Focusing Formative Assessment on the Needs of English Language Learners

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Formative assessment has the potential to enhance teaching and learning, especially for those students who face particular challenges, such as English Language Learners (ELL students). In this paper, we examine how formative assessment can enhance the teaching and learning of ELL students in particular. We highlight the opportunities and challenges inherent in integrating formative assessment into instruction for ELL students in the era of the Common Core and other "next generation" standards. We argue that in order to use formative assessment effectively with this student population, teachers must attend simultaneously to the students' needs both in learning content and skills and *in developing the English required to express their learning.*

Indeed, it is the extent to which this dual attention to language and content learning is given that distinguishes formative assessment strategies to support ELL students from strategies for non-ELL students.

Much progress has been made over the last decade on understanding how best to teach and assess ELL students, driven in no small part by the No Child Left Behind Act of 2001 (NCLB). Although support for NCLB has been mixed, there is widespread agreement that the Act is responsible for shining an important spotlight on ELL students' education and the need for fair, valid, and reliable assessment of ELL students. NCLB called for schools and districts to assess all ELL students and to be accountable for their achievement in both English language development and academic knowledge and skills, at a level comparable to that of their non-ELL peers.

This push for accountability persists as the nation ushers in a new era of education reform, driven by development of and widespread support for new and more rigorous learning standards nationwide, such as the Common Core State Standards (CCSS), Next Generation Science Standards (NGSS), and commensurate standards for English language proficiency development. The vast majority of states have now committed to weaving the CCSS and corresponding "next generation" assessments into the fabric of their instruction and assessment systems. The vision embodied by the Common Core movement is that instruction and assessment will work hand in glove to support deep, high-quality learning, with career and college preparedness the ultimate goal for all students, including ELL students (Darling-Hammond et al., 2013).

In this context, formative assessment has emerged as a promising teaching and learning strategy

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Efforts to improve the education outcomes of ELL students must take into account that this student population represents a range of different academic and linguistic experiences, resources, and needs.

(Heritage, Walqui, & Linquanti, 2013). Integrating instruction and assessment, formative assessment is a continuous cycle that entails gathering evidence of and judging student learning; providing feedback to students about their learning; and using assessment data to adjust subsequent instruction as needed. (See pp. 3–4 for a more detailed explanation of formative assessment.)

Implementation of the CCSS and of formative assessment practices presents major challenges and opportunities for teachers, who, in each case, must deepen their subject matter knowledge, take on new roles and responsibilities, and newly examine their instructional strategies. For example, a distinguishing feature of the CCSS is the unprecedented extent to which the standards specify the academic language competencies students need within and across different disciplines (Abedi & Linquanti, 2012). Hence, teachers in general, and especially those with ELL students, need to understand the possible sequences in which students may acquire language skills, the language demands embedded in particular texts and tasks, how the different disciplines use language, and how to support or scaffold the development of student proficiency in language competencies. Effective use of formative assessment places similar demands on teachers, and it poses additional challenges. For example, research suggests that teachers struggle with how best to use formative assessment data to revise their instruction (Dunn & Mulvenon, 2009; Kingston & Nash, 2012; Shepard, 2005).

Currently, many researchers are examining different approaches to formative assessment and trying to determine what it takes to effectively incorporate formative assessment into instructional practice generally. However, not much work has been done yet to identify promising formative assessment practices to improve learning specifically for ELL students.[1] As use of formative assessment expands, it is imperative to examine the potential impact of formative assessment practices on both the academic achievement and language learning of ELL students and to explore how formative assessment practices could be tailored to meet the specific needs of these students (Heritage et al., 2013).

Although the body of research on formative assessment of ELL students is quite small, there has been substantially more research done on large-scale, *summative* assessment of ELL students (Abedi, 2011; Bailey, Huang, & Escobar, 2011), and we argue that this research on large-scale assessment provides an important reference point for understanding and improving formative assessment for ELL populations. The research on large-scale assessment of ELL students examines many of the same kinds of concerns—such as fairness, accuracy, and opportunity to learn—that must be addressed with regard to classroom assessment, including formative assessment.

Although this paper focuses in particular on the use of formative assessment with ELL students, we recognize that this topic is part of the broader field of study of how a wide spectrum of student language-related differences interacts with the demands of instruction and assessment. In this spectrum are differences among the varieties of English used by students' native-English-speaking families; different languages and their particular varieties; and differences in language abilities, including literacy skills (Adger, Wolfram, & Christian, 2007;

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[1] The use of formative assessment practices with ELL students appears to be more established in English as a second language (ESL) and English as an additional language (EAL) classrooms, where observational checklists, portfolios, journals, peer assessment, assessment dialogues, and the like are commonly used on an ongoing basis to assess progress in learning English (Genesee et al., 2006; Rea-Dickins, 2006).

Definition and Principles of Formative Assessment

After many years of confusion and conflicting viewpoints about what constitutes formative assessment, there is emerging consensus about its definition. This is evident from the similarities in definitions provided by different experts on this topic (Learning Point Associates, 2009). The definition offered by Noyce and Hickey (2011, p. 1) is representative of the consensus, describing formative assessment as

> ***"the process of monitoring student knowledge and understanding during instruction in order to give useful feedback and make timely changes in instruction to ensure maximal student growth."***

Although this definition adequately reflects current conceptions about formative assessment, it is important to dig deeper into the key characteristics of this emerging practice. Building from this definition and from current research findings, we propose six guiding principles for effective formative assessment:

1. Promotes student learning. Formative assessment is best characterized by its purpose: to support student learning. Other types of assessment have different purposes. For example, summative assessment is typically intended for accountability purposes, and interim assessment is intended to monitor student progress toward proficiency in standards. Moreover, whereas summative and interim assessments gauge students' learning after a given period of instruction (e.g., an academic year, a unit), formative assessment is a continuous process that is integral to teaching and learning.

2. Elicits evidence of learning through a variety of tasks. Formative assessment tasks can take many forms: planned and opportunistic; individual and group; brief and extended; as well as informal and formal. Shavelson and his colleagues (Shavelson et al., 2008; Shavelson, 2006) define three anchor points on a continuum of informal to formal formative assessment tasks:

- ***On-the-fly*** formative assessment occurs in response to an unexpected "teachable moment." For example, to address a misconception evidenced by a student comment, a teacher might pose an impromptu question to identify the source of the misunderstanding.
- ***Planned-for interaction*** is purposeful; a teacher designs ways to identify the gap between what students actually know and what they should know. For example, a teacher might pose prepared-in-advance tasks to students which are tied to the learning goals.
- ***Curriculum-embedded*** formative assessments are inserted at specific points in a unit. For example, a teacher might engage students in the solution of a novel problem that weaves student understanding of concepts introduced in that unit before deciding whether to proceed to the next unit.

The teacher designs or selects a formative assessment task based on its specific instructional purpose. Its characteristics (e.g., structure, supports) are determined by answers to the following questions: What do I wish to measure? What evidence of learning is needed? What are the characteristics of tasks that will elicit this evidence? Do I need information from this task to help me adjust my instructional activities, or to help students gain insights about how to adjust their learning strategies? Or both?

3. Changes the roles of teachers and students. Formative assessment places students at the center of teaching and learning, thereby engaging teachers and students in distinctive ways. The teacher sets the stage for each lesson, focusing on clear learning goals and indicators, communicating these to the students, and deciding what evidence of learning to collect, and how. Teachers must create a collaborative and supportive classroom environment for students, in which questioning, constructive feedback, and

self-assessment are perceived as non-threatening (Heritage, 2011). Students also play an active role in formative assessment. Students not only perform tasks that provide evidence of their current learning, but they are involved in self-assessment (and sometimes peer assessment), thus developing and enhancing autonomy as they use feedback to inform their future work (Marshall & Drummond, 2006). This means that the feedback must inspire reflection, be actionable by the student, and be specifically linked to what the student is trying to learn and accomplish.

4. Uses learning progressions to anchor learning goals and monitor learning. Formative assessment begins with learning goals that clearly articulate what teachers expect students will learn through the course of an instructional activity. These goals must be communicated to students—or even co-created with them. Learning progressions constitute a tool for helping teachers set appropriate goals and organize standards-based instruction in a sequence that reflects a learner's likely developmental path. The goals provide a model or map along which students are expected to progress in a given domain from novice to more expert performance (McManus, 2008; Heritage, 2008). As such, learning progressions help teachers think about student learning development in a content domain and plan related formative assessment strategies.

5. Results in meaningful feedback and adjustments to improve instruction for students. Perhaps what most distinguishes formative assessment from other instructional or assessment methods is that it culminates in immediate action to improve instruction (Black & Wiliam, 1998). Further, formative assessment calls for contingent action that is responsive to specific student needs. Learning opportunities for students are created based on an assessment of what the students have learned, what they may have misinterpreted, and what may be on the cusp of development (Heritage et al., 2013) to advance further development.

Teacher feedback to students is an essential element of formative assessment and a major avenue by which formative assessment promotes student learning (Sadler, 1989). Demonstrated to have a positive effect on learning, feedback is formative when it provides information about the gap between a student's current level of learning and the expected level of learning, as well as guidance to the student about to how close this gap (Sadler, 1989; Trumbull & Lash, 2013). Effective feedback is focused and directive, providing corrective information and offering suggestions for addressing a student's misconceptions and errors. In regard to timing, feedback has the greatest impact on the students at the point when they are considering strategies for how to do their work (Hattie & Timperley, 2007; Learning Point Associates, 2009).

6. Enables students to become self-regulated and autonomous learners. The ultimate goal of formative assessment is for students to attain self-efficacy as learners by developing their agency and exercising power over their own learning. Just as formative assessment calls teachers to action in assessing student learning in relation to learning goals and adjusting their instruction accordingly, it also sets the stage for students to direct and modulate their own actions toward learning goals (Hattie & Timperley, 2007). With such autonomy as the objective, teachers must guide students to develop the metacognitive skills that make it possible for them to assess their own levels of understanding and improvement.

Formative assessment functions as a mirror, reflecting to the student important information about his or her learning even as, at the same time, it reflects to the teacher important information about his or her instruction. Equally important, teacher feedback scaffolds students' ability to generate their own internal feedback about the state of their learning.

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Ball & Farr, 2003; Trumbull & Farr, 2005; Vellutino, Scanlon, & Lyon, 2000). It is important that formative assessment practices and tools be designed with this broader range of language-related differences in mind.[2]

The authors of this paper include experts in both ELL teaching/learning and ELL assessment. Hence, we come at the issues of formative assessment for ELL students—and specifically, the relationship between language development and academic content mastery—from different, and sometimes divergent, perspectives. We began developing this paper from a point of consensus, which we've captured in a section (pp. 3–4) that presents a formal definition of formative assessment and offers our perspective on principles for effective formative assessment.

Teaching and Assessing ELL Students in the United States

What we know about the nation's ELL students

The term *English language learners* (or *ELL students*) in this paper refers to students who are not yet proficient in English and need instructional support to fully access the academic content in their class work (Ballantyne, Sanderman, & Levy, 2008). A growing number of students in U.S. schools have been designated as ELLs. From the 1997/98 school year to the 2008/09 school year, the number of ELL students enrolled in public schools increased from 3.5 million to 5.3 million, or by 51 percent (National Clearinghouse for English Language Acquisition, 2011). As of 2010/11, ELL students accounted for 10 percent of the population of public school students in the country.[3] In many states, the proportion of ELL students is much larger; for example, one quarter of California students are ELL students. In the U.S., ELL students include speakers of more than 100 different languages, although 75 percent of them speak Spanish (Editorial Projects in Education, 2009). Recently, the population of ELL students has been growing most rapidly in states that have not historically had many ELL students, such as Delaware, Kentucky, and South Carolina (Editorial Projects in Education, 2009).

Efforts to improve the education outcomes of ELL students must take into account that this student population represents a range of different academic and linguistic experiences, resources, and needs. It includes students born abroad as well as those born in the U.S. Slightly more than one third of ELL students are immigrants, nearly half are second-generation Americans, and another 17 percent are third-generation (Editorial Projects in Education, 2009).

Immigrant students arrive at all ages and with a broad range of education experiences. Some older students may have had little or no access to schooling in their home countries. Others have had excellent formal schooling and may be ahead of age-level peers in certain academic domains. Immigrant students from affluent urban families who have had access to continuous schooling will have had different experiences from those whose families have lived modestly in rural settings, where schooling is not always available, or those who come from war-torn countries where schooling may often have been interrupted.

The ELL student population also exhibits a broad spectrum of individual proficiency patterns, in both first language and English (Solano-Flores & Trumbull, 2008). At one end of the spectrum are students who are just beginning to learn English; at the other end are students who might more appropriately be categorized as "fully-functional bilinguals" (Valdés et al., 2005). Between these two points, there are numerous configurations of bilingualism.

Students' degree of bilingualism is related to their facility with *academic language*, or the language

[2] For more information, see the discussion of "The Role of Language in Formative Assessment" in Trumbull and Lash (2013).

[3] For more information, see National Center for Education Statistics (2013).

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of school-based learning, which encompasses the way in which specific academic practices are formulated, the fundamental structure of language, the specific ways in which words are used, and discipline-specific vocabulary (Zwiers, 2008). With respect to bilingualism, some ELL students are conversationally fluent in their first language but have developed academic language proficiency (oral and written) only in English. Older immigrant students may know little English but have academic language proficiency in their first language and, thus, a strong foundation for eventual academic language proficiency in English.

Also noteworthy is the fact that there is a growing percentage of "long-term" ELL students (students who have been classified as English Language Learners or Limited English Proficient for seven years or more), signaling the need to reassess the learning opportunities these students are offered. In California, for instance, statewide language assessments of ELL students reveal that a great many of them appear to progress quickly in the early stages of acquiring English but get stuck at an "intermediate" level of proficiency, where they may remain for years (Linquanti, Crane, & Huang, 2010).

Although all students are developing new uses of language throughout their academic careers, there are critical differences between ELL students and their non-ELL peers that can affect ELL students' achievement in school (Bailey, 2007; Crosnoe, 2004; Short & Fitzsimmons, 2007). For example, ELL students typically have limited exposure to a rich and varied vocabulary and other language features and functions in English. Expressions, vocabulary, and other language features that ELL students are likely to know are often more closely linked to friends, neighborhood, and close social contexts than to the academic context—and often are modeled and reinforced in their native language rather than in English.

Because language and culture are so tightly linked, differences in language use are nearly always associated with sociocultural differences (Gee, 2007). Children learn how to use language in social settings among members of certain cultural groups. Thus, they come to school with particular *cultural scripts* for using language to communicate and to learn (see, e.g., Durán, 2008). Although the surface manifestations of language used by students—such as grammatical forms and vocabulary—are probably most evident to a teacher, it is the differences in the ways people use language to accomplish goals and conduct their relationships that may have the most powerful consequences for student interactions in the classroom, including those associated with assessment (e.g., Greenfield, Suzuki, & Rothstein-Fisch, 2006; Heath, 1983).

For instance, some students will have been socialized to listen much more than speak. Assessments that require them to express opinions or show their learning in front of others—as is typical in formative assessment discourse—may place demands that are more burdensome for them than for other students (Greenfield et al., 2006). Therefore, this type of formative assessment may not be immediately accessible to ELL students, even when they understand the discursive, syntactic, and lexical features of questions or feedback (Leung & Mohan, 2004). ELL students in particular may need time to learn and adjust to the conventions of verbal expression and classroom interaction related to instruction and formative assessment.

The growing understanding of the language learning experiences and challenges faced by ELL students is essential to improving teaching and learning for this population and, ultimately, to closing the academic achievement gap between ELL and non-ELL students. The gap—at least by the time students reach adolescence—is largely due to differences in literacy skills (Snow & Biancarosa, 2003), which are heavily dependent on (and which

reciprocally promote) knowledge of academic language. Hence, any attempt to reduce the gap must focus learning and teaching simultaneously on not only academic knowledge but also development of language and literacy.

What we know about effective instruction for ELL students

Because formative assessment is so intimately connected to instruction and serves the express purpose of promoting learning, developing an effective approach to formative assessment for ELL students requires an understanding of how ELL students learn best and how teachers can provide the best instruction for these students.[4]

Effective instruction for ELL students begins with a sound theory of language learning

According to van Lier and Walqui (2012), there are at least three different perspectives on language and how it develops:

1. *Language as form*. In this view, the core of language is grammatical structures, sounds, and vocabulary; content plays a smaller role. A student's ability to correctly use language forms becomes the goal of instruction. Therefore, language learning progressions are built on a sequencing of syntactic structures arranged along a continuum of simpler to more complex, filled in with vocabulary that is considered useful for everyday activities. For example, English as Second Language (ESL) courses typically begin with the verb *to be* in its simple present form and progress to present progressive, past, present perfect, future, and so on. Although content may vary from lesson to lesson, lessons seldom involve students in a process of coherent development of creative or critical thinking. As Valdés (2004) points out, a negative outcome of this language perspective is the "curricularization" of ESL language courses, the idea that unless students use the language contained in the syllabus correctly they should not pass to the next-level ESL course. Recent studies in California point to the negative consequences of such a mastery approach and its contribution to students never or only very belatedly progressing from ELL classrooms to join their peers in the general education program (Callahan, Wilkinson, & Muller, 2010; Linquanti et al., 2010; Walqui et al., 2010).

2. *Language as a set of discrete functions*. This perspective conceives of language in terms of individual acts in specific communicative circumstances. For example, teachers might ask students to recognize "Can you pass me the ruler?" as an instance of a request and to respond appropriately "Certainly." This view of language is based in traditional sociolinguistic speech act theory, which characterizes language in terms of what its users are attempting to accomplish with a given utterance or interchange within a particular social context (Austin, 1962; Searle, 1969). Speech act theory is part of the field of "pragmatics," or the study of how people use language in social contexts. However, some research indicates that this approach does not lead to discursive competence, where social exchange is accomplished by coherent sequences of interactions that take an idea to a discussion and back and forth to an agreement (van Lier & Walqui, 2012).

3. *Language as action*. This perspective on language is gaining in credibility and influence (see, for example, Nevile & Rendle-Short, 2007). In this perspective, language is an inseparable part of human action, intimately connected to all

[4] Programs that reflect a high regard for students' home language as a social and intellectual resource, particularly high-quality bilingual and dual immersion programs, result in better achievement than those that focus solely on developing students' English language skills (see review in Lindholm-Leary & Genesee, 2010). However, the majority of ELL students do not have access to bilingual instruction in which their first language is used extensively and developed on a continuing basis in its own right. For that reason, this paper focuses on instructional approaches and strategies that can be provided in settings where students' first language is not used to a great extent. Nevertheless, to be most effective, ELL instruction should recognize the usefulness of home language as a learning resource and an important source of identity and family connection for students.

> forms of action—physical, social, and symbolic. Teachers guided by this approach invite students to participate in meaningful classroom activities (e.g., projects, research, science labs) that engage the students' interest and encourage language and intellectual growth through the collaborative construction of academic products of various kinds. Teaching and learning do not treat language as an autonomous system but, rather, as a system nested within a larger set of social systems. This approach to language learning and use does not obviate the importance of students' acquisition of communicative competence at all levels (including proficiency with discourse, syntax, and vocabulary); nor does it negate the value of deliberate functional linguistic instruction focused on specific forms (Lyster, 2004, 2007; Schleppegrell, 2001, 2004)—particularly as embedded within an activity that focuses on language meaning.

A number of researchers who focus on ELL instruction and assessment argue for a move away from the first two of these perspectives in favor of the third, the language as action perspective, consistent with "a redefinition of language as a complex adaptive system of communicative actions to realize key purposes" (Hakuta & Santos, 2012, p. ii). This approach focuses attention primarily on language meaning and the agency of the language user. Language instruction should, therefore, engage students in well-supported, significant, and authentic activity (e.g., creating, discussing, and writing) that develops their academic autonomy over time.

The perspective of language as action, with its emphasis on collaborative construction, complements the rigorous expectations laid out in the CCSS. The standards articulate academic practices in which students will be able to engage with increasing sophistication as they progress through the grades. This engagement requires that students use language as a tool for action, whether in English language arts or in mathematics. And to support them in doing so, educators must rethink the views of language and language progressions that have typically undergirded English language development (ELD) and ESL instruction (van Lier & Walqui, 2012). Only then can ELL students, from the most beginning levels of English and from the earliest grade levels, begin to move toward meeting these challenging standards.

For example, one of the CCSS's College and Career Ready Anchor Standards states that students will be able to "integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally" (NGA Center & CCSSO, 2010). Listening comprehension is essential for meeting the "oral" aspect of this standard, that is, for eventually being able to comprehend extended academic discourse taking place in English. A young ELL student in the primary grades with a very beginning level of English proficiency will clearly struggle to comprehend academic instruction given exclusively in English. However, when provided with visual supports, repeated classroom routines, and other children's responses as aids for making meaning, this young student can begin to guess intelligently at the meaning of information that is presented orally by a teacher.

To start building the competence necessary to meet the College and Career Ready Anchor Standard cited above, ELL students who are just beginning to learn English need access to a language-rich environment with authentic models of English that contextualize meaning with illustrations and concrete objects, for example, and that allow students to practice focused listening for short stretches of time. As students progress to an early intermediate level of English language proficiency, they are able to identify the topic and details of most presentations with the support of graphics, gestures, advance organizers, or some combination of such aids. They are also able to listen with understanding for longer stretches of time and, with supports and frequent comprehension checks, to gain more from instruction given in English. Intermediate-level ELL students can comprehend the main points and details of most age-appropriate academic instruction in English. As students move to advanced levels of English language proficiency, they typically can follow academic instruction on more abstract

and technical topics appropriate to their grade level (Valdés, Walqui, & Kibler, 2012). For ELL students to successfully advance along this continuum of language development, they need teachers who understand how language proficiency typically develops as well as the kinds of activity and supports that benefit ELL students as they progress.

The CCSS support opportunities to engage students in valuable actions, such as making meaning of complex text and using evidence when interacting with others in English language arts and other disciplines. In mathematics, for example, the standards call for students to achieve both conceptual understanding and procedural fluency, engage in high-cognitive-demand math tasks, and develop the belief that mathematics is sensible, worthwhile, and doable. To meet these standards, ELL students, supported by deliberately constructed scaffolds, need opportunities to actively negotiate the meaning of both math concepts and situations, which is consistent with an action-oriented perspective on language.

Effective instruction for ELL students integrates rigorous content and academic language

For all students, learning academic content is inseparable from learning the academic language of the content area, but this is especially true for ELL students (Heritage, Silva, & Pierce, 2007; National Research Council, 2001; Schleppegrell, 2001, 2005; Walqui & Heritage, 2012). Furthermore, research suggests that academic language competencies—which include discursive, grammatical, and lexical features specific to a particular context or content area—correlate with academic success (Aguirre-Muñoz, Parks, Benner, Amabisca, & Boscardin, 2006; Halliday, 1994; Sato, Lagunoff, & Yeagley, 2011; Schleppegrell, 2001). These connections among academic content learning, academic language learning, and academic success suggest that ELL students benefit from structured support for academic English development *within* a discipline, including explicit instruction that is contingent upon evidence of student learning, and that addresses discursive, grammatical, and lexical

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competencies (Aguirre-Muñoz, Parks, et al., 2006; Gersten et al., 2007; Francis et al., 2006; Kemp & Chiappe, 2006; National Reading Panel, 2000; Shanahan & Beck, 2006).

As students progress through school, academic content becomes more varied and complex, as do the academic language skills that students need in order to meaningfully engage with and learn content (e.g., Canale & Swain, 1980; Celce-Murcia, 2002; Scarcella, 2003). For ELL students to successfully engage with academic content, they must know enough academic language to acquire new knowledge and skills, and to show what they know and can do in academic subjects. Thus, it is critical that ELL students be provided with appropriate supports to learn the language of the content areas and that these supports be aligned with the more rigorous content demands and higher achievement expectations associated with the CCSS. Only then can students' construction of content knowledge progress hand in hand with the development of their English (Sato et al., 2011; Walqui & van Lier, 2010).

However, in an effort to make instruction accessible for students with limited English, schools have often placed ELL students in low-level ELD or ESL classes where their access to academic English, rigorous content, and native-English-speaking peers is restricted (Valdés, 2001; Walqui et al., 2010). The emphasis in such classes has traditionally been on the explicit teaching and practice of language forms *without* meaningful context (e.g., grammar exercises on unrelated sentences). Furthermore, before being granted access to mainstream classes, ELL students have been required to show certain levels of English proficiency, based on mastering such language forms. There is growing recognition among researchers and practitioners that this approach

limits ELL students' opportunities to learn grade-level content, as well as to learn academic language and develop literacy. One of the missed opportunities that comes from separating ELL students for the purposes of English language development is interacting with native English-speaking peers who can serve as language models and age-appropriate interlocutors (Wong-Fillmore, 1976).

There is now widespread consensus that, instead of watering down the academic and language learning opportunities for ELL students, instruction for these students must focus on high standards (Gibbons, 2002; Walqui & van Lier, 2010). Recent developments in research and practice suggest that ELL students engage and learn better through integrated instruction of rigorous content and related academic language, coupled with specific kinds of support (Derewianka, 1990; Schleppegrell, 2005; Snow, Met, & Genesee, 1989; Walqui & van Lier, 2010). Four crucial features of effective learning opportunities for this student population are:

- Inviting engagement in rigorous grade-level academic content
- Paying attention to academic language and literacy in the context of subject-matter learning
- Promoting high-quality interactions to develop the use of academic language and new linguistic competencies
- Providing scaffolding that is adjusted as students gain competence with content and language

Inviting engagement in rigorous grade-level academic content. According to Walqui and van Lier (2010), ELL students should be engaged in rich, rigorous academic content that reflects expectations for their grade level. Failure to provide a rigorous academic program impedes access and opportunity to learn (e.g., Ochoa & Cadierno-Kaplan, 2004). During the time they are developing proficiency in academic English, ELL students must continue to learn grade-level subject matter if they are to avoid falling behind their non-ELL peers. Teachers can help ELL students learn core academic concepts by engaging them as apprentices in substantive academic work, using modeling, scaffolding, and other learning supports, as detailed below (Olson & Land, 2007).

Paying attention to academic language and literacy in the context of subject-matter learning. As students engage in academic work, they need opportunities to acquire competence in oral and written uses of related academic language through integrated content and language instruction (Gibbons, 2002; Snow, Met, & Genesee, 1989; Valdés et al., 2005; Walqui & van Lier, 2010). A major benefit of integrating content and language instruction is that academic content provides students with a meaningful purpose and context for language learning, which supports second-language acquisition and engenders motivation for using English (Ellis, 2009). When teachers integrate language development with academic content instruction, it highlights for teachers what aspects of language learning they should focus on to ensure that their students are developing the language competencies needed to participate in the curriculum. Thus, integrated instruction supports language and content learning in a reciprocal fashion (Gibbons, 2002).

Simply placing ELL students in mainstream content classrooms does not constitute integrated content and language instruction. ELL students require specific kinds of support, and teachers must understand the language and literacy demands of their particular academic subjects in order to provide this support (Gibbons, 2002; Valdés et al., 2005). The different types of texts students encounter (e.g., a science textbook, a novel, a historical analysis) pose specific challenges for students' learning to read and write in English (Schleppegrell, 2004; Shanahan & Shanahan, 2008). To deliver instruction effectively, teachers must set learning goals for their lessons that take into account the language demands posed by different types of texts in their particular content area(s). In setting these goals, teachers must also bear in mind that learning progressions for students in general may not apply well to ELL students; in fact, the learning progressions of ELL students may differ substantially from those of their non-ELL counterparts.

Research shows that discipline-specific proficiency in academic language plays a critical role in ELL student achievement. For example, greater mastery of academic language supports and enables students to demonstrate and explain their critical thinking in the content area (Schleppegrell, 2005). When teachers systematically focus students' attention on linguistic features and functions of academic language in a specific content area—what has been called a "functional linguistic" approach—it can facilitate student exploration and clarification of technical meanings and concepts in the content areas, thereby facilitating learning (Coffin, 2010; Schleppegrell, 2001, 2004). For example, a functional linguistic approach might be used to help students understand the structure and language of the genre, such as persuasive writing as different from a narrative, in terms of communicative function and form. A persuasive text is intended to convince, to move to action, whereas a narrative is intended to entertain or teach a lesson. Linguistically these genres display different features, organization, and preferred uses of language.

Furthermore, research suggests that purposeful, structured instruction in academic English might help close the achievement gap between ELL students and their non-ELL peers. Some research has shown that instruction in general academic vocabulary has improved the vocabulary learning of ELL students more than that of their non-ELL peers and that this learning translates to improved performance by ELL students on English language arts standardized tests (Snow, Lawrence, & White, 2009). Other research has shown that instruction in academic English benefits ELL students as well as non-ELL students, improving their success on performance assessments, although not closing the achievement gap (Aguirre-Muñoz, Boscardin, et al., 2006). In a study that included English language arts teachers and their middle school students, researchers found that higher performance on the Language Arts Performance Assignment for both ELL students and native English speakers was associated with the teaching of functional grammatical concepts, with a focus on how text is organized in various academic content areas (Aguirre-Muñoz, Parks, et al., 2006).

Because academic content and academic language are best taught together in an integrated fashion, teachers must *amplify* rather than simplify their instructional communication with students (Walqui, 2003; Walqui & van Lier, 2010). To amplify communication, teachers provide students with a rich linguistic and extralinguistic context during instruction, including multiple cues to support comprehension—what Gibbons (2002) refers to as "message abundancy." For example, ELL students engaged in reading rich academic texts should be provided pre-reading activities that help them build the schemata and context that will support their reading comprehension. Such activities might involve *anticipatory guides*, in which students review statements about information or ideas that will be addressed in the academic text and consider whether each statement is true or false. As a way to discuss what they learned from the text, students might then return to the statements after completing their reading. Prior to having students start reading the text, teachers can also engage students in *quick writes*, in which students respond in 2 to 10 minutes to writing prompts, thus helping them bring to mind prior knowledge and experiences related to the text. Similarly, before reading picture books, teachers can lead students in *picture walks*, in which the teacher guides students in looking through illustrations and making predictions. During these picture walks the teacher also introduces key concepts or vocabulary so as to establish interest in the story and reinforce the use of visual cues when reading. Alternately, students can discuss and order key illustrations and then present the story they think will emerge in the book.

ELL students should be given access to models of academic genres and to multiple opportunities to engage with and practice using the complex language and concepts they are learning. When students are reading a text over a period of days, teachers should periodically organize structured discussions in which the language and concepts from the text are rephrased and expressed in ❝

different ways. After finishing reading a text, students can engage in activities that require them to return to the text for specific purposes. For example, students can reread the text with particular prompts in mind to prepare for a discussion or to complete different types of assignments.

Promoting high-quality interactions to develop the use of academic language and new linguistic competencies. Along with engagement with text, interaction with other people is the basis upon which language development is largely built. To support both content learning and language development, students must be encouraged to engage in high-quality interactions with peers, teachers, and texts that extend and deepen their understanding of core academic ideas. A recent review of research on effective literacy instruction for Spanish-speaking ELL students revealed that two specific forms of cooperative learning (Bilingual Cooperative Integrated Reading and Composition [BCIRC] and Peer Assisted Learning Strategies [PALS]) were associated with a positive impact on literacy (Cheung & Slavin, 2012).

When structuring such interactions in the classroom, teachers must determine what levels of interaction students are already capable of engaging in independently, and then design instruction to build on and purposefully extend what students know and can do. Through their interactions with students, teachers can help students build on their current level of English language proficiency and understanding of academic content toward more sophisticated academic discourse and understanding of content, as articulated in teachers' learning goals for their students.

Providing scaffolding that is adjusted as students gain competence with content and language. The systematic support (from modeling to suggesting to prompting) that teachers provide until the student can move independently through targeted tasks is known as *scaffolding*. Effective scaffolding does not entail simplifying either the language or content used with ELL students; rather, it is a strategy that allows for students to engage in challenging instructional activities while providing them with support that is both strong and flexible. Over time, students require decreasing levels of scaffolding as they gain the skills to appropriate the academic content and language for themselves (Quiocho & Ulanoff, 2009). Walqui and van Lier (2010) describe six key features of effective scaffolding for ELL students:

- *Continuity and coherence*: Familiar organizing structures and tasks provide a level of stability and predictability that enable ELL students to focus on novel content and language.
- *Supportive environment*: A safe classroom environment supports students to take risks with new learning and provides the means to do so.
- *Intersubjectivity*: Teacher and students jointly engage in activity and invest time and effort in comprehending and communicating with one another.
- *Flow*: Classroom activities are intrinsically motivating and challenging and fully engage students.
- *Contingency*: Scaffolding is contingent on and responsive to the learner's immediately preceding initiative and responses.
- *Gradual handover/takeover*: Support is gradually removed as the learner develops competence and is able to take over pieces of work.

As districts and teachers develop instructional practices in response to the CCSS, scaffolding becomes an especially important strategy for working with ELL students. Under the CCSS, students are expected to read and write various types of texts in history/social studies and science—such as persuasive, analytical, and expository texts—with increasing sophistication, beginning in elementary school and progressing through high school (NGA Center & CCSSO, 2010). Students are also expected to engage in interactive academic work, including collaborative conversations about an academic task or problem to be solved, evaluating a speaker's point of view, and presenting information appropriately for a given

task, purpose, and audience. Engaging students in carefully scaffolded, rich academic tasks that integrate content and language can help them reach these new oral language and literacy expectations.

Implications of effective ELL instruction for formative assessment

What we know about effective ELL instruction suggests a pivotal role for formative assessment, particularly in this CCSS era in which educators need to ensure that students are on track for deeper learning. Formative assessment may be even more critical for the effective instruction of ELL students than non-ELL students. ELL students are learning content, academic skills, and language simultaneously, and hence are more likely than non-ELL students to develop misconceptions in the course of learning academic practices taught in English—misconceptions that need early detection so that the course of learning can be reset (Abedi, 2011; Bailey et al., 2010). Frequent formative assessment of ELL students gives substantive insight into both their language and content learning, allowing the teacher to provide the right type and level of supports that students need as they build their capacity and autonomy as learners. Because ELL students' English language proficiency is developing, a teacher cannot readily predict exactly what aspects of new content each ELL student will comprehend, and therefore the teacher must rely on ongoing assessment to inform any necessary instructional adjustments (Meskill, 2010).

What we know about effective assessment for ELL students

As yet, there is no accepted set of measurement principles to guide formative assessment for students in general, much less for ELL students (Bennett, 2011; Trumbull & Lash, 2013). What we know about assessing ELL students comes primarily from research and practice on *summative* assessment. Critical concerns in summative assessment of at-risk student populations, including ELL students, include issues of validity and access: Do the assessment process and tools lead to valid results for these students? Do these students have sufficient access to the assessment process and content? Similar concerns arise in the use of formative assessment. Thus, this section explores recent developments in the summative assessment of ELL students, with particular emphasis on issues of assessment validity and access.

Validity considerations for assessment of ELL students

Test developers, and those who purchase assessments for schools, must understand that the ELL population is highly diverse, and that the interaction between an ELL student's academic content knowledge and his or her English language proficiency affects the validity, reliability, and fairness of any assessments used with them.

Design and implementation of all assessments, including those developed for ELL students, are driven by validity considerations—the extent to which an assessment measures what it purports to measure, thus providing a sound basis for interpreting scores on the assessment. Appropriate assessment development requires a validity framework, which posits a theory of action that links academic content, population characteristics, and consequences of using the assessment for the purposes and desired outcomes outlined as part of the framework (Kane, 2006). To build a validity framework for the assessment of ELL students, three aspects of validity—content, construct, and consequential—are particularly significant.

Content validity. Because of the interaction between content and language skills, it is critical when assessing ELL students to be clear about whether English language proficiency or academic knowledge and skills are being assessed. For example when the targeted content is language skills, as in an English language proficiency examination, the question is: How well is the assessment aligned to English Language Development (ELD) standards? When, instead, the targeted content is academic knowledge and skills, as in a statewide test of

mathematics proficiency, the question is: How well is the assessment aligned to the relevant academic content standards? If not properly aligned to the relevant standards, the assessment may be assessing student achievement related to irrelevant (or, from an assessment standpoint, "unwanted") content.

When the targeted content is math, science, or any content area other than English language arts, a major concern in the large-scale assessment of ELL students is the inclusion of extraneous or needlessly complex language. For example, math word problems with unduly long or irrelevant text introduce unwanted content into the assessment. If a student responds incorrectly to such a word problem, it is not clear if the student lacks proficiency in the targeted math skill or simply doesn't understand the superfluous language.[5]

To help ensure content validity, assessment developers must not only be aware of the *breadth* of the content to be assessed but must also target assessment tasks and modules at the proper *depth*. A common concern in the large-scale assessment of ELL students (and some other special populations) is that academic content assessment items are overly simplified in an attempt to ensure that test items are appropriate for these students, resulting in a test that may lack the proper content depth or complexity (Messick, 1993; Sato, Rabinowitz, Gallagher, & Huang, 2010). The scores resulting from such a test might overestimate an ELL student's achievement relative to the targeted academic domain.

Construct validity and the question of access. Construct validity embraces all forms of validity and is the ultimate test for any type of assessment: Does the assessment measure what it purports to measure for each identified purpose and targeted student population? Research shows that the validity of assessments, particularly those administered to ELL students, requires that these students have adequate *access* to the academic content on which they are assessed (Gong & Marion, 2006; Herman & Abedi, 2004; Marion & Pellegrino, 2006; Pellegrino, 2006).

The term *opportunity to learn* (OTL) is often used to characterize access to the academic curriculum that students are expected to master. Inequities in OTL have long been documented in less affluent communities, where teachers may be less well prepared and not have adequate resources for teaching (Oakes, 1985). Indeed, ELL students are at a distinct disadvantage when it comes to OTL. Although any students (including ELL students) may lack access to the academic curriculum, ELL students often face additional barriers, such as lack of access to both academic language and basic structures of the English language.

In assessment terms, providing *access* requires minimizing or removing any source of variance among student test scores that is not related to the construct being tested. In the previous example of a math word problem with unnecessarily complex and lengthy text, language is a potential *construct-irrelevant factor* that may limit ELL student access to the content of the problem. As a result of this barrier, the test may well underestimate the ELL student's mathematical problem-solving achievement.[6]

Access can also be limited by the background context in which an assessment question is couched, when that context does not align with the experiences students have had (Kopriva, 2008). For instance,

[5] Relevant academic language (such as technical terms) that *is* part of the mathematical concept being measured *is* appropriate to include in word problems. For example, if the targeted math skill relates to *area* and *perimeter,* it is essential for word problems to include those terms and to expect all students, including ELL students, to understand them and to solve the problems.

[6] We are not advocating simplification of *all* language during assessment—ELL students should be exposed to and supported in their engagement with and acquisition of rich language tied to rigorous academic content so that they can develop toward extended discourse and proficiency in English within the academic content. Rather, we are highlighting the necessity for assessment developers and users of distinguishing between construct-relevant language and construct-irrelevant language that should be simplified on an assessment so that ELL students can access the assessed content and fully demonstrate what they know.

immigrant students from Mexico may not connect in the way that their U.S.-born peers do with a mathematics item asking them to calculate the cost of materials for a tetherball structure (Trumbull & Solano-Flores, 2011). Furthermore, access is likely affected by students' ability to understand the *test register*, the particular variety of academic language used in tests, which has its own vocabulary, grammar, and discourse features. The test register is characterized by concentrated text and limited contextual information (Solano-Flores, 2006). Typical test items require very careful reading, with attention to words such as *unless, therefore, but, except, in,* and *on,* and phrases such as *which of the following* that indicate a relationship between words in a list but have little semantic content in themselves.

Some test item graphics that are intended to set a context for students actually have no substantive value for helping students respond to the assessment item. Research indicates that some ELL students look to a graphic for cues that may not be present, interfering with their ability to solve the assessment problem presented (Kachchaf & Solano-Flores, 2012). In addition, the format of a written item may introduce unnecessary demands on a student who is unfamiliar with that format or is more experienced with another format (Kopriva, 2008). For instance, immigrant students accustomed to assessment items that directly pose a mathematical question may be confused by having the item set in a story context. They may focus more on the story than on the mathematical task at hand (Trumbull & Solano-Flores, 2011).

Linguistic analysis of mathematics, science, and reading comprehension items on the Stanford Achievement Test Series (Ninth Edition) revealed that well over half of the items in all content areas contained unnecessarily difficult vocabulary or syntax that increased the "language load" of the items (Bailey, 2005). Seventy-five percent or more of science and reading comprehension items were judged to have unnecessary language load. That is to say, simpler vocabulary or syntax could have been used without affecting the conceptual demand of the items. This kind of construct-irrelevant linguistic complexity no doubt penalizes all test-takers to some degree, but it is likely to disproportionately affect ELL students and poor readers. In this case, researchers found that the performance gap between ELL students and native English speakers increased as the language load of an item increased (Bailey, 2005). As would be expected, the performance gap narrowed or disappeared for items that entailed only mathematics computation, which is not very language-dependent.

Viewing the issue from another angle, a study of student test-taking behaviors suggests that ELL students may deploy their cognitive resources differently from their non-ELL peers when they respond to an assessment task. Using cognitive interviews with students in an experimental study, Kachchaf and Solano-Flores (2012) found that non-ELL students tended to use significantly more problem-solving strategies than ELL students did to answer a science question. In contrast, ELL students devoted more effort to making sense of the question being asked. Others have reported similar findings (Durán, 2008; Rivera et al., 2006).

Ideally, consideration of student access would occur during design and development of an assessment. By limiting the language load of the assessment in ways that support clarity *without* significantly altering the targeted academic construct that is being assessed, test developers support students' ability to demonstrate their academic knowledge and skills. In situations where it is appropriate and possible to design assessments in both English and another language, the same considerations should be applied. Equal attention should be given to modifying assessment language in languages other than English; simply translating from English to the target language can result in an inferior assessment that yields invalid data (Solano-Flores & Trumbull, 2003; Solano-Flores, 2008).

In addition to design and development strategies or modification of test item presentation to maximize ELL students' access to assessment tasks, specific *accommodations* implemented during test administration are often necessary to ensure students' ‟

full access. Accommodations (e.g., extended time for assessment administration; dictation of student answers to the assessment; provision of glossaries) typically are selected to support each student's access to, interactions with, and responses to test item content (Abedi, Hoffstetter, & Lord, 2004). Historically, accommodations were identified and implemented to support access for students with disabilities. However, not all accommodations appropriate for students with disabilities are appropriate for ELL students (Abedi, 2011). Educators must know how to distinguish between accommodations that are useful and effective for ELL students and those that apply primarily to students with disabilities (Acosta, Rivera, & Shafer Willner, 2008). Although accommodations for ELL students focus primarily on their *linguistic* needs, those for students with disabilities tend to focus on physical, sensory, and behavioral needs, which are addressed through strategies concerning presentation, response, timing/scheduling, and setting (Acosta et al., 2008).

Research has shown that the use of appropriate, systematically selected accommodations for ELL students results in significantly higher performance on standardized measures (Kopriva et al., 2007). It is important to note that, whereas accommodations are most frequently associated with summative assessments, formative assessment tasks embedded in commercial curricula, which are commonly used across classrooms, may specify accommodations for ELL students. Teachers who use such formative assessment tasks should be prepared to evaluate the appropriateness of these accommodation practices for their ELL students. They may want to offer additional accommodations for particular formative assessment tasks.

Consequential validity. Consequential validity concerns the intended and unintended consequences of test interpretation and use (Messick, 1989): Does the assessment practice lead to or interfere with student learning and achievement? For an assessment to demonstrate consequential validity, it should not result in any adverse consequences for those who have been assessed. Assessments can have negative consequences if they misdirect teaching efforts, deny students' access to beneficial learning opportunities, or exclude students with particular needs (Darling-Hammond et. al, 2013). A concern in large-scale assessment is whether the assessment recognizes ELL students who meet grade-level content standards. For example, a consequentially invalid result of a large-scale assessment might be that ELL students are incorrectly placed in math remediation classes as a result of an assessment that underestimates their math ability.

All assessments, especially classroom-based formative assessments, should inform and reinforce effective instructional practice aimed at long-term student achievement, rather than short-term strategies used to increase test scores (see, e.g., Torrance, 2007). Thus, of the three types of ELL assessment considerations described here, consequential validity is arguably the most directly relevant to formative assessment of ELL students from an instructional perspective (Messick, 1989). A key question for formative assessment is: Does the assessment practice lead to or interfere with proper instruction and enhanced student learning?

Implications of valid large-scale assessment of ELL students for formative assessment

What we know about large-scale assessment of ELL students has several implications for formative assessment of ELL students. In designing formative assessment tasks, teachers must be mindful of the evidence of learning they are trying to elicit—whether it is disciplinary content, academic skills, or English proficiency. Not only must they be purposeful in targeting skills to ensure ELL students' access to formative assessment, teachers must be sensitive to the variety of demands that their formative assessment questions and tasks can place on students and must know the typical features of tasks that can cause students to slip up. Finally, as with large-scale assessment, teachers must be mindful of unintended consequences of formative assessment, specifically that inappropriate formative assessment practice can lead to inappropriate instructional decisions.

Fortunately, because teachers interact with and observe their students performing on instructional tasks daily, teachers can bring knowledge about students' language and academic proficiencies to bear upon their interpretation of students' responses to formative assessment tasks. Thus, teachers can make informed inferences about student learning from formative assessments that cannot be made on the basis of decontextualized summary scores from large-scale assessments. As a result, if a student's performance on formative assessments does not appear to align with what the teacher thinks she or he knows about the student, the teacher is in a position to ask questions or administer additional tasks of different types to obtain additional data. For these reasons, some theorists suggest that standard notions of how to achieve assessment validity do not fully apply to formative assessment (Brookhart, 2003; Shavelson et al., 2007). Nevertheless, the fundamental concerns are the same: Has every effort been made to ensure that the target constructs and only those constructs are being assessed? Can inferences based on the data gathered be justified? Are the consequences of the assessment practice appropriate for students?

A Proposed Approach to Formative Assessment of ELL Students

Combining what we know about formative assessment for students in general with what we know about effective instruction and assessment of ELL students leads us to recommend a particular approach to formative assessment of ELL students. This recommendation makes use of established stages of the formative assessment process: (1) articulation of the construct—including learning goals and success criteria—being taught and assessed, (2) elicitation of evidence about students' learning, and (3) interpretation of this evidence for future instruction. Figure 1 depicts the logic model for this proposed formative assessment process. Specifically, it posits that the appropriate use of formative assessment leads to specific desired changes for teachers and students, including: improved teacher understanding of the relationship between content and English language development in the context of instruction; increased teacher knowledge of students' progress relative to learning goals; and improved ELL student engagement in learning and assessment. In turn, these desired changes ultimately lead to improved student learning in academic content (including development of academic language and literacy concepts) and English language proficiency.

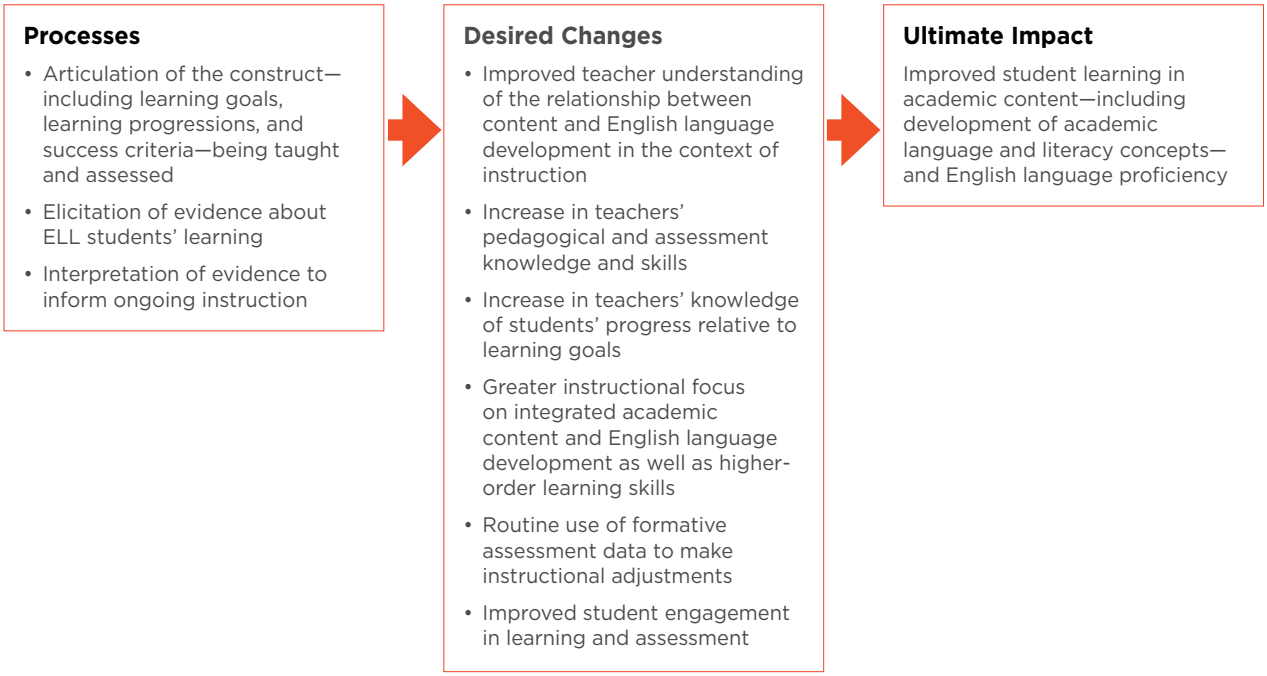
Articulation of the construct being taught and assessed

The first step in formative assessment consists of the teacher (and sometimes students) articulating the learning goals and success criteria. An understanding of learning progressions can help the teacher set appropriate goals and plan out formative assessment for students. Learning progressions undergird formative assessment in that they (either implicitly or explicitly) guide a teacher's view of what a child is on the cusp of developing and, consequently, the instruction needed to support that development. However, the likely interaction of content and language progressions for ELL students complicates the picture and presents a challenge specific to articulating the learning progressions for ELL students.

When the teacher and students set a learning goal that is focused primarily on content, this does not mean that language demands should automatically be removed or minimized from any formative assessment task related to this goal. Especially when working with ELL students, teachers need to ask: What is the concept I am teaching? Is language and/or literacy part of my learning goals or the success criteria (i.e., what students need to do to show they have mastered the learning goals)? If so, what aspects of language or literacy are relevant?

An important companion to goal setting is defining what success relative to that goal looks like. A key element of any assessment, including formative assessment, is a set of criteria for what counts as

FIGURE 1: Logic Model for a Proposed Approach to Formative Assessment of ELL Students



success. Teachers and testing companies often use rubrics for open-ended assessment tasks. A rubric is an organized set of criteria for judging the quality of a student's demonstrated learning in some aspect of a domain. A rubric—or any set of criteria—helps teacher and student determine whether something has been learned well or not. It can also be used instructionally, to point students to specific learning goals and help them imagine what achievement of those goals looks like (Andrade, 2000).

Research shows that teachers may not always make learning goals explicit, particularly for aspects of language learning. In a research collaboration with kindergarten teachers of Spanish-speaking ELL students, researchers found that even when teachers had explicit learning criteria vis-à-vis the science content of more than half of their activities, they had such criteria for only 10 percent of the academic language learning (Bailey et al., 2011). This was in a setting where all teachers were bilingual, with Spanish as a first language and English as a second language. However, with feedback from the researchers and joint meetings to develop pedagogical tools, teachers eventually developed success criteria for 91 percent of their instructional activities.

Elicitation of evidence about ELL students' learning

Once teachers are clear about the role of language in the construct they are teaching and assessing, they can plan for how they will elicit evidence of learning. Eliciting such evidence is done to gain an understanding of where the student is in relation to his or her learning goal. As previously noted, evidence elicited from formative assessment activities can range from responses on formal, curriculum-embedded tasks to data collected on the fly. Depending on the place of language in the relevant learning goal, the teacher can select how language-dependent the formative assessment task will be. If focusing solely on students' content knowledge, the teacher can tap students' understanding and skill through tasks that are minimally language-dependent, such as visual or performance tasks.

For example, during a lesson about circuits, students can draw a circuit that will work and contrast it to one that will not work. In a literary analysis lesson, students can draw symbols that capture a novel's theme or the role or emotional state of a particular character (see, e.g., Tellez & Waxman, 2006). Alternatively, if the teacher can comprehend the students' primary language, he or she can encourage students to use their primary language to show content learning.[7]

Open-ended tasks that allow for multiple points of entry will allow students at a range of levels to demonstrate their learning, both of content and language. Such tasks can also embed multiple strategies to elicit learning. For example, by asking students to draw an image and explain it in writing, the teacher provides two ways for students to demonstrate learning and the teacher is able to informally triangulate data. Some students may be able to express an idea visually but struggle to explain it in writing.

Formative assessment tasks need not present the language barriers common to formal, standardized tests (Bailey, 2005). However, to the degree that the teacher relies on language to present problems, pose questions, give feedback, and engage students in discussion, formative assessment is vulnerable to the same threat to validity as large-scale summative assessment—meaning that it can become as much a test of language skill as it is of content knowledge. Formative assessment tasks typically require that students use language to make sense of what they are being asked to do, respond to prompts, participate in discussions, talk about learning goals, and much more. Because each student has a unique language profile, effective instruction and assessment require teachers to think analytically about how a student's language background intersects with the linguistic expectations of the classroom. Teachers must consider how to help each individual student build on her or his foundation of linguistic skills *and* participate in both instruction and assessment.

Rich linguistic context versus minimization of irrelevant language. In eliciting evidence of ELL student learning during formative assessment, the principles of effective instruction and valid assessment may, at first glance, appear to be at odds. For instruction, a major concern is ELL students' access to rigorous content and academic language and the need to amplify instructional communication in order to promote such access so that ELL students do not fall behind their same-grade peers. Hence, the language of instruction may even be somewhat challenging, purposefully in the zone of proximal development—at the level of demand that is made accessible either by context or with teacher scaffolding (Vygotsky, 1978). In assessment, however, a key concern is that irrelevant or ancillary language and literacy demands may impede ELL students' access to the academic content on which they are being assessed. *Whereas the former calls for rich linguistic context, the latter calls for minimization of irrelevant or ancillary language.* This generalization may not hold for formative assessment tasks that are scaffolded and adapted in the moment. During such assessment tasks, a teacher may intentionally use language that is at the edge of a learner's competence and modify or scaffold it as needed to ensure comprehension. In that way, a student may be purposefully exposed to challenging elements of the assessment register in a supportive context.

How does this tension play out in formative assessment, which many consider to be the bridge between instruction and assessment? Simply put, teachers need to know how to both amplify communication and minimize language load, and

[7] However, teachers should be judicious about using this strategy because an academic task may be more difficult in a student's primary language if he or she has been educated solely in English and does not have relevant academic language or literacy competencies in his or her primary language. Determination of which language to use in formative assessment entails consideration of many factors, and any choice will have its limitations for yielding accurate information about student learning (Solano-Flores, 2008). If the learning goal focuses on the comprehension of disciplinary language (either written or oral), the assessment task can allow for multiple ways to express that comprehension, so that students' limited oral English abilities don't preclude their expression of learning.

be able to make a decision to engage in one strategy over the other, as the instruction or assessment situation demands. Amplification, as a key instructional support strategy, must take precedence—particularly when the teacher explains, models, and provides feedback to ELL students. However, when the teacher is in the process of eliciting evidence of learning through formative assessment tasks, the teacher must take care that the evidence is of the targeted content/skill that he or she is trying to measure and not evidence of the targeted skill plus something additional and unwanted.

For example, if the teacher wants to simply gauge whether or not his or her young ELL students understand the basic concept of two-digit addition, the teacher should start by asking students to provide an answer to the problem "12 + 15," rather than asking them to complete a word problem. The latter task may elicit evidence not only of "ability to add two-digit numbers" but also some language skill.

For a student who gives the correct response to the problem "12 + 15," a next step may be to gauge whether or not the student understands when to use this operation. Thus, the teacher might ask:

"What operation (addition or subtraction) do you use to solve this problem? Jacob had [__] apples; Emma gave him [__] more. Now how many apples does Jacob have?"

Note that the example above uses a word problem structure that conveys, through language, a particular mathematical operation ("gave him [__] more" connotes addition). All students—non-ELL students and ELL students—need to learn the structure of these problems in order to figure out what operation to apply (Carpenter & Moser, 1982).

In summary, to really understand a student's knowledge of two-digit addition, a teacher can start by posing problems that minimize the language load (as in the pure computation problem of "12 + 15"), then ask if the student knows when to use addition (as in the number-free story problem above), and then finally ask the student to do both (solve a word problem with numbers).

As suggested above, minimization of language load may be of more concern in some formative assessment tasks than others. For example, it may be less important to consider the language load during on-the-fly assessments as compared to more formal, curriculum-embedded tasks. With on-the-fly formative assessment, teachers can use *amplification* and follow-up questions to better gauge a student's learning, homing in on the source(s) of a student's errors.

Interpretation of evidence to inform ongoing instruction

The next phase in the formative assessment cycle is the interpretation of data. Teachers do this, as can students who participate through peer and self-assessment. Interpretation may be done in the moment or over a longer time scale. The process generates feedback on the status of current learning, which should include specific guidance as to how each student can move closer to the learning goal. The interpretation also informs subsequent teaching and learning activities.

The more thoughtful a teacher is beforehand about the learning goal and evidence, the better able he or she will be to provide feedback that builds toward the learning goal. In order to interpret ELL students' performances on a task, teachers need to understand the task's linguistic and information processing demands (Durán, 2008). Although language and content are closely interlinked, it can be helpful to analytically separate content and language when looking at students' work. Teasing apart English language development and academic content achievement is particularly important in analyzing the performances of ELL students on formative assessment tasks—particularly the more formal, planned-for tasks—because it provides the teacher with information about sources of error on a given task and helps the teacher interpret a student's performance appropriately so that subsequent instruction can effectively target the student's learning needs.

Because second language acquisition, even in young children, takes time (Valdés, Capitelli, & Alvarez, 2010), teachers must make sure to note both what students understand conceptually and what they can or can't do linguistically. A student may have a strong conceptual grasp of the material, but may not yet be able to explain his or her understanding in standard, academic English. The teacher's feedback and subsequent instruction should reflect the learning goals. For example, in a fourth-grade math lesson, a teacher may want to understand students' grasp of equivalent fractions and might ask an ELL student to explain why she knows that 1/2 and 6/12 are equivalent. In her feedback to the student, the teacher should focus on the content of the student's contribution, rather than her grammar. In this situation, correcting the student's grammar would derail the focus on math and possibly confuse the student. However, if an error in usage interferes with correct mathematical expression, the teacher should take the opportunity to make the student conscious of the correct form because of the importance of precision in mathematical communication (see Trumbull & Solano-Flores, 2011). Another strategy for getting at students' mathematical understanding and proficiency with mathematical expression is to have students write their own word problems and get other students to solve them (Barwell, 2009). Feedback from other students about the items can help hone students' use of mathematical language.

If the focus of a lesson includes academic or disciplinary language, the teacher should be clear about what aspect of language is the focus and use this to guide his or her analysis and feedback. For example, in a ninth-grade social studies class in which students are learning to write argumentative essays, the teacher might notice that students are not providing evidence for their claims. She could then plan a lesson where they examine model texts, identify the claims and evidence, and create a list of linking phrases that authors use to connect claims and evidence (e.g., *therefore, as a result, for instance*). Students would then reflect on their drafts and note where they have or have not cited evidence, and how they can strengthen their arguments by citing evidence and using linking phrases to clearly and convincingly connect evidence to claims. At the end of the lesson, the teacher would collect students' revised drafts. Given the focus of her lesson, her analysis and feedback would focus on their use of relevant evidence and how they link it to the claims. Of course, she may also notice other features of academic English that ELL students are struggling with, and this could serve as a focus for future lessons.[8]

It is important to note that providing effective feedback to students is not easy. A number of recent studies have found that teachers struggle with providing feedback that is both substantive and actionable by students (Ruiz-Primo & Li, 2011). In addition, although feedback is effective only if and when it's used to adjust instruction, research has shown that many teachers fall short in implementing such adjustments. That is, although they may be able to gather learning evidence and diagnose a student's learning gaps, they are often not successful at undertaking specific instructional steps to close the gap (Trumbull & Lash, 2013). Developing the deep level of teacher expertise needed to deliver effective formative assessment requires a school to create a system of support and to provide continual teacher professional learning practice.

What Next?

Formative assessment is a promising strategy for helping ELL students with the formidable challenge of learning rigorous academic content at the same time they are learning English. Building on an evidence-based understanding of effective instruction and valid assessment of ELL students, we've argued that formative assessment may be even more beneficial for the teaching and learning of ELL students than of non-ELL students because the continual practice of gauging learning and adjusting instruction is key to addressing the gaps and misconceptions that may prevent ELL students from achieving

[8] We provide more fully fleshed out examples in the appendix to this paper.

English language proficiency and deep content learning. However, much more research on formative assessment remains to be done before there is a full understanding of how best to help ELL students reap the most benefits of this promising practice. An adequate body of research specifically related to formative assessment with ELL students will be long in the making, no doubt.

Regardless of how research efforts may proceed, the implementation of CCSS and other rigorous standards means that numerous districts and schools are seizing on formative assessment as a key strategy for preparing their students. Therefore, professional development on the effective use of formative assessment with ELL students is widely needed (for an extended discussion of formative assessment professional development, see Trumbull & Gerzon, 2013). Indeed, high-quality professional development is a key factor for the effective implementation of formative assessment with ELL students. The need for teachers to support ELL language development *and* attainment of the rigorous CCSS requires many teachers to expand their skills and strategies. The needed expertise cannot be expected of either novice or veteran teachers unless ongoing support is provided to help them interpret and evaluate—both contingently and in the moment, as well as for future lessons—where students are, what knowledge and skills they are ready to develop, and how to maximize that development.

Effective professional development for teachers, very much like accomplished teaching, creates robust visions of destinations (long-term goals), starts with learners where they are, traces responsive developmental paths, and scaffolds that development. In the process, all actions of the professional developers point to the same long-term goal, help accomplish intermediate goals, and assess formatively where to go next.

Effective professional development also requires significant structural support. Specifically, a comprehensive professional development plan requires coordinated and complementary roles at the state and local levels. Some components of this plan will support formative assessment strategies for all students; others will be more tailored to the specific needs of ELL students. In both cases, teachers must become familiar with the key principles of effective formative assessment described in this paper and be given the opportunity to hone their skills in a supportive whole-school environment.

At the state level, several effective steps can be taken to support schools' readiness to engage in effective formative assessment for ELL students and non-ELL students:

- Dissemination of effective, research-based formative assessment strategies, and the conditions under which they have been validated and found to be successful
- Development or adaption of sample formative assessment modules that include standards-based tasks, scoring guides, and key instructional supports (e.g., teacher's guides)
- Support of statewide or local formative assessment communities (including online) who are charged with collaboratively developing resources for school-based implementation
- Development of webinars and training modules for use by local trainers or directly by teachers looking for real-time resources

At the local level, the following strategies can support professional development on formative assessment for teachers of ELL students:

- *Whole-school focus:* If only a few teachers in a school receive professional development, there will only be a limited impact on students. What we know about whole-school change suggests that a core group of staff working toward the same goals, engaged in the same practices, using the same vocabulary, and striving for consensus will be better positioned to effectively develop their ELL students' and other students' academic skills and language. Whole-school work entails the participation of all administrators and teachers in professional development. If principals,

assistant principals, and heads of departments are aligned under the same vision and practices of teaching and formative assessment, chances are that the school will become more successful in judging and promoting student learning.

» *Professional development portfolio:* Creating a coherent, powerful professional development portfolio for a school demands that all actions proposed for teacher learning point in the same direction. The same theory of learning and teaching should guide the design and implementation of workshops serving multiple disciplines or grades and workshops specific to a particular grade or subject matter. The same theory of language and how language develops needs to underlie proposed practices. In addition to workshops, there should be opportunities for teachers to get together and discuss their formative assessment efforts. Some of these opportunities can be offered through Teacher Learning Communities, some through common planning times. Another important component is coaching—in which teachers with more expertise accompany colleagues to their classes after having reviewed teacher action plans, and professional conversations afterward focus on the enactment of learning opportunities and formative assessment. Videos and transcripts are very useful artifacts in the joint analysis of formative assessment as well.

» *Cohorts of teachers:* An organizational structure that is especially productive in middle and high schools is to group students and have a consistent cohort of teachers (covering English Language Arts, English as a Second Language, Social Studies, Mathematics, and Science) assigned to each two or three groups of students. In this way, the teachers in each cohort share the same students, facilitating the teachers' abilities to focus both on individual student growth and on group development.

» *District support:* Districts can and should support the kinds of professional development strategies described above. They are in a position to initiate work across schools and can provide both a larger breadth of expertise and economies of scale, as compared with individual school sites (Santos, Darling-Hammond, & Cheuk, 2012). For example, districts can facilitate learning communities where teachers (or administrators) across schools with similar roles can focus on common challenges of formative assessment implementation.

Although research supports the potential benefits of formative assessment for positively impacting student learning, formative assessment is not a panacea, and its effectiveness is dependent on a host of factors, such as professional development. Perhaps the approach and examples included here can help inform the practice of educators who hope to use formative assessment as a means of supporting ELL students' access and achievement relative to rigorous standards.

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Appendix: Examples of formative assessment of ELL students

The examples in this appendix demonstrate both the power of formative assessment in linking student learning and instruction and the capacities required of teachers to enact effective formative assessment with ELL students. As described in this paper, formative assessment practice can occur along a continuum of different time scales and levels of formality. The examples here include both on-the-fly formative assessment practice, in which teachers provide contingent feedback and adjustments in the moment, to more planned and formal tasks, which teachers use to adjust instruction on a longer time scale. In each case, the teacher elicits evidence of learning in the context of rich instructional tasks and analyzes that information to provide actionable feedback and modifications to instruction that can accelerate student learning. The result is instruction that is more student-centered and responsive to students' current capabilities and what they need to learn next.

Example 1

This example illustrates on-the-fly formative assessment. The teacher provides feedback and adjusts instruction in the moment, based on her observations of students and their comments or questions. While responding to a specific comment, she also draws from her prior knowledge of that student, including the student's capabilities and goals for future learning.

Alice Cohen teaches an English as a Second Language (ESL) class at Ridgewood Intermediate, School 93, in New York City. Although her class contains only recent arrivals to the United States, they are very diverse, coming from 12 different countries and representing 10 languages as well as varied levels of prior schooling experiences. Although Ms. Cohen keeps in mind individual needs as she plans lessons, she invites all of her students to participate in the same rich and robust learning experience. As the lesson unfolds, she engages in constant "kid watching" to assess how much each student is understanding, whether students are misunderstanding something, how far they are from the learning goals she set for the lesson, and where to go next instructionally for individual students, and for the class as a whole.

The current lesson was designed to be a week-long focus on Robert Frost and the poem, *The Road Not Taken*, with the objective of analyzing metaphor and figurative language in poetry. On the first day students read and discuss a biography of Robert Frost. On the second day they listen to Ms. Cohen as she reads the poem aloud to them, and then they read it silently, working on interrogating the text and writing down their reactions and questions. Notes are shared in groups, and similar and different individual reactions are highlighted. On the third day the teacher asks students at each table to read the poem aloud in four voices (she has chunked out the poem meaningfully, retyping each chunk in a different font so that students can take a font each). They are then given the task of constructing a collaborative poster on one stanza of the poem, with each group working on a different stanza. Each group's poster is supposed to contain one key quote from the stanza, one original phrase summarizing the spirit of the fragment, one symbol, and one picture. As groups work on their posters, Ms. Cohen walks around the class, observing what each individual student does and what each group does. She uses her observations to inform where she may go next.

The students who were assigned the first stanza choose their quote, start drawing their picture, and work on their original phrase. While the group's two boys (S1 & S4) focus more on the drawing, the two girls (S2 & S3) work on writing their own statement:

S2: How about this, "I'm Robert Frost, I've got to decide, which path to take, right or wrong." No, "right or wrong" ruined it. (Begins writing in a notebook.) "I'm Robert Frost...I'm Robert Frost, I have to choose, but it's difficult for me, Robert Frost, to find the truth."

S3: I don't know, write it, write it. Write all of it, then we can fix it.

S2: "I'm Robert Frost, I have a path to choose. It's hard for me,"

S3: "Robert Frost,"

S2: "to find the truth." It's like a rap.

S3: Let me see (reading from the notebook), "I'm Robert Frost, I have a path to choose,"

S2: "it's hard for me, Robert Frost, to find the truth." Like, "truth" and "Frost" kind of go together…

…

Not content with their choice, they keep trying:

S2: Oh, oh! "to choose the good or to choose the wrong."

S3: Uh, "to choose the right or to choose the wrong."

S2: Yeah, yeah, "to choose the right or to choose the wrong."

S3: But he doesn't know which one is wrong…

S2: Okay, "I'm Robert Frost, I have a path to choose, (writing the new ending) it's up to me to find the truth."

S3: Better. I think this one makes more sense and it explains more.

S2: Yeah, but he still needs to choose, "to choose the right or to choose the wrong."

S3: Wait.

S2: No, no, now it doesn't make sense, "to choose the right or to choose the wrong."

S3: It doesn't make sense because he doesn't know which one is right, which one is wrong. That's the point of asking himself which way to go.

S2: How about, "I gotta choose now, or I might be"

S3: I think this one's better.

S2: Okay, how about this, "I might choose one, but I might be wrong."

S3: Yeah. Write it, write it fast. "I might choose one, but I might be wrong."

S2: (writing) Keep repeating it.

S3: "I might choose right, but I might be wrong."

S2: "I'm Robert Frost, I have a path to choose. I might choose the right, but I might be" (puzzled)

S3: "wrong."

S3: (pointing to notebook) This is good until this part. We have to think up of the ending.

S2: "I might choose the right, but I might be…" Only "wrong" goes there. (frustrated)

S3: Where's the dictionary? (S2 leaves group)

S2: Yeah.

…

The boys have finished their illustration and become interested in the problem of completing the original quote. As the four students work together, Ms. Cohen is brought into the group by one of the students.

S4: Rhyme something with "right" instead of "wrong."

S3: I know.

S1: And it gotta rhyme. (S2 has gone to look for the teacher.)

S3: (Teacher joins the group, S2 has explained the problem to her.) We think that after the "right" part, it's right, but we don't know.

S2: (reading) "I'm Robert Frost, I have a path to choose. I might choose the right, but it might be …"

T: "but it might be wrong."

S3: But it doesn't rhyme.

T: You want it to rhyme?

S2: Yeah.

T: Why don't you use a homophone?

S1: "I might choose the right road so I can write."

S3: (smiling) "I might choose the right that might help me write."

This example shows valuable instances of on-the-fly formative assessment, in which Ms. Cohen provides a suggestion based on her observations and knowledge of students that supports the group in successfully completing the task. Ms. Cohen has observed, without interrupting, the first part of the discussion. She knows the students in this team understand what they need to do, they get the key idea of the poem's first stanza, and their decisions on the quote and picture to be drawn demonstrate their understanding and struggles with making their language increasingly more precise. She then decides to move to observe and assess other groups' actions. When she is called by S2 to help the team with their impasse, it becomes clear to her that the group has misinterpreted that their phrase must rhyme. She sees that students are keen on their interpretation of the task, which increases its complexity. Rather than disappointing the students by saying that their statement does not need to rhyme, she acts contingently by bringing in a concept the students studied before—homophones. After one boy suggests an answer, S3 polishes it for the poster. During the presentation to the whole class, which is shared by all, it is S4 who explains to the class, "We decided to use a homophone."

Ms. Cohen's careful observation of students' actions serves as formative assessment data that she interprets in order to act contingently and provide feedback that supports the students in completing the academic task. Her observations tell her that students understand and enjoy using rhyme, that they are developing linguistic perseverance (they check the dictionary; they try hard; when everything fails, they look for the teacher's help), and that they can bring forth resources learned in past classes. She realizes that metalinguistic knowledge (their objective knowledge about language) fosters their autonomy, and more importantly, rather than giving them the answer, she formulates a question that will get students to get the answer themselves. In addition to this in-the-moment feedback she has provided, she now knows how she is going to introduce in the next class other metalinguistic concepts, such as figurative language and metaphor.

Example 2

This example illustrates formative assessment on a longer time scale, as the teacher adjusts instruction over the course of a unit. The teacher has planned a rich instructional task that will allow her to see what students understand about the content they are studying and how they are able to articulate that understanding in written English. In analyzing students' writing, she realizes that they need to solidify their understanding of the subject matter but also need support developing the disciplinary language to show their conceptual understandings. The class develops criteria for the genre they are learning, which students use to self- and peer-assess, generating feedback that they will use to revise their writing. In this way, the example highlights how formative assessment can support students to develop autonomy and self-regulation as learners.

This is a fourth- and fifth-grade bilingual class in which all of the students are Spanish speakers and have been designated as ELL students. The class is currently studying electricity and magnetism using the FOSS science curriculum developed by the Lawrence Hall of Science. Central to the FOSS curriculum are a series of hands-on activities and investigations through which students build their understanding of electricity by creating and manipulating different types of circuits and electromagnets. The teacher has adapted the science unit to serve as a venue for language and literacy development as well.

In the weeks leading up to this example, students have created circuits to power light bulbs and motors. At the same time, the class has used the content as an opportunity to develop their competence with one genre of science writing: instructions. Students have orally given each other instructions to create different kinds of circuits and have written instructions. Based on her observations of students'

work with circuits and their written instructions, the teacher has concluded that the students have a strong procedural understanding of electrical circuits. That is, they know how to design and build circuits that function. However, she also wants students to understand that a circuit involves the flow of electricity and that it requires a closed connection that allows the electricity to travel through a complete pathway.

She adapts an activity from FOSS in which students are presented with six pictures of complete and incomplete circuits. The students must apply their experience with circuits thus far to determine which of the options shown in the pictures will work to illuminate a light bulb. Although the curriculum intends the activity to be an individual assessment, the teacher uses it as an instructional activity to address both content and language goals and as part of a formative assessment process. First, she gives students time to look at the images individually and consider which will or will not work. Students then pair up and discuss the circuits with a partner, coming to consensus about which will and will not work. If students have different opinions, they are asked to explain and provide reasons to convince their partner. The class then comes back together to discuss each picture. The teacher explains that now they will write explanations of why one of the circuits does not work and how it can be fixed. In this writing, students are asked to give some directions and are asked to explain, which is a different function of science writing. She expects that students' prior oral explanations, in pairs and in the whole-class discussion, will support their writing. To provide an example of what she expects, the teacher also models writing an explanation for one of the incomplete circuits. Students then write their own paragraphs. At the end of the class, she collects their writing to consider their current state of learning. Students are not done with their study of electricity, and they have just begun to work on explanations. Therefore, her analysis of students' writing will inform the activities she plans for the coming days.

Table 1 includes two examples of what students write for this task, showing the kind of information the teacher analyzes in a formative assessment process to inform future instruction. Both students, Nicolás and Miguel, write about a drawing labeled "Picture 1," and both are Intermediate level ELL students in fifth grade. Before analyzing the two examples, it is important to consider the genre students are producing or approximating. They have been asked to produce writing that both explains and gives instructions, as they are to explain why the circuit does not work and direct the reader on how to correct it so that it does work. Derewianka (1990) provides a helpful analysis of many genres that elementary school students are expected to read and write across the curriculum, including instructions and explanations.

TABLE 1: Writing samples

Nicolás	Miguel
In this paragraph, I am going to tell you how to make the light bulb turn on. What wrong is that you need to get one more wire because if the other wire is missing the electricity of the battery will not go around to make the light bulb turn on. Instead of get the other wire and put it in the other side of the battery and the light bulb too. Also, see if it turn on if it does is called a circuit because it makes the electricity go like a circle.	In this paragraph, I will tell you what is the problem on Picture 1. Picture 1 is not going to work because it has one wire, instead of use only one wire you need 2 wire's. Then when you have a other wire instead of connected with other wire connected separate and connected to the other clip of the battery holder and also connected the other side from the wire and connected to the clip from the lightbulb holder and the lightbulb may work.

TABLE 2: Instructions and explanations

Genre	Instructions	Explanations
Purpose	To tell someone how to make or do something	To give an account of how something works or reasons for some phenomenon
Text organization	• Focus is on a sequence of actions. • Structure usually consists of goals, materials, and method. • Text may also include comments on the usefulness, significance, danger, fun, etc., of the activity. • Headings, subheadings, numbers, diagrams, photos, etc., often are used for clarity.	• Focus is on process. • Usually is a statement about the phenomenon in question to position the reader, followed by an explanation of how or why something occurs.
Language features	• Reader is referred to in a general way (one/you) or not at all. • Linking words to do with time. • Mainly action verbs. • Tense is timeless. • Detailed factual description of participants (shape, size, color, amount, etc.). • Detailed information on how, where, and when actions should be done. • Written directions are explicit and self-sufficient (unlike oral directions where context is shared).	• Generalized non-human participants. • Time relationships (first, then, finally). • Cause-and-effect relationships (if/then, so, as a consequence). • Mainly action verbs. • Some passives. • Timeless present tense.

Source: Compliled from Derewianka, 1990

Table 2 summarizes the purposes, text organization, and language features of these particular two genres: instructions and explanations.

In terms of the science content, both students correctly diagnose the problem with the drawing and explain how to fix it to make a complete, closed circuit. Nicolás has given more indication that he understands that electricity involves an electric current flowing around a complete circuit. He explains, "because if the other wire is missing the electricity of the battery will not go around to make the light bulb turn on." At the end he also explains that if it turns on, it "is called a circuit because it makes the electricity go like a circle." Therefore, it appears that he understands that in a circuit the electricity flows in a circle and that the battery is the source of electricity in the circuit. In contrast, Miguel does not provide an explanation of why it does or doesn't work, but does provide more specific directions for how to correctly construct a circuit.

In terms of organization, both begin with an orientation that positions the reader and states the goal of the paragraph. Neither student uses subheadings to organize his piece, but both follow a temporal sequence of actions. They use generalized participants and refer to the reader in general terms as well (as "you" or by using command form). In addition, both students provide specific information about where and when the reader should take actions. For example, Nicolás directs the reader to put the wire "on the other side of the battery

and the light bulb too." Miguel describes how the reader should connect the second wire "separate" from the other wire. He also explains which clips the wire should go into, directing the reader to put them in the "other clip" and the "other side," meaning the clips not currently used by the first wire. Both students use specific referents to make their directions explicit to a non-present reader, though making sense of the directions requires referring to Picture 1.

Their use of transitional phrases parallels the differences we noted earlier in the content of their writing. Nicolás uses three different kinds of transitional phrases: cause and effect (*because, if*), contrastive (*what wrong, instead of*), and additive (*also*). He uses cause and effect phrases to support his explanation of why the circuit does not work and why the complete circuit would work. His contrastive phrases are tools to contrast the incomplete circuit with one that will function. Miguel, on the other hand, does not use any cause and effect transitions, but does use *instead* to contrast the incomplete circuit with what the reader should do ("instead of use only one wire you need 2 wire's"). Unlike Nicolás, Miguel uses sequential transitions (*then, when you…*), which support his giving of instructions.

Both students use timeless present tense with some future tense in the introductory sentence. Miguel writes the word *connected* several times, but it appears he means to say *connect it*, rather than use past tense. He also uses conditional tense at the end (*may work*), though the tentativeness expressed is perhaps inappropriate for the genre. Both students use mostly action verbs, though the range of the verbs is somewhat limited (*make, need, get, turn on, put, see, use, connect,* and *work*).

Based on going through this kind of analysis of the written responses from these and other students, the teacher decides that not all students have a strong grasp of the concept of circuits, or at least are not yet able to communicate their understanding in scientific terms. Some students, like Nicolás, appear to have a stronger grasp, but others either do not or, at least, did not communicate it given the task. Students like Miguel may have a stronger conceptual grasp than one would assume on the basis of reading their writing. The task may have not been clear to them, or they may need additional support using English to explain the scientific concept. While the scientific content and language demands of this particularly activity were intentionally interlinked, the teacher could have elected to engage students in a task that separates the linguistic from science content demands in order to better identify the possible sources of student struggles with this topic (e.g., whether such struggles are related to content, language, or clarity of task).

Highly interactive and well-structured classes—where all students are active and moving continuously into higher degrees of intellectual autonomy—provide fertile ground for formative assessment. In this type of environment, teachers can observe students in action, working collaboratively through a series of well-designed lessons and assignments. The kinds of assessment activities described above are well suited to revealing students' misconceptions and gaps in knowledge, and the teacher now has considerable data upon which to plan further instruction.

To address students' science and language development, the teacher decides to expand her work on scientific explanations over the next several days. She finds several examples of explanations in the science textbook that the class will read and analyze. Reading and working with these examples is intended to support students' science and language learning. The examples will provide students with more information about electricity and how it functions, which they may not have been able to learn from hands-on activities. Analyzing these models should support students' use of richer scientific language, including a broader range of action verbs. The class will also focus on the kinds of transitional phrases authors use with the goal of expanding students' use of cause and effect phrases and sequential phrases. These are formulaic phrases that students can borrow to structure their own scientific writing, and that become generative over time as they

are appropriated and used when they are needed. After reading several models, the class will develop criteria for scientific explanations. The teacher will model how to use these criteria to assess an example explanation she has written. They will then look back at their initial writing of the explanations and self-assess, with or without involvement of a peer. Finally, individually, students will use this feedback to revise and expand their original explanations. Through this process, students will have gained tools to evaluate and revise their own academic writing, fostering their autonomy as learners.

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