Darlene Wakefield’s second-period science students are clustered in small groups around strands of hair. The eighth graders, predominately Latino English Language Learners (ELLs), are trying to classify the hair according to several genetic characteristics, such as curly, wavy, straight, thick or thin, brown or black. Darlene walks around the classroom visiting each group and listening to their questions and comments. One group is having a difficult time with the classification activity. They call Darlene over to their table and ask for an explanation of several vocabulary words that they must use to classify the hair. “Why does it say shaft, Ms. Wakefield? When you shaft someone it means to cheat them out of something. How are we supposed to show a shaft for hair?”

Darlene is momentarily taken aback. She’d reviewed the classification list before assigning the activity. As a native English speaker, she’d automatically assigned the appropriate definition to the word *shaft*. She hadn’t considered slang versions of the word or alternative definitions like the shaft into which miners descend. Other students are now reaching the same place on the worksheet. They call for Darlene’s assistance. Darlene moves to the front of the classroom and announces that all students’ eyes should be on the front of the room. She explains the term *shaft* and provides the students with the science definition. The students also take the opportunity to query Darlene about some of the other genetics vocabulary words. Ten minutes later, the students return to their classification activity. Unfortunately, within a few minutes the bell rings, and they move to the next period. The classification activity, one that Darlene thought would take 20 minutes to complete, will have to be carried over to the next day’s lesson. Once again, Darlene feels overwhelmed by the students’ science vocabulary needs.

Darlene, like many mainstream urban teachers, is experiencing an increasing number of ELL students in her content-area classroom. Yet these teachers often find themselves unprepared or under-prepared to simultaneously provide content-area instruction and meet the academic literacy needs of these students. Lacking this pedagogical knowledge, teachers often “wing it,” calling upon their previous instructional background, their assumptions and beliefs about ELL students’ abilities, and when available, utilizing information obtained through one-shot or short-term professional development experiences to supplement their instructional practices. Given the growing numbers of English language learners in U.S. classrooms, it seems clear that leaving teachers in the classroom to wing it is not a viable solution for educating diverse urban and bilingual students. Teachers, professional developers, and curriculum designers must have better examples of how to support the teaching and learning of middle school ELL students in content-area instruction. To do this, we must have focused and descriptive case-study portraits of teaching experiences in mainstream classrooms with ELL students. Such portraits can provide deeper descriptions of how
teachers attempt to meet ELL students’ content area literacy and language needs. Here we report one case study of a mainstream teacher’s experience supporting ELL students. The teacher, our long-term colleague Darlene, is teaching a two-day lesson on genetics in a middle school science classroom where the majority of students are Latino.

The Vocabulary Problem and English Language Learners

We chose to explore this reliance on winging it more closely by focusing our analyses on vocabulary. In particular, content-area vocabulary is often cited in the literature as a common obstacle for ELL students (Moje, Collazo, Carillo, & Marx, 2001; Watts-Taffe & Truscott, 2000). Much of “best practice” literature points to the importance of vocabulary development among ELL students. Gersten and Baker (2000) suggest anchoring curriculum goals to vocabulary development. When selecting vocabulary words, Gersten and Baker suggest careful consideration so that words selected convey key concepts, are of high utility, are relevant to the bulk of the content being learned, and have meaning in the lives of students. Gersten and Baker also suggest that “restricting the number of words students are expected to learn will help them learn word meaning at a deep level of understanding, an important principle of sustained vocabulary growth” (p. 8). They claim that teachers should present lists of seven or fewer words that students can work on over relatively long periods of time.

In addition, the best practices literature suggests that teacher-planned activities should get students actively involved in listening to the language and in using it in meaningful ways (Gonzalez, Luisa, & Tinajero, 1998). Teachers should also provide specific examples of key words and technical vocabulary using pictures, gestures, props, graphic organizers, word banks, videos, or role playing (Gonzalez et al., 1998). In other words, using a variety of methods to teach vocabulary helps students acquire a deeper comprehension of word meanings.

Elements of effective vocabulary instruction that appear universal include an emphasis on providing both definitional and contextual information about key words, elaborating on word meanings during teacher-led discussions, and providing opportunities for students to actively elaborate on word meanings themselves. (Watts-Taffe & Truscott, 2000)

Students can learn words in a variety of ways, such as making semantic maps of important concepts, or pulling important words from the reading. However, according to some, the most effective way for students to learn new vocabulary is through their own attempts to use the words in their everyday language and writing (Brisk & Harrington, 2000). Along these lines, Williams and Capizzi-Sniper (1990) assert that students learn from their errors if they are corrected as they make them. This would seem to indicate that teachers should give students ample practice with reading, writing, and speaking language, and should also pay close attention to students’ use of vocabulary in natural as well as task-driven settings.

Whether intuitively, through experience, or through study, Darlene recognized the critical importance of vocabulary development. She highlighted vocabulary as a challenge for her students as they learned science. The following classroom examples illustrate: 1) students struggling with vocabulary in its basic definitional sense, 2) Darlene’s struggle in recognizing students’ inability to access the science content due to problems with vocabulary, and 3) vocabulary impeding students from navigating their way through the day’s science activity.

What Darlene Saw as the Problem

Post-observation interviews with Darlene were critical in discerning the level and frequency of vocabulary problems for ELL learners (and their
instructors) in science classrooms. Throughout various interviews, Darlene frequently identified vocabulary as a common obstacle to students’ understanding of science content. In addition, Darlene often indicated her frustration with attending to students’ vocabulary challenges while trying to keep pace with local science standards requirements.

I work on vocabulary issues every day. I do this to address the specific needs of my students. When they read, they don’t understand the vocabulary. [Working with this population, teachers] first have to understand the vocabulary issues. Science vocabulary is a language unto itself, and for a second language learner, it’s vital to reinforce vocabulary. One explanation or demonstration is not enough. Concepts and vocabulary must be constantly addressed in order to sink in. (E-mail interview, 8-13-02)

Darlene’s realization that her ELL students require additional support with vocabulary initially came as a surprise to her. In her prior teaching experience, this had not been an issue as she indicates when she says:

I previously taught African American students and found that most loved to read and learn vocabulary. They readily accepted new words and were excited to use them in everyday language. I found this not to be so with the bilingual population. The bilingual student is usually struggling with the new language and hesitates to use new words unless they are completely comfortable with the pronunciation, meaning, and appropriate use of the word. My first [experience with this] was during a science lesson. I used the word “fin” to describe a body part on a fish. I have four science classes and none of the eighth-grade population knew the word. They knew it in Spanish or Polish, but not English. I was shocked. I thought this was a simple word, but boy was I wrong. It made me rethink what and how I say things. (E-mail interview, 8-13-02)

In response to students’ limited ability to navigate vocabulary, Darlene attempted to modify her practice. When describing this process, she says:

I’ve had to greatly modify [my instructional practice]. . . . I have to pull out a lot of the vocabulary. . . . I have to go through it ahead of time, pull out the things that I think they won’t understand or don’t get and find alternative experiment activities to drive it home. We use [vocabulary words] every day . . . at first I’ll have them write [the words] and that kind of stuff.

It’s a matter of using them every day in our language, in our class, just a lot of repetition . . . and we play games, etc. (Pre-observation interview, 2-02)

Darlene went as far as to recognize that if her students were going to be successful, she was the one who had to make some changes:

I was the one who had to change some of my style to adjust to my new students. I had to understand them culturally in order to understand how they learned. I had to adjust to the language differences as well as to the group dynamics. (E-mail interview, 8-13-02)

In order to better illustrate the specific vocabulary issues present in Darlene’s classroom, and the manner in which she responds to these issues, we turn to classroom examples.

**Day 1—The Silent Classroom**

During one particular class, Darlene began with a review of concepts and vocabulary pertaining to the day’s lesson on genetics. The pace at which she conducted this session indicated that she believed it should be review for the students (Cazden, 1988). However, the level of student interaction indicated to us and Darlene that students were not treating it as a review of old material. Throughout the review, Darlene often responded to her own questions, defined terms herself, and revisited concepts through her own speech. There was minimal student participation. In other words, the students, although they had been exposed to the terms and concepts before, did not seem able to recall them or articulate the meanings behind them. It appeared as though the students were stuck.

When we posed an open-ended question to Darlene about this segment of classroom interaction, she was quick to point out that this was a case of students struggling with vocabulary. According to Darlene, vocabulary challenges were indicated by the lack of immediate responses to the review questions, the absence of dialogue between Darlene and her students, and the fact that throughout the review session, many students were looking for clues or contextual help in the available texts. She said, “When students understand material, they are quick to yell out what they
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“When they’re clueless about language, you hear nothing—silence.”

know.” Darlene further explained her belief that the students’ challenges in this particular instance centered on vocabulary and not content by characterizing her students’ mode of interaction when the challenge is conceptual versus vocabulary knowledge:

With content issues, there’s talk back and forth—and they may not understand that they don’t [completely] understand [the concept], but there’s still a lot of talk. . . . When they’re clueless about language, you hear nothing—silence. (Interview, 3-6-03)

During the same genetics lesson, Darlene attempted to provide a concrete example when revisiting the concept of purebred. In this case, she asked students, “What does it mean if something is considered purebred?” The students did not respond, so Darlene used the blackboard to illustrate the concept of purebred through common alleles such as TT or tt as seen in Punnett squares. This may have been helpful to students in the context of the worksheet they would be working on for the remainder of the class period. However, students’ ability to identify TT or tt as representing something that’s purebred does not necessarily mean that they have attained a conceptual understanding of the word. For the purposes of the day’s exercise, they might have found themselves able to use and identify the word, but their ability to do so in other contexts was questionable. Students’ lingering confusion was demonstrated when a student, in the midst of the worksheet activity, raised his hand and said aloud, “I don’t understand this.” In response to his comment, Darlene walked over to the student and asked him, “What are traits?” He didn’t know. She provided the definition, yet the student responded again with, “I still don’t get it.” At this point, Darlene led the entire class in another mini-review of vocabulary and concepts such as dominant, trait, recessive, etc. In essence, Darlene tried to repair a vocabulary problem by giving students even more words they were unlikely to understand.

Darlene now notes that her ability to recognize signs of students’ struggling with vocabulary and strategies was something that developed over time and was not present in her repertoire at the time of our classroom observation. In the comment below, Darlene goes on to note how her expertise has grown but laments the lack of specific guidance toward growth. When referring to the students’ use of Spanish cognates to navigate some science vocabulary, she says:

What I need to do is kind of try to pick up on what I think they might not get . . . [when] I’m watching that kind of picking apart of [words] which I probably wasn’t aware of previously. You know, so they’re starting to do that with vocabulary and I think if I had picked up on that previously, I could’ve used that but [instead] it’s been more recent. It would’ve been helpful if someone had shared that with me—shared those kinds of things with me. (Interview, 3-6-03)

Day 2—Reproducing Dragons

The next day’s activity further illustrates the way vocabulary difficulty unfolds for ELLs in Darlene’s science class and her repertoire to support students. On Day 2, students were to assemble a paper dragon according to alleles contained in their materials envelope. Students had to match up alleles (e.g., N or n) corresponding to a particular trait (e.g., neck length) to determine the genotype (e.g., NN, Nn, or nn) and phenotype (long neck or short neck). In addition to the day’s activity illustrating how alleles or chromosomes work to determine what traits are exhibited, another lesson objective was for students to grasp the concepts of homogeneous versus heterogeneous as they relate to dominant or recessive traits. The important role of vocabulary in this activity is apparent. Navigating the worksheet alone required a certain level of familiarity, comfort, or confidence with the vocabulary. As students began the activity, a student asked Darlene, “Is homo dominant?” Darlene responded, “No, a capital letter is dominant. Little is recessive. Homo is two letters the same. Hetero is two different letters.” The student then turned to her partner and asked, “Hetero is if they’re the same, right?”

“...When they’re clueless about language, you hear nothing—silence.”

During her interview regarding those classroom lessons, Darlene spoke very candidly about...
what she could’ve done to improve her instruction during the two days.

I’d probably redesign the whole darn thing! I would have used word walls [or] I would have definitely done [word] lists. I was definitely feeling my way through this. It was the first time I had taught this in a bilingual situation, so I [was] feeling my way through it . . . . I found this idea just to kind of bring it home to them, but I actually think I would’ve created the [word] wall or created some type of folder for them to keep on hand and take notes on this subject that they could keep. (Interview, 3-6-03)

When we asked her where she learned about the modifications she proposed using, she said:

I’ve looked at other teachers who have been successful in bilingual education. . . . I know what works [for them] and I expand on it . . . [and] you know, I had seen it through things I had gone through—materials I’d seen, and [then would] try to tailor it to my kids. (Interview, 3-6-03)

Through the preceding examples, we’ve tried to provide a portrait of the types of challenges occurring in Darlene’s classroom. What seems evident is that students’ stumbling blocks often become their instructors’ stumbling blocks. Darlene’s reflective analysis of these classroom examples really seems to frame these challenges in terms of 1) the significance of teachers being able to recognize clues that can help them identify their ELL students’ literacy challenges, and 2) the importance of teachers being well-equipped with the right instructional strategies to attend to ELL student needs.

Implications and Conclusions
Darlene is representative of the many teachers who wing it as they work to support their ELL students’ literacy needs while simultaneously teaching content. Many teachers, like Darlene, review their lessons to consider how they can better support these English language learners. Such review is indicative of a shift from spontaneous winging it to purposeful design. During one such reflection, Darlene explained:

I mean [the students] may get what I’m getting at, but they’re always trying to look for clues. I mean, I’m getting that mainly […] when we’re doing something on herbivores and carnivores—well, the Mexican word for meat is carne. And I’m watching that kind of picking apart of things which I probably wasn’t as aware of previously. And like herbivore—oh look—there’s the word herb—it has to eat plants—so they’re starting to do that with vocabulary and I think if I had picked up on that previously, I could’ve used that but it’s been more recently. . . . And again, what I need to do is kind of try to pick up on what I think they might not get, and I started to go home and type out word lists with meanings—you know, like definitions, and so now I’m noticing when I say something that they didn’t quite get, they jump up looking for it [the list]. So they know where it is. And that becomes important to them to keep referring back . . . . (Interview, 3-6-03)

The implications of this work for teachers are three-fold. First, mainstream teachers of ELL Latino students must be able to recognize students’ academic literacy and language challenges in the content areas. Second, in order to recognize these challenges, they must have professional development experiences that provide deep information about the literacy challenges ELL students face. Teachers must be more informed about the coupling of language ability to literacy skills to content-area academic literacy. They must recognize that students who are orally functional in English may continue to need vocabulary and conceptual support in reading and writing in content-area study. Teachers must also have pedagogical knowledge about how to modify instruction to support ELL students’ literacy needs while also engaging in content-area instruction. Finally, school districts and local school administrators must construct opportunities for mainstream teachers to collaborate with bilingual teachers in ongoing local professional development as they leverage each other’s expertise in support of ELL students.

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