CHAPTER

8 Needed: A Framework for Integrating Standardized and Informal Assessment for Students Developing Academic Language Proficiency in English

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The teacher pondered what to do to ensure that his students performed well on the upcoming statewide writing assessment, while keeping them motivated to learn academic content he realized was also important. As he thought about how to meet the demands of assessment-driven instruction while using informal assessment to promote learning, he turned to the class and said:

T: OK, now we need to get really good at writing our five-paragraph responses. Here's a new prompt I would like for you to try today.

JOSÉ: Oh, no, not again. Do we have to? We have already written paragraphs three times this week! Can't we do something else today?

MARÍA: Yeah, can't we do science? We haven't done it all week.

JORGE: Yeah, all we do is practice for tests. When can we do things we like to learn?

T: OK. You win. Let's rewrite the paragraphs you did yesterday, and then we'll do science. I have this really great activity I know you'll love. We're gonna make biospheres.

CLASS: Yeeeeeeaaah!!!! (accentuated with lots of clapping)

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One of the greatest challenges schools face is enabling students from diverse language backgrounds to acquire the academic discourse required to comprehend textbooks and participate in content area instruction (Gardner, 1990; Heath, 1983). Literacy learning can be challenging for many young learners. For students acquiring English language literacy as they gain content area knowledge, the challenge can be particularly great. This chapter considers ways the challenge can effectively be met so that all students have access to the learning opportunities required for academic success. For purposes of this chapter, the students who are the focus of this discussion are referred to as English Language Learners (ELLs).

Like the one described above, most classrooms are filled with sounds and images of students interacting and learning. Meaningful communication grows from a desire to convey ideas, share interests, relate to others, and achieve results. A wealth of student information is potentially available by listening, observing, and analyzing students' meaningful communication. Insights into students' progress in developing academic language is available through such informal assessments, producing information about students' academic progress based on regular observations and collection of student products.

During the past decade efforts to promote alternatives to the narrow instructional focus imposed by standardized, one-size-fits-all assessment have had an impact on the way assessment information is collected, interpreted, and used for instruction (O'Connor, 1992). Although the limitations of standardized assessment are well known, recent research indicates the dichotomy between informal, classroom and large-scale, whole-district assessment continues. In fact, the use of large-scale assessment data remains the preferred source of information about students achievement (Stake, 1999). Not until teachers' decisions about student achievement based on informal classroom procedures are accepted as being valid as the results of standardized tests will teachers be accepted as professional educators (Mabry, 1999). More importantly, not until teachers are able to effectively use informal assessment procedures will students with limited educational opportunities and developing English proficiency have access to the kinds of quality instructional experiences that can enable them to achieve.

Although standardized procedures often discount ELLs' abilities and understandings just as such tests discount their progress in acquiring new knowledge, informal assessment provides potentially powerful alternatives for promoting academic achievement. Difficulties in using informal assessment occur when teachers are unable to link insights gained from interacting with their students in classroom contexts with the information gained from standardized tests.

A framework is needed for integrating standardized and informal assessment information in promoting academic achievement. Such a framework would have utility for enhancing teachers' professional competence and for promoting the practices and policies required to insure students' access to appropriate instruction. Given the reality that most teachers (83%) report that they are unprepared to assess and instruct ELLs (National Center for Education Statistics [NCES], 1999), such a framework could have utility at the national, state, and local levels. At a professional level, this report of teachers' self-evaluation underscores their recognition of a need for in-depth preparation in second language acquisition

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and assessment to integrate language, literacy, and content instruction using standardized and informal procedures.

In this chapter the assessment of social and academic language is considered in the context of standardized and informal assessment. Because the development of academic and social language plays an important role in students' achievement, we begin with a discussion of these constructs. Next, we examine academic language development in the context of fourth-grade science and literacy instruction involving whole-class and single-student performance on multiple tasks. The chapter concludes with considerations for integrating informal and standardized assessment procedures to promote academic achievement.

Conceptualizing Academic Language

Teachers have long noted differences in students' oral and written communication (Bernstein, 1972; Donaldson 1978). Such notable differences in the language of students learning English led Cummins (1979, 1984) to identify and distinguish between social and academic language. *Academic* language has been characterized as linguistically complex and cognitively demanding, often containing multiple embedded clauses and subtle lexical differences—the language of classroom instruction (Cummins, 1979). Comparable *social* language has been characterized as interpersonal, context-embedded, and dependent on information within the environment in which the communication occurs (Donaldson, 1978).

Students' movement toward the acquisition of academic discourse in classroom contexts has received limited attention in terms of test construction and use (Bartolomé, 1998). In contrast, ELLs' progress, measured by standardized tests, and the comparison of their achievement with English-proficient (EP) students' progress often reveals significant gaps (NCES, 1992). Although efforts at reducing achievement gaps are clearly needed, overreliance on standardized measures can be misleading in measuring students' actual learning gains. In addition, an emphasis on standardized tests can result in a large portion of instructional time being devoted to enhancing test-taking skills, rather than meaningful instruction. Such a focus can also limit teachers' perceptions of the academic language required to perform well on large-scale tests and real-world contexts (Edelsky, 1996). In the following section, we discuss the relationship of standardized and informal assessment in the context of fourth-grade science learning setting.

Measuring Fourth-Grade Students' Academic Language Development

The information discussed here is part of a larger study of ELLs' development of language proficiency, literacy, and science knowledge.[1] Here, we focus on data from fourth-grade Hispanic students in two Hispanic-dominant schools (over 95% Hispanic) in a large urban district in Florida. Because Florida is an English-

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only state, the focus of this chapter is on instruction in English although some instructional support was provided in students' home languages—Spanish and Haitian Creole.

The Context of Instruction

Although many of the fourth-grade students in our study had transitioned out of English to Speakers of Other Languages (ESOL) programs, more than 20 percent received ESOL instruction in the two schools discussed here. For purposes of this discussion, most of the students would be considered ELLs because they had not yet developed oral or written proficiency at the level of grade peers in other parts of the state or nation (Waggoner, 1993). Even though most of the fourth-grade teachers had state endorsement in ESOL, the ESOL students received additional language arts instruction in special programs.

The two schools served a transient population where enrollment fluctuated between 32 and 35 students per classroom, for a total of approximately 425 students. Both schools used an inclusion model for meeting the instructional needs of exceptional students. As a result, the students presented a normal population, including students with mild learning disabilities, communication disorders, typical, and gifted and talented students. The majority of teachers (12 of 13) were Hispanic. All were highly committed to students' academic achievement.

The Content of Instruction and Assessment

Understanding the instructional components and the context of instruction is essential in promoting effective assessment practices, interpreting standardized assessment results, and integrating information from multiple sources in meeting students' learning needs. In this section, we discuss the components, including the materials and instruction, teacher preparation, and the content of classroom assessment.

The Materials and Instruction. Information on the curriculum is provided to indicate the important relationship between the content of instruction and the assessment practices used to determine students' academic progress. Because appropriate instructional materials were not available for making science relevant to fourth-grade ELLs, the project developed two units, including student books and materials for hands-on activities, teachers' guides, and pre- and postunit tests. The first unit, the water cycle, presented content on melting, freezing, evaporation, condensation, and precipitation. Instruction in the second unit, weather, built on the first unit in a progression from more concrete to more abstract content. All lessons focused on predicting and measuring changes. Most lessons required two instructional periods, one for hands-on activities and the other for sense-making in analyzing and reporting outcomes. Mathematics instruction became essential in enabling students to record and report the changes they observed during hands-on activities. All content was keyed to the National Science Edu-

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cation Standards (National Research Council, 1996), the Florida Sunshine State Standards for Mathematics and Science (Florida Department of Education [FDE], 1996a, 1996b), and the Teachers of English to Speakers of Other Languages [TESOL] Standards (TESOL, 1997).

In addition to science and mathematics, literacy instruction occurred throughout the lessons. An initiating activity in each lesson required that students use a variety of language functions or specific ways of communicating, such as reporting, comparing and contrasting, and reasoning (Tough, 1986). Meaningful language use was supported through hands-on interactions and follow-up oral and written tasks. Activities requiring observations of changes and measurement of weight, time, temperature, and height were designed to create opportunities to discuss and report findings. Although the activities encouraged explicit, precise language, ELLs participated in the context-embedded activities without difficulty using single words and short responses. In addition, students communicated understandings through tables, graphs, and drawings. The context of instruction, manipulating materials, making observations, and interacting with others in discussing and interpreting changes, provided rich learning opportunities for literacy development. In this context, literacy refers to the representation of information and understandings in multiple formats, including oral and written discourse and tables, charts, graphs, and drawings. These participatory contexts provided teachers with opportunities to observe students' interactions, note their literacy development, and gain insights about students' learning needs.

The Teacher Preparation. Professional development was central to the project. In the second year (YII), six "focus teachers" participated in workshops and classroom observations. All six were first-generation, Hispanic immigrants who shared both the language and cultural knowledge of their students. Limiting YII participation to these teachers provided in-depth understanding of the instructional process. Insights were used to refine the materials and expand teacher preparation for YIII. During YIII, all fourth-grade teachers in the two schools received the instructional units, supporting materials, and professional development workshops. Focus teachers assisted nonfocus teachers in using the materials. At the conclusion of YIII, all teachers participated in formal interviews concerning the materials, instruction, and the assessment process.

The Assessment. Several assessment instruments were used with students in science, reading, and writing over the course of instruction. First, during YII and YIII, all fourth-grade students participated in pre- and postinstruction assessment based on the science content from the two instructional units.[2] All students were included in the assessment process for both years because fourth graders are expected to learn the content specified in the Sunshine State Standards for Science at fourth grade (FDE, 1996a, 1996b). The Standards are Florida's guide to content area instruction and the source of content for unit development.

Second, in addition to the assessment of all fourth-grade students, randomly selected "focus students" participated in pre- and post-instruction elicitations to determine their understanding of science content and discourse. Each year fifty

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students participated in the two elicitations lasting approximately forty-five minutes. A trained bilingual adult, fluent in English and Spanish, interacted with mixed-gender dyads (a boy and a girl) to do hands-on activities from the science units. Activities were conducted in Spanish and English. All elicitations were audio and videotaped and transcribed. Trained bilingual graduate assistants using rubrics designed for the research scored responses from transcripts. To insure consistency in scoring, interrater agreement was established at 90 percent and all discrepancies were reconciled.

Third, in Florida, all public school students participate in Florida Writes! writing assessment in grades four, eight, and ten (FDE, 1998a) using 0 to 6 scoring criteria (6 being the highest). A similar rubric, Science Reporting Rubric[3] (SRR), was developed to promote teachers' recognition of students' progress in acquiring oral and written academic language of science (Table 8.1). The theoretical framework for the SRR derived from second language acquisition research (Fradd & Larrinaga McGee, 1994) in combination with our study of fourth-grade written and oral language samples collected over two years. Because the "reporting" function of "telling about an activity" (Tough, 1986) predominated in these fourth-grade students' oral and written science discourse, it was the focus of rubric development. The use of language to report provides a transition from the narrative of social language, for example, "what I saw and did" to more complex expository academic language, including ordering and sequencing, providing explanations, and making predictions. To facilitate application, the 0 to 6 scoring criteria parallel Florida Writes! indicators (0 to 6); however, the SRR differs from Florida Writes! in ways central to ELLs' acquisition of academic language. Most importantly the rubric differentiates "form" (accuracy in grammar, phonology, spelling, and general mechanics of language use) from "content" (specific knowledge and understandings of science). The half-point increments for the first two levels include early-stage language development, a stage through which monolingual students have already passed.

Finally, during YIII, statewide assessment expanded to include all fourth-grade public school students on the Florida Comprehensive Assessment Test (FCAT), a criterion-referenced assessment test designed to measure reading and mathematics skills (FDE, 1998b, 1998c). Content for the FCAT is keyed to the Sunshine State Standards (FDE, 1996a, 1996b). The FCAT requires single-word, short-answer, and paragraph-length responses. More than 60 percent of FCAT content is from science and social studies (FDE, 1998b, 1998c). The FCAT has begun to refocus attention on the importance of content instruction and academic language development.

Integrating Standardized and Informal Assessment

Quantifying students' performance provides a means for observing growth over time and for comparing individual students with the group. In this section, we

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TABLE 8.1 Science Reporting Rubric

Level 0; *Descriptor: None*

No attempt to write

No oral information about activity or concept

Level 0.5

Form	Content
Single words or simple phrases Little attention to grammar or punctuation Difficult to be understood by persons not present	Little information about science

Level 1; *Descriptor: Little*

Form	Content
Simple phrases or sentences about activity or concept Little attention to grammar or punctuation Difficult to be understood by persons not present	Little use of science vocabulary Basic information with little attention to main ideas and details

Level 1.5; *Descriptor: Little*

Form	Content
Multiple sentences about activity or concept Attempts at sequencing information include markers such as "and, . . . then . . ."	Tangential use of vocabulary Attempts at description of content or activities Emerging notions of the main idea Emerging expression of similarities and differences Reliance on personal experiences for explanations

Level 2; *Descriptor: Emerging*

Form	Content
Written Reports Emerging awareness of grammar and punctuation *Written and Oral Reports* Brief information, focusing on who, what, and where Emerging use of past and future tense Emerging use of positions and linking words showing relationships, such as, "so," "because," "due to," and "as a result of"	Emerging, yet inaccurate, use of science vocabulary Emerging description of activity or content without clear relationship to topic Emerging awareness of the importance of observations in providing descriptions Main topic with undeveloped or inaccurate details Emerging use of comparisons and contrasts and analogies Emerging ability to sequence events and activities with recognition of chronological importance

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Communication in phrases and sentences with emerging development of paragraphs

Emerging awareness of listener perspective

Comprehensible to sympathetic persons not present

Level 3; *Descriptor: Expanding*

Form	**Content**
Written Reports Expanding organization of sentences into paragraphs	Expanding use of science vocabulary
Approaching 80% accuracy in spelling, punctuation	Expanding descriptions based on observation and supporting evidence
Approaching 80% accuracy in present and past tense, including subject/verb and noun/article agreement	Expanding use of comparisons and contrasts and analogies
Written and Oral Reports Information clearly topic focused with main ideas and details, in terms of who, what, and where	Main topics with reasonably developed, accurate details
Expanding awareness of listener perspective	Emerging use of explanations or predictions, including: ■ cause/effect ■ classification ■ sequential order ■ relationships of chronological events

Level 4; *Descriptor: Movement toward Adequate*

Form	**Content**
Written Reports More than 80% accuracy in spelling and punctuation	Adequate use of science vocabulary
	Adequate, clear, relevant descriptions
More than 80% accuracy in present and past tense grammar, including subject/verb and noun/article agreement	Expanding evidence of explanations or predictions, including: ■ cause/effect ■ comparisons and contrasts ■ classification ■ sequential order
Written and Oral Reports Emerging introductions and conclusions not necessarily appropriate or related	Expanding use of relevant analogies
Organization of ideas in multiple paragraphs, although some inconsistencies and unrelated information still apparent	Emerging use of evidence to support statements, including: ■ understanding of system and relationships among subsystems ■ generalizations
Continuing development of language for listener perspective	
Usually understood by persons not present	

(continued)

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TABLE 8.1 Continued

Level 5; *Descriptor: Movement toward Accurate*

Form	Content
Written Reports Conforms to major aspects of form, including organization of information, grammar, and punctuation *Written and Oral Reports* Clear, appropriate introduction Clear organization in topic related paragraphs with main ideas and supporting details Conclusions not necessarily accurate but show relationships to overall presentation Understood by persons not present	Accurate use of science vocabulary Accurate, complete descriptions Adequate explanations or predictions, including: ■ cause/effect ■ comparisons and contrasts ■ classification ■ sequential order Adequate use of relevant analogies Expanding use of evidence to support statements, including: ■ systems and relationships among subsystems ■ generalizations

Level 6; *Descriptor: Effective*

Form	Content
Written Reports All aspects of form, including organization of information, grammar, and punctuation *Written and Oral Reports* Introductions and conclusions clearly stated and appropriate Ideas convincingly and clearly presented Correct use of elements of scientific reporting with nativelike proficiency	Effective use of science vocabulary Accurate explanations or predictions, including: ■ cause/effect ■ comparisons and contrasts ■ classification ■ sequential order Effective use of evidence to support statements, including: ■ systems and relationships among subsystems ■ generalizations Effective use of complex analogies

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discuss the results of unit assessments and their relationship with students' performance on standardized tests.

Student Performance in Science, Reading, and Writing

Science achievement scores by unit (matter and weather) and teacher group (focus and nonfocus) during YII and YIII are presented in Table 8.2. In YII, when only focus teachers used the instructional units, an aggregate achievement difference of twenty points on the two units occurred between the students in the focus (M=47.65) and nonfocus (M=27.71) classrooms. This difference is not surprising because, although all of the teachers were expected to teach the standards-based science content, only the focus teachers used materials directly related to the unit tests. During YIII, when all the teachers used the same materials, achievement scores of the focus (M=60.00) and nonfocus classrooms (M=57.28) were comparable—a significant improvement for all students. Both groups exceeded the performance of the students in focus teachers' classrooms in YII. The YII outcomes suggest that engaging content area materials, when combined teacher preparation and a focus on academic language development, provide ELLs with important learning opportunities. The YIII outcomes indicate all students can achieve when provided with effective instruction. However important, such whole group information does not tell the entire achievement story. More in-depth assessment information is needed to gain insights on the impact of formal and informal procedures on students' learning.

Examples of the Assessment Process

Although educators are in agreement about the need to promote achievement, difficulties arise in determining the most effective means for determining achievement outcomes. When well-conceptualized and implemented, standardized assessment procedures linked to state or national standards can provide important benchmarks for identifying and defining achievement. Emphasis on preparing students to perform well on standardized tests, however, can have negative consequences for many students, particularly ELLs, when test instruction replaces authentic learning opportunities. When the focus of instruction is increased high-stakes test performance, students may appear to achieve without gaining generalizable knowledge or meaningful understanding of content area material. The time devoted to teaching test-taking skills disadvantages students with limited experience using English or little exposure to content information. In comparison, students already literate in English usually have a greater command of the academic language of tests and access to subject knowledge through a variety of sources beyond the classroom. By definition, ELLs are more dependent on both school-based instruction for language development and for content area learning. As a result, they are particularly vulnerable to the consequences of test-focused instruction when it supplants meaningful learning opportunities.

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TABLE 8.2 Hispanic Student Achievement Differences on Two Science Units in Classes of Focus and Nonfocus Hispanic Teachers

Year	Group	n	Pretest		Posttest		t	p
			M	*SD*	*M*	*SD*		
YII	**Focus**							
	Matter	165	10.45	7.20	26.61	8.65	24.07	.000**
	Weather	153	9.61	4.43	21.10	4.68	23.75	.000**
	Matter/weather	140	20.16	8.89	47.65	12.38	27.33	.000**
	Nonfocus							
	Matter	102	12.77	6.64	14.35	6.73	2.67	.009*
	Weather	106	11.26	6.17	12.89	5.39	3.21	.002*
	Matter/weather	96	24.48	11.13	27.71	10.06	3.55	.001*
YIII	**Focus**							
	Matter	147	11.35	6.75	32.24	10.67	26.03	.000**
	Weather	129	11.98	5.84	26.28	7.75	23.80	.000**
	Matter/weather	120	24.04	10.59	60.00	15.50	28.83	.000**
	Nonfocus							
	Matter	197	13.07	7.48	30.33	9.77	27.49	.000**
	Weather	190	11.59	6.75	26.39	7.84	21.99	.000**
	Matter/weather	174	24.90	12.20	57.28	14.73	31.09	.000**

*p < .01
**p < .001
Maximum score for the matter unit: 69
Maximum score for the weather unit: 63
Maximum combined score (for matter and weather): 132

Because standardized measures of academic achievement can, in reality, become measures of students' acquisition of language patterns and communication formats, increased achievement scores may offer a false image of students' academic attainment (Edelsky, 1996). For example, to score well on the Florida Writes!, students must write a five-paragraph essay with an introductory paragraph stating three ideas related to a specified topic. These three ideas become the subjects of three subordinated paragraphs followed by a concluding paragraph linked to the introduction. Responses are scored high if (a) the introduction is clear, (b) the subordinating paragraphs contain creative ideas and elaborate descriptions, and (c) the concluding paragraph restates the components as a whole. In contrast, authentic academic language requires knowledge of content areas and the use of

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a variety of expository genre. For example, students engaging in science inquiry must understand how to ask and answer questions, provide evidence of reasoning, and draw conclusions. They must be able to state their claims in sociolinguistically appropriate ways related to audiences' knowledge and interests. Example of a fourth grader's written and oral discourse illustrate differences between writing for a standardized task and communicating academic meaning and content.

Insights from Jorge's Assessment

Jorge had been in the United States for a little over two years when he entered fourth grade. In interpersonal conversations, his English, although spoken with an accent, was clearly understandable. He was attentive to the teacher and worked well with other students. Although shy, his interest in school was evident in his ready smile and eyes that communicated enthusiasm for learning. Jorge's performance on the standardized and informal assessments described next is representative of many other students.

Practicing for the Large-Scale Writing Assessment. At the beginning of YIII, fourth-grade teachers were given the Florida Writes! rubric and encouraged to have students write each week using the five-paragraph format of the state assessment. Each week students' writing samples were scored using the Florida Writes! rubric. Students were also taught to use the rubric in reviewing their own writing. The following is a sample of Jorge's writing in October, in response to the prompt "Most people have someone that they admire. Tell about him/her so that your reader will know as much about this person as you do, and why you admire this person."

> Probably why I would admire my parents is because they love me. My parents are so important to me because they guide me. There important to me because they like to hug me. For example, once I was running fast and I fell down and hurt myself She put a bandage on my right knee.
>
> I admire my parents because they gave me an incredible life. In my incredible, I have talents In my incredible life I have two talents, one is the piano and last is karate.
>
> I also admire because they gave me a nice little sister. I admire my parent because she is sweet and beautiful. She is fun to play with.
>
> My person that I admire is my parents. I like them because they love me, they gave me an incredible and they gave me a little nice sister.

Using the "form" component of the SRR (see Table 8.1), the sample was scored a level 3 because the discourse was organized into paragraphs with evidence of past and future tense indicative of a movement toward level 4. Because this sample used a preestablished format, the SRR could overrate for development. Because the topic was personal opinion, not science, the SRR "content" component was not applicable. Jorge's teacher rated the sample a 3.5 on the Florida Writes! rubric.

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Writing instruction throughout the first six months of YIII consisted primarily of improving students' responses in the five-paragraph format. Like most students, as the year progressed, Jorge's writing became more elaborate and complex, as it grew in conformity to the expectations of Florida Writes! In February, Jorge responded to the prompt "We all have important decisions to make in life. Think of a time in your life when you had an important decision to make. Write to explain to your reader why you are sorry about your choice" with this sample.

> We all have important decisions to make in life. My important decision that I made in my life was to become a pianist. I think it was a good decision because kids could love how I play, I can play in big concerts, and for the money.
>
> Probably, why my decision was good to be a pianist was because kids would love how I play. Because I would play a funny folksong. For example, once I played a song name 'Chopsticks' to a bunch of kids and then I play and they all started to giggle.
>
> Also, why my decision was good to be a pianist was because I can play in concerts. So I go and play beautiful songs. For example once I went to a concert and I played classic, Chopin, the song was called Polonaise. Once I played and finish everyone started to clap at me. When I was going to my seat my teacher and her husband, plus the audience congratulated me. Finally, why my decision was good to be a pianist was because for the money. Because if I play for no money my parents and my little sister wouldn't have a home.
>
> My important decision that I made in my life was to become a pianist. I think it was a good decision because kids could love how I play, I can play in big concerts, and for the money.

In writing about a "good" decision instead of one he was "sorry about," Jorge indicated he had misread the prompt. Nevertheless, his teacher was enthusiastic about the response and scored it a 5. Using the form component of the SRR, the sample was a 4. In spite of errors and a lack of grammatical accuracy, Jorge provided a comprehensive sample using present, past, and future tense with cohesive idea organization. Discussion of personal beliefs, rather than science content, precluded a SRR content rating.

On the standardized statewide Florida Writes! assessment in March, Jorge scored 4.2. The state average was 3.0, and the average for both Jorge's school and his class was 3.3. For an inner-city school where the majority of the students were ELLs, it was apparent that substantial progress had been made in acquiring the language measured by the Florida Writes!

Oral Assessment in Science. On the preinstruction elicitation, Jorge's demeanor was quiet and watchful. He frequently mumbled or spoke in single words and short phrases. In response to the question "What will happen if we heat the water?" Jorge produced his longest intelligible utterance (18 words): "The steam will go up and the water level will go down. The water cycle will be starting." The response indicates Jorge had an initial understanding of the water cycle. Using the SRR, the sample was 1 to 1.5 in form and 1.5 in content.

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In contrast, on the postelicitation, Jorge spoke in clear and animated sentences and paragraphs without mumbling. When asked to explain the terms *evaporation* and *condensation* he used in the previous turn, Jorge responded:

> Evaporation is when, the when water, when the sun, the sun is like heating on water. Then, when the sun is beating a lot to the water, like it's boiling, like this (pointing to a picture of the sun above the ocean). The water evaporates to the clouds and condensation is when it hits a cool place, like a top, a cool place, and then it starts getting, turning into liquid. (61 words, 55 not counting false starts)

At the conclusion of the postelicitation, when asked what he did to perform well in school, Jorge stated, "When I don't know something, I mumble and talk soft, and when I do know, then I like to talk out loud. Sometimes I get excited, and I don't say it right." Although Jorge's postinstruction discourse showed substantial development in overall language production, the content of his discourse was still under development. Increased length provided an indication of growth, yet length did not equal development, as the false starts and mazing in the initial segment illustrated: "Evaporation is when, the when water, when the sun, the sun is like heating on water." However, the full transcript showed emerging control of grammar at a level 2 in form using the SRR, an important gain.

As important as the development and control of grammar is, academic language development also requires specific content area knowledge. In content, Jorge's use of key vocabulary terms and his attempt to exemplify them provided an indication of his awareness of two salient features of academic language, definition and exemplification. In spite of this awareness, the sample was rated a 2 because of the lack of clarity in using the terms. Jorge may or may not have known that oceans do not boil when the sun shines. Jorge appeared to be attempting to make an analogy between increasing evaporation by heating a pot of water and the evaporation that occurs when the sun heats the ocean surface. Not only do these samples reveal Jorge's level of discourse, but they also provide starting points for instruction to enhance his knowledge of science and his ability to communicate understanding accurately and effectively.

In addition to illustrating Jorge's growth in academic language development, the pre- and postelicitations also indicate language shift from Spanish to English. In the preinstruction elicitation, Jorge willingly communicated in Spanish, using fully formed, easily understood sentences. In the postelicitation (with the same native Spanish speaker), Jorge declined to use Spanish and indicated a strong preference for English.

Informal Writing in Science. The last sample provided an additional indication of Jorge's ability to express his understanding of science in writing. To promote science learning beyond the two units, Jorge's teacher divided the class into small groups and provided them with large ten gallon containers in which to construct biospheres, plant seeds, and grow plants. Each group was given different environmental growing conditions for the seeds. As a culminating writing activity for this

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three-week unit that occurred shortly after the Florida Writes! exam, students were asked to (a) describe the growing conditions of their biosphere and (b) make predictions about what would happen to the plants. Before beginning to write, groups interacted to discuss the growing conditions and make predictions. In small groups, the students shared their ideas, observed the biospheres, and discussed changes that had occurred to the plants during the past weeks. To facilitate the discussion and writing, the teacher and class summarized the growing conditions in the biospheres as the teacher noted the students' ideas on the chalk board. As he wrote, he emphasized the descriptive words the students could use in writing about their biospheres. To ensure everyone understood the assignment, the teacher also wrote the topics on the chalkboard: "describe the growing conditions of your biosphere" and "make predictions about what will happen to the plants."

In spite of the preliminary scaffolding, many students had difficulty with the assignment. One student broke into tears, crying that she did not know where to put the middle three paragraphs. Nine others declared they could not write. Despite encouragement from the teacher and an assistant, some students simply put their heads down and wrote nothing. Jorge wrote:

> What happened in group 3 & 2 was it had the top off and the heat hit and the water evaporated and it's soil got dry. What I think that will happen next is that all the plant are going to dye. Because it's very dry.

Jorge's sample illustrates the difficulty he had in using academic discourse, even when it was made explicit through classroom interactions and teacher scaffolding. On the SRR, his form was rated a 2 and content a 1.5. In spite of his enthusiasm in orally discussing the biosphere, Jorge's writing offers little insight into his understanding of the activity. Because the task required an organizational format different from the highly practiced Florida Writes! Jorge appeared to be unable to respond beyond the most basic level. He, like many of the students, had learned the Florida Writes! format so well that they surpassed the state average, yet they were unable to apply their understanding of the writing process to this science context.

The emphasis on a five-paragraph composition had limited instruction in other important areas of the curriculum. As a result, the students did not acquire the discourse functions of describing or predicting beyond a rudimentary level. Because most of the writing instruction had been specific to the Florida Writes! format, it lacked application for communicating science. As a result, Jorge and the other students suffered the limitations of test-focused instruction, even as they achieved the distinction of being declared "effective writers" and they enjoyed learning science.

Discussion and Conclusions

In spite of the growing recognition of the importance of academic language in school achievement, little research has been conducted to define or describe

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academic language in classroom contexts (Fradd & Larrinaga McGee, 1994; Bartolomé, 1998; TESOL, 1996).[4] The construct has been operationalized primarily through standardized tests, rather than classroom performance (Edelsky, 1996). As this chapter indicates, such interpretations can provide false pictures of students' progress and instructional needs.

Dependence on standardized assessment to determine performance is particularly troubling in classrooms where ELLs spend a great deal of instructional time developing test-taking skills. This is not to argue against preparing students for taking tests, rather, it is to affirm the importance of instruction to promote meaningful literacy-based learning relevant to real-world contexts. Because teachers require in-depth knowledge of academic language acquisition, from initial stages to full participation (NCES, 1999), a framework is needed to make instruction across subject areas relevant to students' overall language-learning needs.

A working definition of the process of academic language acquisition as developmental and ongoing is needed. Such a definition would include (a) the acquisition of language form, (b) the use of specific discourse functions, such as reporting, describing, and explaining, for communicating in academic and social contexts, and (c) academic content knowledge. Such a definition could be used to integrate the performance indicators and achievement information from different assessment procedures to provide a holistic view of students' language development. The rubric presented here provides a beginning for observing students' growth in these components. Through the use of specifically designed rubrics paralleling those used with monolingual students, teachers of ELLs can assess and promote development of the discourse their students require to communicate effectively.

The notion of a specifically designed rubric for observing grammatical development and content knowledge as two separate, interrelated areas of language acquisition may be a useful heuristic for both assessment and instruction. The use of such a framework could also promote teachers' capacity to integrate standardized and informal assessment information. Although not all states support bilingual instruction by utilizing students' home languages as well as English, the assessment process could inform teachers of students' development of the form, functions, and content required for meaningful communication across languages. Thus, such a framework could enhance teachers' understanding of students' language development and content-area knowledge and insure that meaningful learning opportunities are not delayed because students' lack proficiency in English (Bartolomé, 1998; Edelsky, 1996).

The language samples of Jorge underscore the need to promote integrated language instruction that includes both form and content. As his essays reflect, Jorge sought opportunities to acquire the academic language at school not only for his own personal benefit but also to assist his family and to participate in the larger world. According to his score on the state writing assessment, Jorge's written language was above average; however, as he reached the end of fourth grade, because he did not know how to organize and present his ideas, Jorge had

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difficulty writing on a science topic he and his classmates had studied for three weeks. Although Jorge and the other students had participated in many context-embedded language-learning activities designed to promote acquisition of specific science content, they lacked an understanding of how to present their knowledge in multiple formats. In exemplifying the strengths and limitations of test-focused instruction, these samples illustrate the need to explicitly link instruction and language development with real world activities that generalize beyond the context in which instruction occurs (Bartolomé, 1998). The examples also underscore the importance of preparing teachers to move students beyond achievement on high-stakes assessments.

Although Florida is an English-only state, there is growing awareness of the importance of biliteracy in the educational process (Fradd, 1996). The need for a multilingual global work force has increased the importance of literacy in more than one language in Florida and across the nation (Fradd & Lee, 1998). A framework for academic language development could be used for student instruction and assessment as well as teacher preparation to achieve higher literacy levels in English and other languages. First, it could provide teachers with insight into the overall language-learning process across written and oral formats in multiple languages. Writing instruction could be integrated throughout the curriculum, such that knowledge gained in improving writing for specific purposes could be made applicable to other tasks and contexts. Therefore, in addition to specific test-taking skills, students would learn a variety of formats for organizing and communicating their understandings. Second, oral and written language instruction could be integrated so that development in one would support effective communication in the other. Third, content instruction, in areas such as science, would be recognized as providing opportunities to expand language development through both hands-on interpersonal activities and formal contexts in which students must use a variety of language functions. Fourth, vocabulary instruction would be used not only to ensure students acquire content-specific terminology but also to promote thinking and framing "big" ideas in which to apply content knowledge. As this chapter suggests, with relevant instructional materials and professional preparation, teachers can foster ELLs' language acquisition and science learning. What is needed is a framework for organizing and integrating such learning opportunities.

This chapter presents the beginnings of a framework with applications in classrooms where teachers provide instruction for accountability and content learning. The example used here illustrates the utility and need for extending the framework across assessment procedures and contexts, grade levels, subject areas, and languages. Informal assessment can provide insights into students' learning strengths and needs not available through standardized assessment. At the same time standardized assessments establish benchmarks toward which all teachers and students must strive. Through the integration of information from both types of assessment, teachers and students can benefit from improved practices that promote achievement for all students.

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DISCUSSION QUESTIONS

1. List the components of the assessment framework presented in this chapter, and tell why these are important.
2. What are the three components of language development discussed in informal assessment?
3. Compare and contrast the first three levels of the *Science Reporting Rubric,* and then explain what the authors mean by "developmental" language learning.
4. In this chapter, students exceeded state norms for effective writing yet were unable to write a simple composition about a science activity. How is it possible for students to exceed writing norms and still lack the ability to communicate content from state grade-level standards in writing?
5. This chapter provided multiple examples of Jorge's oral and written communication. Summarize this development, and state what you would do as his teacher to meet his instructional needs in literacy and science learning.

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NOTES

1. In 1988 prominent scientists and science educators announced commitment to make science available for all students (American Association for the Advancement of Science, 1989). The dismal achievement of Hispanic students in general and lower socioeconomic level students in particular made this commitment more of a promise than a reality for many ELLs (NCES, 1992; National Science Foundation, 1994). This "promise" became the inspiration for the Promise Project, the study discussed here. Reference for this study is Fradd, S. H., Lee, O., & Sutman, F. (1995–1998). *Promoting science literacy for all Americans, including culturally and linguistically diverse students, keeping the promise* [*The Promise Project*]. National Science Foundation, Research on Teaching and Learning Program. #RED 9552556, Coral Gables, FL: University of Miami.

2. The pre- and postassessment instruments had a high level of consistency, as indicated by Cronbach coefficient Alpha, the internal consistency for matter pretest was 0.83 and matter posttest 0.87. The internal consistency for weather pretest was 0.73 and weather posttest 0.78.

3. Science Reporting Rubric (Fradd, S. H., Lee, O., & Larrinaga McGee, P. [1998]. *Developmental science reporting rubric. An instrument developed for "Promoting Science Literacy for All Americans, Including Culturally and Linguistically Diverse Students: Keeping the Promise."* National Science Foundation, RED 9552556. Coral Gables, FL: University of Miami. This draft version is still under revision.)

4. The TESOL standards are designed to promote language development in classroom contexts (Teachers of English to Speakers of Other Languages. [1997]. *ESL standards for pre-K–12 students.* Alexandria, VA: Author).

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