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Repositioning Formative Assessment from an Educational Assessment Perspective: A Response to Dunn & Mulvenon (2009)

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Within the recognized tensions between statewide testing and the process of teaching and learning, formative assessment's potential for improving student learning and for shedding light "inside the black box," has received increased attention from scholars in different countries. In their critical review, Dunn & Mulvenon (2009) pointed out the lack of agreed-upon definitions and limited empirical evidence concerning formative assessment. We contend that from the educational assessment field, there is a clear overlap among definitions of the concept and that the conceptual confusion may be coming from outside the field. We also argue that Dunn & Mulvenon's claim of limited empirical evidence is basically inaccurate and based on misinterpretations of Black & Wiliam's (1998) article and of social science research more broadly. Consequently, we start by distinguishing key concepts related to formative assessment. Second, we describe the paradigm of the educational assessment field, and summarize the different definitions they propose. Finally, the article addresses the issue of "limited" empirical evidence concerning formative assessment.

Persistent problems in US test-based educational accountability system under the No Child Left Behind policy (Koretz, 2008; Frederiksen & Collins,1989), the recognition of the limitations of current assumptions about knowing and learning embedded in this system, and its tension with newer learning and assessment paradigms (e.g., Delandshere, 2001, 2002; Gipps, 1994; Hickey & Anderson, 2007; Shepard, 2000, 2008; Stiggins, 2002; Torrance, 1993) have forced researchers to rethink the role of assessment so that it can help support and document classroom learning in an attempt to shed light into the "black box" of classroom practices (Black & Wiliam, 1998). In this article, we briefly review Dunn & Mulvenon's (2009) main critiques of the concept of formative assessment from the educational assessment perspective. We distinguish among concepts related to formative assessment, present the emergent paradigm that sustains current definitions of formative assessment, and review Black & Wiliam's (1998) seminal article to address the critiques raised by Dunn & Mulvenon.

While we agree with Dunn & Mulvenon in their attempts to clarify and see formative assessment with "new eyes"—as they used Stiggins' expression—their discussion, we believe, leads to see formative assessment with "old eyes": in criticizing the field of educational assessment under the lens of program evaluation, the authors overlooked key theoretical conceptualizations shared by those researchers in the field. These conceptualizations have taken several years to evolve and do indeed define the field of educational assessment and reflect its paradigmatic assumptions as discussed later in this article. In what follows, we briefly summarize some of Dunn & Mulvenon's most problematic statements and claims concerning the concept of formative assessment, and then, we provide the basic theoretical conceptualizations

agreed upon in the educational assessment community. We conclude by discussing the evidence concerning formative assessment.

Clarifying the Concept of Formative Assessment: Its Emergent Paradigm and Definitions

Dunn & Mulvenon argued that "there is no agreed upon lexicon with regard to formative assessment" (p. 1). Even though we disagree with this statement for reasons we attempt to show below, we tend to feel more dissatisfied with their solution: the authors claimed that "assessment is an assessment" and that it would be better to define "formative assessment as a test." As it will become clear later, equating "assessment" with "test" is antithetical to the formative assessment concept itself. Therefore, before addressing the general issue of lexicon, we review the definitions of test and assessment.

A test, according to the Standards for Educational and Psychological Testing, is an "evaluative device or procedure in which a sample of an examinee's behaviors in a specified domain is obtained and subsequently evaluated and scored using a standardized process" (p. 3). An assessment is a "process that integrates test information with information from other sources" (p. 3). Similarly, for Delandshere (2001), assessment is a process of forming "value judgments and interpretations that determine the significance, the importance, and the value of learning and knowing" (p. 132). Consequently, assessment, more than a test for quantifying the "how much" of an entity—as Dunn & Mulvenon seem to have suggested—it is a more comprehensive qualitative interpretation of complex learning outcomes and processes (Sadler, 1989). As synthesized by Gipps, assessment is "a wide range of methods for evaluating pupil performance and attainment including formal testing and examination, practical oral assessment, classroom based assessment carried out by teachers and portfolios..." (1994, p. vii). It follows that equating "assessment" with "test" may be, at least, a misleading strategy for clarifying the concept of formative assessment and clearly goes against the main efforts of the educational assessment community to move away from simplistic, multiple-choice-related notions of assessment toward understanding and supporting learning through assessment practices. The origin and rationale of this movement are summarized below.

In her book *Beyond Testing: towards a theory of educational assessment* (1994), Gipps pointed out that assessment has been mostly equated to multiple-choice tests (instruments) under the psychometric model. According to the author, assessment underwent a "paradigmatic" change moving away from a "testing culture" toward an "assessment culture." This assessment culture conceives assessment as a dynamic and interactive practice, unlikely to be inserted into the rigid and quantitative nature of psychometric theory and its statistical analysis. The pedagogical implications of keeping the psychometric model would have limited the character of the assessment tasks, and the extent of the teacher's help and interaction with the pupils. Hence, there was a need for assessments with specific educational purposes, i.e., those that had positive impacts on the teaching and learning *process* (Gipps, 1994). A similar case was built later by Shepard (2000) for the role of assessment in an emerging "learning culture" in which assessment is used during the process of learning as opposed to the external test administered at the end of several curricular units. Shepard made an important distinction that we believe contributes to understand the different meanings of formative assessment. She distinguished between a "traditional paradigm" and an "emergent paradigm." The former is associated with behavioral perspectives of learning, social efficiency curricula, and scientific measurement of achievement. The latter is associated with constructivist perspectives of learning, a more learner-centered curriculum, and *classroom assessment*. These cultures (Gipps, 1994) or paradigms (Shepard, 2000) differently define the relationship between instruction and assessment. If we are closer to the traditional paradigm or testing culture—as it is the case today in the USA—we will understand formative assessment as "data," a "tool," or an "instrument" to be used for different purposes (e.g., "formative" or "summative"). And this use can be applied to different time scales, for example, daily,

monthly, yearly, etc., in a more-or-less loose relationship with the instructional processes occurring in the classroom. On the contrary, if we are closer to the emergent assessment culture, we will understand formative assessment as a set of practices intertwined with the ongoing actions during the teaching and learning process.

As an important case in point that exemplifies these two visions and that motivated this paper and of course Black & Wiliam's, is the role of statewide testing for improving teaching and learning. For instance, what if a teacher uses the results of, say, Indiana Statewide testing for Educational Progress (ISTEP) 2012, and she then uses her insights to plan a different instructional strategy for teaching a specific topic on 2013? Is this a formative use of ISTEP? First of all, it is important to highlight that this type of question is inspired by the assumptions behind the testing culture or traditional paradigm just described. In any case, to answer the question, we need to answer these other two first: (1) did the teacher interpret the ISTEP in terms of learning needs? and (2) did the teacher use that interpretation to make adjustments to meet those needs? (Wiliam, 2006). As we do not know what our fictitious teacher could have done or not with the ISTEP, we can only consider the general conclusions from the literature. First, state-wide tests like the ISTEP do not provide a clear progression for understanding where students are in terms of the desired goals, i.e., learning needs (e.g., Heritage, 2007); hence, the answer to question 1 should be negative. Second, while learning needs could have been identified by our fictitious teacher, real teachers seem to make no substantial instructional innovation other than narrowing the curriculum to "re-teaching" to the test (Jones et al., 1999) or test-prep activities (Abrams, Pedulla, & Madaus, 2003). Hence, question 2 should also receive a negative answer. Consequently, the limited guidance embedded in statewide tests for coupling together needs and formative assessment strategies, plus the difficulties of teachers in using such strategies (Wiliam, 2006) casts a shadow on the actual possibilities of statewide tests to move *learning forward*, the original "leit-motif" behind the idea of formative assessment. To move learning forward, we need to pay closer attention to where learning in actuality occurs, that is, in classrooms' practices and activities, and what their proximal factors influencing them are, for instance, what the teacher and students in actuality do together. This is the key assumption of the "assessment culture" or "emergent paradigm" and why educational assessment scholars focus their attention on *classroom* assessment and learning (e.g., Black & Wiliam, 1998).

For these reasons, we would not consider as formative assessment the use of ISTEP as described in the example above. Formative assessment is simply a phenomenon that occurs in the moment-to-moment interaction between teachers and students. Consequently, we contend that the concept of formative assessment as an object of inquiry *inside* the educational assessment field is clearer and less vague than Dunn & Mulvenon have suggested. In order to support their claim about the "ethereal" and "vagueness" or lack of consistency in definitions, they quoted Black & Wiliam's definition and paraphrased FAST group's (McManus, 2008) and Popham's definitions (2006, 2008). However, they did not specify in which aspects the definitions were inconsistent or "vague"; that is, they did not provide an argument for why these definitions were "vague." In our review of the definitions below (see Table 1), we quoted the ones used by Dunn & Mulvenon and added others from influential scholars and researchers. We then elaborate and synthesize the common ideas among these definitions to show their common denominator that makes them similar rather than "vague."

From our perspective, the definitions clearly depict formative assessment as a process, rather than a tool or instrument as recognized by Good (2011), reflecting the paradigm of educational assessment (i.e., the assessment culture) described above. The definitions also depict formative assessment as involving actions, activities, judgments and feedback loops (Ramaprasad, 1983) between teachers and learners so that they can adjust their actions and thinking, and in doing so, get a better understanding of the topic at hand. From the definitions outlined below, formative assessment can be then understood as

a series of informed and informing actions that change the current state of the reciprocal teaching-learning relationship toward a more knowledgeable one.

those judgments to the learners so that they can reduce the gap appropriately. Furthermore, it is *during* this reciprocal relationship that learners must

Table 1: Definitions of Formative Assessment

Authors	Definitions
Sadler (1989)	"...is concerned with how judgments about the quality of student responses (performance, pieces, or works) can be used to shape and improve the student's competence by short-circuiting the randomness and inefficiency of trial-and-error learning" (p. 120).
Gipps (1994)	"Take place during the course of teaching and it is used essentially to feed back into the teaching/learning process." (p. vii).
Black & Wiliam (1998)*	"...all those activities undertaken by teachers, and/or by their students, which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (p. 7).
Tunstall & Gipps (1996)	"...is that process of appraising, judging or evaluating students' work or performance and using this to shape and improve their competence" (p. 389).
Cowie & Bell (1999)	"...the process used by teachers and students to recognize and respond to student learning in order to enhance that learning, during the learning" (p.101).
Shepard et al. (2005)	"...assessment carried out during the instructional process for the purpose of improving teaching or learning" (p. 275).
OECD (2005)	"...frequent, interactive assessments of student progress and understanding to identify learning needs and adjust teaching appropriately" (p. 21).
Popham (2006)*	"An assessment is formative to the extent that information from the assessment is used, during the instructional segment in which the assessment occurred, to adjust instruction with the intent of better meeting the needs of the students assessed" (p. 3).
Popham (2008)*	"...a planned process in which assessment-elicited evidence of students' status is used by teachers to adjust their ongoing instructional procedures or by students to adjust their current learning tactics" (p. 7).
McManus (2008)*	"Formative assessment is a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students' achievement of intended instructional outcomes" (p. 3).
Heritage (2008)	"The purpose of formative assessment is to provide feedback to teachers and students during the course of learning about the gap between students' current and desired performance so that action can be taken to close the gap" (p. 2).

* These sources were cited by Dunn & Mulvenon as examples of lack of consensus. Only Black & Wiliam's definition was quoted by the authors, the others were only paraphrased.

We believe that this is the central idea behind formative assessment for classroom learning. With informed actions, we refer to actions based on judgments of relevant information concerning the learners' knowledge gap. On the other hand, with informing actions, we refer to the communication of

develop the capacity to monitor the quality of their own work, so that they can move from teacher-supplied feedback toward expert self-monitoring (Sadler, 1989). The role of formative assessment is to help this process by incorporating feedback loops as a mode of supporting the learning of complex

topics and subject matters. It is beyond the scope of the article to further elaborate on these ideas, but formative assessment so defined resembles the tutorial process (Wood, Bruner, Ross, 1976) and the instructional method of scaffolding theoretically identified with Vygotsky's (1978) Zone of Proximal Development (e.g., Torrence, 1993; Shepard, 2005).

Following the above considerations, we find it hard to sustain Dunn & Mulvenon's perceived "vagueness" or lack of "agreed-upon" definitions of formative assessment. This fact supports Shepard's (2008) and Popham's (2008) argument that the confusion about what formative assessment is or should be comes mainly from the testing vendor companies and not necessarily from the research community. For instance, Popham believes that educators need to know how to distinguish between formative assessment and other assessment practices also called formative by commercial test-development companies, but that hardly represent formative assessment practices. A case in point are interim assessments, that is, formal instruments administered at the end of each quarter or every month and that provide information to teachers on which standards have been mastered and which require further instruction (Shepard, 2008). However, these assessments fall short for the day-to-day and individual-adjusted instruction typical of formative assessment practices. As discussed above, we believe that on the epistemological level, the confusion is also due to the existence of different research paradigms that lead to different ideas concerning what formative assessment is, what methods should be pursued, and what counts as empirical evidence of its effectiveness.

Empirical Evidence of Formative Assessment

It is beyond the scope of this response to engage in new literature review to argue for the positive impact of formative assessment. Rather, we believe that by showing how Dunn & Mulvenon seemed to have misinterpreted, in terms of *meaning and scope*, Black & Wiliam's claims and key aspects of social research, we can reframe the issue of "limited" empirical evidence.

In terms of meaning, Dunn & Mulvenon seem to have interpreted the claim "The research reported here shows conclusively that formative assessment does improve learning" (Black & Wiliam, 1998, p. 61) as a *conclusion*, not in the sense of a reasoned judgment within an inference—which we think was the intention of Black & Wiliam—but in the sense of a *necessary* conclusion within a syllogism. On the other hand, in terms of scope, Dunn & Mulvenon believed that "...it is important to note some issues were identified with the eight research articles Black and Wiliam (1998) actually presented to support this conclusion" (p. 5). However, the real conclusion of Black & Wiliam concerning the eight studies was that "...the consistent feature across the variety of these examples is that they all show that attention to formative assessment can lead to significant learning gains" (p. 17). This particular statement does not seem to be very ambitious or disconnected from the evidence of the eight articles. The conclusion of Black and Wiliam on page 61—the focus of Dunn & Mulvenon's critique—in actuality referred to the rest of the studies reviewed in their article. The eight studies appeared under the section "Examples of evidence" to only set the stage for further analysis of the articles related to formative assessment. In this sense, claiming that Black & Wiliam warranted the "controversial" conclusion on page 61 only on those eight examples is narrowing down the scope of the article's conclusion. In fact, the article continued reviewing studies on individual differences, and exploring cognitive and motivational factors. Given that formative assessment is focused on supporting learning, its success depends largely on the learners' role. As Black and Wiliam put it:

> *The core of the activity of formative assessment lies in the sequence of two actions. The first is the perception by the learner of a gap between a desired goal and his or her present state (of knowledge, and/or understanding, and/or skill). The second is the action taken by the learner to close that gap in order to attain the desired goal (p. 20).*

These actions refer, basically, to the role of feedback in self- and peer-assessment activities. Next, Black and Wiliam reviewed a set of studies that showed positive relationships between these actions (e.g., Schunk & Swartz, 1993; Thomas et al.,

1993; McCurdy & Shapiro, 1992). For instance, Schunk & Swartz, in their study of goals and progress feedback, found that process goal with progress feedback had the greatest impact on achievement outcomes compared to product and process goal without progress feedback. Similarly, McCurdy & Shapiro found that students' oral reading rates improved as a result of the feedback experienced through either peer or self-monitoring. Essentially, these studies represent a fraction of all the studies reviewed by Black and Wiliam from page 20 to page 39. The authors then closed their article with implications for policy stating the conclusion criticized by Dunn & Mulvenon.

Concerning the meaning of research on social science, the manner in which Dunn & Mulvenon reviewed the articles is unsatisfactory. While Black & Wiliam's conclusion was based on a *range* of different conditions, contexts, populations, and formative assessment strategies, Dunn & Mulvenon's critique is based on studies taken *individually*. For example, referring to Fuchs & Fuchs (1986) article, Dunn & Mulvenon stated that "…(it) creates serious problems *for using this article* to conclusively show that formative assessment improves academic achievement in general" (p. 5, emphasis added). The authors found ground to criticize the generalizability of the results of each study, when in fact the only way to *attempt* to solve the issue of generalizability is by reproducing a study. As Cook & Campbell (1976) (see also Cronbach, 1982) stated more than three decades ago:

> *We would delude ourselves if we believed that a single experiment, or even a research program of several years' duration, would definitely answer the major questions associated with confidently inferring a causal relationship, naming its parts, and specifying its generalizability.*(p. 227)

In terms of the scope of Dunn & Mulvenon's critique, it is basically related to the number and types of units involved (e.g., "only one teacher") and the type of treatments used in the studies (e.g., "only self-assessment"). However, by adopting a narrow scope and focusing on these general elements such as sample size, the critique defeats itself in its attempt to advance our understanding of formative assessment as defined in the previous section. In order to meaningfully critique a study of formative assessment on an *individual* basis, i.e., to broaden the scope of the critique, it is necessary to consider what the focus of the research on formative assessment really is, and of course, from which paradigm the study was conceived. Torrance (1993), for instance, identified as a focus of concern whether and to what extent teachers are using the different "evidence" concerning students' achievement, what teachers think of assessment, and how formative assessment looks like in a classroom and if it makes a difference in the culture of those classrooms. Finally, Torrance suggested exploring the conditions under which formative assessment can have a positive effect on learning. Black and Wiliam (1998, 2009) also pointed to different aspects of the study of formative assessment. For instance, core beliefs about learning underlying curriculum and pedagogy, the nature of the evidence obtained from the learners' responses, the teachers' and students' perceptions and beliefs concerning themselves, their roles, and the purpose of learning are all aspects to review in order to gain a coherent and rich understanding of a study.

The important point here is that these areas for future research imply a strong emphasis on qualitative, case study-type of research—or at least mixed methods research—to identify the processes and interactions typical of classrooms and how they interact with the different formative assessment strategies. For instance, some work done in classrooms and technology in the form of educational games have followed these recommendations and produced formative assessment principles for supporting inquiry learning (Hickey & Filsecker, 2011). These principles are the culmination of a series of design-based refinements of multiple specific features. Of course, following Cook and Campbell (1976), this type of research turns meaningless any generalizable claims concerning one specific feature from a single study. However, together, they represent a promising line of research to study and improve the formative assessment practices in specific contexts such as game-based learning.

Conclusion

To the extent that different paradigms (i.e., the traditional testing culture or the emergent assessment culture) entail different assumptions about learning, assessment, and instruction, the manner in which formative assessment is conceptualized, for example, either as a tool/instrument or as a process/practice, will depend on which paradigm we endorse. In part, this paper was an attempt to highlight the fact that there is no right or wrong definition of formative assessment. What we do have are two different paradigms from which we *construct* our object of inquiry. And it is a dangerous journey to convey judgments born out of one paradigm in order to critique an object of inquiry born out of a different paradigm. This difference we believe was in general overlooked by Dunn & Mulvenon's critique.

Consequently, from the educational assessment field, formative assessment is neither testing nor "assessment data" and the definitions have more elements in common than disagreements. The definitions entail a set of practices at the center of the teaching and learning processes concerned with the what (process) rather than the how much (outcome) of learning. It is also concerned with adapting the teaching process to the learners' needs on a moment-to-moment basis, sharing the same complexities of the tutorial process.

Finally, scientific evidence is always constrained to a particular study and subject to falsification by a future one. Formative assessment research is no exception to this general scientific *Ethos*. This means that any empirical evidence concerning formative assessment will necessarily be "limited," and the main strategy to enhance the generalizability of the results of a study is simply conducting another one.

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