999); (2) the investigation of the role of metacognitive processes in formative assessment and in self-assessment (Allal, 1993; Laveault, 1999; Scallon, 1996).

In parallel with developments of the constructivist/cognitive perspectives, new orientations were sought in theories emphasising social and philosophical dimensions of teaching and learning. Referring to work in social psychology, Cardinet (1988) proposed looking at formative assessment as a process of successful teacher-student communication about objectives, criteria, learning difficulties, etc. Using communication theory, Ouellette (1990) defined assessment as a dialogue constructed "with reference to a process of learning, as a function of interactions within an educational relationship" (p. 13). In an eclectic approach combining philosophical, social and institutional considerations, Hadji (1989) analysed formative assessment from the viewpoint of teacher-student transactions about reciprocal expectations and interpretations of assessment outcomes.

More recently, formative assessment was examined from the viewpoint of socio-cultural theories of teaching and learning. Referring to the Vygotskian concept of social mediation of learning, Allal and Pelgrims Ducrey (2000) argued that interactive formative assessment is aimed at providing scaffolding of learning in the student's zone of proximal development. This viewpoint is especially relevant for assessment situations involving teacher interactions with small groups or with individual students. We believe, however, that the theoretical framework of situated cognition and learning offers a broader perspective for conceptualising both interactive formative assessment and use of formative assessment tools in terms of teacher and student participation in the practices of a classroom community (Allal, 2002). A situated perspective was adopted by Mottier Lopez (2002) in a detailed analysis of the influence of classroom microculture on the practice of portfolio assessment with a predominantly formative aim.

Another theoretical approach to formative assessment has been proposed by French-language researchers in the areas of "didactics" (Bain, 1988; Chevallard, 1986; Garcia Debanc and Mas, 1987). This approach analyses assessment as part of a triadic system linking the teacher, the learner and the knowledge being dealt with. Emphasis is placed on how the content structures of school disciplines determine the aims, means and functions of formative assessment. Schubauer-Leoni (1991) proposed an interpretation of assessment within the framework of the "didactical contract" linking the reciprocal expectations of teacher and learners with respect to a given content area or task. Bain and Schneuwly (1993) developed the idea that, for any given instructional activity (*e.g.*, text production), it is necessary to identify relevant scientific "reference models" (*e.g.*, theories of discourse production, of language operations, of text genre) which can inform and guide formative assessment. The relationships between formative assessment and didactics were also discussed in several chapters of a book edited by Laveault (1992).

A few authors have explicitly situated formative assessment in the intersection of several theoretical perspectives. Perrenoud (1991, 1998b) argued that it is necessary to link cognitive, communicative and didactic orientations of formative assessment in a general framework of regulation that includes but goes beyond regulation due specifically to assessment. Bonniol and Vial (1997) explored the contrasting implications of cybernetic, systemic and complexity theories for the conceptualisation of formative assessment.

It is interesting to note that several recent English-language publications on classroom assessment, in particular Shepard (2000), give an important place to the implications of constructivist, socio-cultural and situated theories of learning, thereby joining major concerns of the French-language literature.

*Studies of existing assessment practices in their contexts*

The search for theoretical frameworks could lead to an increasingly abstract vision of formative assessment, cut off from the realities of classroom practice. This is why it is essential to articulate theoretical work with the study of how assessment is actually practiced in the classroom. Studies in this direction have dealt with several phenomena: the interplay between instrumentation and intuition in teachers' practices of formative assessment (Allal, 1983); the fundamental incompatibility between certain instruments of formative assessment and the everyday assessment practices of teachers (Weiss, 1984); the forms of teacher-student negotiation of assessment rules and norms (Chevallard, 1986); the institutional factors affecting teachers' attitudes toward inequalities of students achievement and the effect on assessment practice (Grisay, 1988); the pragmatics of actually doing formative assessment without worrying about doctrine (Perrenoud, 1991); the systemic aspects of assessment that can foster or inhibit the development of formative assessment practices (Perrenoud, 1993a). In work on formative assessment instrumentation, such as computer-based diagnostic testing, increasing emphasis is given to taking into account classroom practices and the ways of articulating instrumentation and practice (Dassa and De Cotret, 1993). Accounts of practice by teachers and teacher educators (*e.g.*, chapters by Berset, Elliott, Wegmuller in Allal, Bain and Perrenoud, 1993) have provided concrete illustrations of different forms of regulation associated with formative assessment.

*Development of active student involvement in assessment*

The role of the teacher remains essential for the practice of formative assessment: it is the teacher who decides what place will be given to formative assessment and the teacher's attitudes and implicit "theories" of teaching and learning have a profound impact on how formative assessment is put into practice. There is, however, increasing recognition of the importance of encouraging active student involvement in formative assessment. Nunziati (1990) and Vial (1995) developed an in-depth conceptualisation of the student's role in the formulation of assessment goals and criteria, in the conduct of interactive assessment, and in the construction of shared understanding of what assessment means. Allal (1999) proposed three different but interrelated forms of student involvement in assessment: individual self-assessment, reciprocal peer-assessment, and co-assessment entailing confrontation of teacher and student assessments. Campanale (1997) developed a detailed model of self-assessment, including metacognitive and reflexive dimensions intervening in the transformation of pedagogical practice in the context of professional development activities. Laveault (1999) expanded the conceptualisation of self-assessment by the inclusion of

motivational regulations, in addition to cognitive and metacognitive regulations. A common theme in the French-language literature is that interactive formative assessment, between peers and between teacher and students, constitutes a framework of social mediation that fosters the student's increasing capacity to carry out more autonomous self-assessment and self-regulated learning. Frameworks for practicing various forms of self/peer/joint teacher-student assessment have been elaborated and applied in classroom settings (*e.g.*, Doyon, 1992; Doyon and Juneau, 1991). It is needs to be recognised, however, that various dilemmas and pitfalls can occur when teachers encourage student involvement in assessment and things do not turn out as planned (Allal, 1999).

### **EMPIRICAL RESEARCH ON FORMATIVE ASSESSMENT**

This part of our review analyses the empirical research presented in French-language publications on formative assessment. It is based primarily on the journal articles in the database we constructed, but takes into account examples of research presented in the books we consulted. Publications of empirical research have been classified in three major categories: (1) experimental studies of the effects of formative assessment; (2) development of instruments and procedures of formative assessment; (3) studies of teachers' attitudes and practices of formative assessment. The classification of publications in these categories allows a rough estimation of the relative amount of research conducted in each category. It is not possible, however, to arrive at a rigorous quantification since many articles contain elements relevant to several categories.

#### ***Experimental research on the effects of formative assessment***

In the English-language literature, experimental or quasi-experimental research designed to determine the effects of formative assessment on student learning is relatively widespread, as attested by existing reviews (*e.g.*, Black and Wiliam, 1998) and by meta-analyses of the effects of mastery learning which includes formative assessment as a key component (*e.g.*, Block and Burns, 1976; Slavin, 1987). This type of investigation has not found an equivalent place in the French-language literature. Of the 105 articles in our database, only two present experimental vs. control group comparisons of the effects of formative assessment on student learning. One of the studies was based on a design comparing mastery learning (with formative assessment) in two history classes to traditional instruction carried out by the same teachers in two matched history classes of a Geneva high school (Huberman, Juge and Hari, 1985). The results showed a positive effect the first trimester but this effect was not maintained subsequently in the second and third trimesters. Various factors which limited the effectiveness of mastery learning – principally institutional constraints and

student tendency to make the minimum effort needed for passing a grade – are discussed in the article. The second study (Gagné and Thouin, 1991), conducted in three French-speaking Ontario high schools, concerned a formative assessment procedure focused on the correction of spelling mistakes (lexical and grammatical) in student texts. Experimental and control classes were compared with respect to pretest-posttest gains on a spelling test and on a scale measuring student attitudes with respect to assessment. The results showed a relatively small effect of formative assessment on spelling scores but a substantial improvement of student attitudes toward assessment. In addition to these two studies, there is a brief reference in an article by Dassa (1988) to a quasi-experimental study carried out in Québec which compared three ways of using computer-based diagnostic assessment tools. Positive effect sizes are reported (0.56 for achievement in French and in mathematics) but the article gives little information on the experimentation and is devoted primarily to a critical discussion of the problems linked to the integration of diagnostic technology in classroom teaching.

In the books we consulted, we identified only one experimental study of the effects of formative assessment on student learning. Del'Guidice (1999) presented an investigation in which five groups of 4<sup>th</sup>-grade students received different types of diagnostic assessment and regulation. The results of these groups were compared to those of a matched control group on several tasks of geometry (calculation of areas). The author stated that the integration of formative assessment in learning situations had a beneficial effect on immediate learning and on transfer. His master's and doctoral thesis were cited but no data were presented in the book chapter.

### ***Development of formative assessment instruments and procedures***

Articles on instrument development have appeared regularly in the journal *Mesure et évaluation en éducation* since its creation. Many of the articles pertain, however, to the development of measurement instruments for research or for summative assessment, or concern instruments that are ill-defined with respect to their function. We were able to identify only a limited number of articles (around a half-dozen) which present empirical evidence of the validation of formative assessment instruments. One type of instrumentation stands out because it was the object of a substantial number of studies by Canadian researchers, namely the development of diagnostic instruments for error analysis and regulation of learning in the area of mathematics. Research in this area includes a variety of approaches: research comparing different models of diagnostic test construction, including estimation of reliability, information on validity, indications about conditions of application (Bertrand et al., 1985); qualitative analysis of computer-based error diagnostics and their didactical validity (Dassa and

De Cotret, 1993; De Campos, 1990); critical reflections about the place of computerised systems of diagnostic testing, such as adaptive testing and performance-responsive drill and practice (Dassa, 1988; Dassa and Vazquez-Abad, 1992). Computer-based diagnostic instrumentation in the area of text revision has also been developed (Laurier, 1996) and extended to student self-assessment and self-regulation (Coen and Gurtner, 1999).

In addition to research on instrument validation, there are various articles (about a half-dozen) which present empirical evidence about the use and implementation of formative assessment procedures. Examples include: a study by Scallon (1985) of how students use a diagnostic assessment guide for multiplication and their attitudes toward this type of assessment; the analysis by Allal *et al.* (1987) of the self-assessment and reciprocal peer-assessment behaviors that occur in mathematics games in 2<sup>nd</sup> and 3<sup>rd</sup> grades; an investigation by Derycke (1998) comparing two types of instrumentation – a criterion-referenced checklist and a portfolio – used for student follow-up when changing teachers (*suivi pédagogique*); a study by Richard, Godbout and Picard (2000) of a team sport assessment procedure that was applied in several activities (soccer, volley ball).

The journal and the book chapters we consulted also include a sizeable number of publications (over 25) presenting formative assessment instruments or procedures that have been developed in collaborative research with teachers, either in the context of teacher education and professional development or in work on curriculum reforms. These articles include conceptual justifications and references to practice but do not offer any systematic empirical evidence regarding applications in the classroom. Examples include: the classroom assessment guide presented by Descoteaux and Lirette (1983); the kits (*trousses*) developed by Cazabon (1991) for formative assessment in language learning; the Learning portfolio (*dossier d'apprentissage*) described by Simon and Forgette-Giroux (1993).

### ***Studies of teacher attitudes and practices of formative assessment in the classroom***

Investigations of how formative assessment functions in classroom settings are based primarily on three sources of information. The first includes action-research projects involving collaboration between researchers and teachers. Projects in Switzerland showed that detailed diagnostic instruments developed by researchers were not compatible with classroom practice (Weiss, 1984) and tended to reinforce recognition of the role of interactive formative assessment in the classroom (Cardinet, 1983). Subsequent projects (*e.g.*, Schwartz and Allal, 2000) were inserted in professional development programmes designed to accompany teachers in their attempts to conceptualise and put into practice their personal versions

of formative assessment. In Canada, action-research projects were undertaken to develop formative assessment instruments in a constructivist and interactionist perspective for mathematics (Thouin, 1993) and for science instruction (Thouin, 1995). Instruments of various types were developed with teachers, tried out in their classes and shared with other practitioners. Another project allowed successive reformulations of teachers' projects for transforming their assessment practices in a more formative perspective (Desrosiers, Godbout and Marzouk, 1992).

A second source of information comes from studies based on teachers' responses to attitude scales, questionnaires or interviews. Standard instrument development methodology was used by two groups of Canadian researchers to validate scales for measuring teacher beliefs and attitudes about assessment and student learning (Gadbois *et al.*, 1991; Louis and Trahan, 1995). But, beyond the initial validation studies, investigations using the scales have not been reported in subsequent journal articles. On the other side of the Atlantic, a questionnaire survey, addressed to 113 Belgian elementary school teachers, showed that teachers were generally favorable to formative assessment but that there was often a gap between espoused beliefs and classroom practice (Van Nieuwenhoven and Jonnaert, 1994). Using questionnaires and interviews, Campanale (1997) found a positive evolution of teacher conceptions of learning and assessment during a professional development programme that gave an important place to self-assessment of practice. A less encouraging result was found in a study of student perceptions of assessment in 6<sup>th</sup> to 8<sup>th</sup> grades in Québec; responses to a questionnaire showed little evidence that students encountered formative assessment experiences (Bercier-Larivière and Forgette-Giroux, 1995).

A third source of information on assessment practice consists in detailed descriptions formulated by teachers and teacher educators of their own practices. Examples include the formative assessment procedures developed by Elliott (1993) for beginning reading, by Berset Fougerand (1993) for writing and spelling and by Wegmuller (1993) for activities of text production. Despite the anecdotal nature of these reports, they provide evidence that teachers who are interested in formative assessment can develop a wide range of procedures involving different forms of regulation and active student implication. There are also a number of books based largely on teachers' experiences with respect to formative perspectives for correcting or assessing student work (Groupe EVA, 1991; Veslin and Veslin, 1992) and the development of active student participation in assessment (Doyon and Juneau, 1991).

## CONCLUSION

The French-language publications on formative assessment have contributed to a significant enlargement of the conception of formative assessment. The central idea of this conception is the regulation of teaching and learning through informal, interactive assessment and through the use of instruments that are adapted to classroom practice. The work by French-language researchers has led to a diversification and enrichment of the ways of carrying out formative assessment. Theoretical proposals have often been influenced by intensive contacts with teachers, through curriculum development projects, through teacher education programmes, through school reform movements. There has not, on the other hand, been a systematic concern for verification of the impact of formative assessment on student learning. Very little controlled experimental work has been conducted. Instrument development has not been sufficiently integrated into long-term research projects. Studies of practice are episodic and dispersed in different settings, which makes it difficult to identify patterns or trends. In summary, the theoretical promise of French-language work on formative assessment is in need of considerably more empirical grounding. This is a major challenge for the researchers of this community in the coming decades.

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â– The relationship between formative and summative assessment â– The assessment of content being learned through English â– The challenges in developing national examination systems â– The assessment of learning. Assessment/testing Literacies. â– Training for test developers â– Teacher competence/readiness for assessing learners â– Assessment of Young Learners programmes.Â Its emphasis on developing learnersâ€™ multi-literacy and higher order thinking skills calls for a review in the function and form of assessment, which goes beyond the accustomed summative approach. The last section of the book, Part Five, broadens out the discussion of language into the domain of the evaluation of large-scale projects and programmes. Formative assessment refers to a wide variety of methods that teachers use to conduct in-process evaluations of student comprehension, learning needs, and academic progress during a lesson, unit, or course. Formative assessments help teachers identify concepts that students are struggling to understand, skills they are having difficulty acquiring, or learning standards they have not yet achieved so that adjustments can be made to lessons, instructional techniques, and academic support.Â In other words, formative assessments are for learning, while summative assessments are of learning. Or as assessment expert Paul Black put it, â€œWhen the cook tastes the soup, thatâ€™s formative assessment. When the customer tastes the soup, thatâ€™s summative assessment.â€