Rethinking instructional strategies with English learners in the content areas

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Abstract
The latest content standards in U.S. K–12 education are academically rigorous for all students, including a fast-growing population of English learners (ELs). Because these standards are different from previous standards in terms of not only their rigor but also their theoretical underpinnings, enacting instruction aligned to the standards will require shifts in how teachers conceptualize the nature of content and language learning. In this article, the authors argue that instructional strategies traditionally used with ELs in the content areas need to be rethought in light of contemporary theoretical perspectives. After providing a brief overview of these perspectives in content area education and language education, the authors highlight three instructional strategies: (a) preteaching vocabulary, (b) providing sentence frames and starters, and (c) using visual aids. They describe how each strategy has traditionally been used and tensions that may arise in using the strategy in light of contemporary perspectives. Drawing on examples from their curriculum development work in linguistically diverse elementary science classrooms, the authors propose ways that teachers can adapt when and how they use each of these strategies to deliver more theoretically sound instruction. Implications of the adapted strategies for teachers working with ELs in content classrooms are discussed.
English learners (ELs) are the fastest growing subset of the U.S. student population, comprising nearly 10% of public school students (National Center for Education Statistics, 2019). The rapid influx of ELs into U.S. schools comes at a time when content standards are undergoing unprecedented change. The Common Core State Standards for English language arts and mathematics and the Next Generation Science Standards (NGSS) raise academic expectations for all students while presenting both opportunities and challenges for ELs, who are in the process of learning the language of instruction (Kibler, Walqui, & Bunch, 2015). These content standards are different from previous standards not only in terms of their academic rigor but also their theoretical underpinnings. Enacting instruction aligned to the standards will therefore require shifts in how teachers conceptualize the nature of content and language learning (National Academies of Sciences, Engineering, and Medicine [NASEM], 2018).

With a fast-growing population of ELs expected to meet grade-level content standards, classroom approaches that integrate content and language learning are being implemented in schools and districts across the nation (for a comprehensive review of these approaches, see Reynolds & O’Loughlin, 2019). These include the Sheltered Instruction Observation Protocol (SIOP), Guided Language Acquisition Design (GLAD), and Specially Designed Academic Instruction in English (SDAIE). Each of these approaches provides a menu of strategies that teachers can draw on flexibly when planning and implementing instruction with ELs in the content areas. However, although many of these instructional strategies are regarded as virtually axiomatic among teachers of ELs (e.g., using visual aids), these strategies may present tensions with new ways of thinking about content and language.

In this article, we argue that instructional strategies traditionally used with ELs in the content areas need to be rethought in light of contemporary perspectives on content and language learning. We begin by providing a brief overview of contemporary theoretical perspectives in content area education and language education. Next, using examples from our curriculum development work in linguistically diverse elementary science classrooms, we highlight three strategies traditionally used with ELs in the content areas (preteaching vocabulary; providing sentence frames and sentence starters; and using visual aids) and describe how we adapted these strategies to bring them more in line with contemporary perspectives. As the examples will illustrate, these strategies are neither “good” nor “bad” in the abstract, but it is when and how they are used that is most consequential. Finally, we discuss several key points about these adapted strategies for teachers working with ELs in content classrooms.

2 | CONTEMPORARY PERSPECTIVES IN CONTENT AREA EDUCATION AND LANGUAGE EDUCATION

The notion of strategy has been theorized extensively in the literature on business management (e.g., Mintzberg, 2007). Although various definitions have been proposed, one common feature among them is that the strategies deployed by individuals or organizations are grounded in particular theoretical perspectives. Put simply, strategy is “conception preceding action” (Moore, 1959, p. 220). In the context of classroom instruction with ELs in the content areas, teachers’ strategies are also grounded in particular theoretical perspectives—whether implicit or explicit—about the nature of content and language learning (Valdés, Kibler, & Walqui, 2014). In recent years, theoretical perspectives in content area education and language education have undergone key shifts, which are described next.
In content area education, whereas traditional perspectives focused on learning discrete facts and information, contemporary perspectives emphasize engagement in the actual practices of disciplinarians in their work (e.g., scientists, mathematicians). As students engage in such disciplinary practices, they gradually come to understand ways of knowing and communicating characteristic of disciplinary communities and develop deep and transferable understanding of disciplinary ideas (Mehta & Fine, 2019). For example, in science classrooms that embrace contemporary perspectives, students engage in science practices (e.g., arguing from evidence) and develop understanding of core ideas and concepts within and across science disciplines, all for the purpose of explaining phenomena (i.e., why observable events occur) in the natural world (National Research Council, 2012). Because contemporary perspectives in content area education involve using and applying knowledge for a particular purpose, these perspectives have been referred to broadly as knowledge-in-use (Harris, Krajcik, Pellegrino, & DeBarger, 2019).

In language education, whereas traditional perspectives focused on acquiring discrete elements of vocabulary and grammar in a fixed sequence, contemporary perspectives emphasize purposeful communication in a social context (Larsen-Freeman, 2007; Zuengler & Miller, 2006). As students engage in meaningful interactions in their classroom communities, they use language to carry out their actions and intentions (van Lier, 2004; Walqui & van Lier, 2010) and perform communicative acts (Bunch, 2014; Valdés, 2004). From this perspective, language is understood as “a product of interaction and learning” rather than a precursor or prerequisite (NASEM, 2018, p. 99). Furthermore, this language goes beyond the individual word level (Jensen & Thompson, 2020; Moschkovich, 2015) and most often appears as part of larger multimodal ensembles that co-deploy visual (e.g., drawing) and actional (e.g., gesture) resources to convey a diverse array of meanings (Canagarajah, 2018; Yi, Shin, & Cimasko, 2019). Because contemporary perspectives in language education involve using language, in combination with other meaning-making resources, for a particular purpose, these perspectives have been referred to broadly as language-in-use (Lee, Quinn, & Valdés, 2013).

Moreover, the shift from learning language as discrete elements to using language for a purpose (language-in-use) reflects the shift from learning content as discrete facts to engaging in disciplinary practices (knowledge-in-use). In this way, contemporary perspectives in language education and content area education are mutually supportive (for a more detailed treatment in the context of science, see Lee, Llosa, Grapin, Haas, & Goggins, 2019).

Despite shifts in theoretical perspectives in both fields, instructional strategies commonly used with ELs in the content areas tend to lack theoretical grounding or be artifacts of more traditional thinking. However, as Valdés et al. (2014) have cautioned, “The application of a collage of practices derived from inconsistent theories cannot be assumed to render good results from students” (p. 23). This concern is compounded in the case of content area instruction with ELs, which requires integrating theoretical perspectives from both content area education and language education in a principled manner. Thus, to deliver instruction that is more theoretically sound, teachers need guidance adapting instructional strategies they currently use to be consonant with contemporary perspectives. Specifically, these adaptations could address when (i.e., timing) and how (i.e., purpose) certain strategies are useful with ELs in the content areas.

Although the examples that follow are situated in the context of U.S. K–12 education, the issues at stake are a matter of disciplinary perspectives rather than national boundaries and therefore have relevance across a range of contexts in which students are learning academic content in English. These contexts include the content and language integrated learning (CLIL) movement in Europe and Asia and English-medium universities across the globe.
3 | INSTRUCTIONAL STRATEGIES WITH ENGLISH LEARNERS IN THE CONTENT AREAS

Informed by contemporary perspectives in content area education and language education, our research team of science educators and applied linguists developed a yearlong fifth-grade science curriculum aligned to the NGSS with a specific focus on ELs. Methodologically, our research followed a design-based approach (e.g., Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003) wherein the curriculum underwent rigorous cycles of development, testing, and revision over a 4-year period. As “co-participants in the design” (Barab & Squire, 2004, p. 3), teachers implemented the curriculum in linguistically diverse science classrooms and worked collaboratively with our research team to make iterative improvements. A detailed account of the larger design-based study is reported in our other publications (e.g., Lee et al., 2019); this article highlights lessons learned from our curriculum development work in relation to instructional strategies with ELs.

In this section, we highlight three instructional strategies: (a) preteaching vocabulary, (b) providing sentence frames and sentence starters, and (c) using visual aids. We focus on these strategies specifically because they were carefully considered as part of our curriculum development work, have relevance across multiple content areas, and are featured prominently in each of the classroom approaches described by Reynolds and O’Loughlin (2019) in their recent review of the literature. For each strategy, we describe (a) how it has traditionally been used with ELs in the content areas, (b) tensions that may arise in using the strategy in light of contemporary perspectives on content and language learning, and (c) adaptations of the strategy to resolve these tensions, including an example of when and how the adapted strategy was used in the context of a science unit.

The science unit, which is the first unit in our yearlong curriculum, engages students in explaining the phenomenon of what happens to garbage in their home, school, and community while developing their understanding of physical science ideas (e.g., particle nature of gas, conservation of matter). This unit (affectionately referred to as “the garbage unit”) has earned recognition as an exemplar of instructional materials design in both science education and language education. In science education, the unit was awarded a Badge of Distinction by Achieve Inc., which rates the quality of instructional materials in terms of their alignment to the NGSS. In language education, the unit was used to illustrate contemporary perspectives on science and language learning in a recent consensus report on ELs in STEM subjects (NASEM, 2018; see box 3-1 on p. 64). The complete unit is available open-source at nyusail.org.

3.1 | Preteaching vocabulary

3.1.1 | Description of strategy

Preteaching vocabulary typically involves introducing a small set of key words and their definitions at the beginning of instruction. These words include both general-purpose vocabulary (e.g., results) and content-specific vocabulary (e.g., particles) that are essential to an upcoming lesson or unit (Beck & McKeown, 1985). The rationale for preteaching vocabulary (also called frontloading) is that instruction will be more comprehensible for ELs if they are familiar with the words before they come up as part of instruction.
3.1.2 | Tensions with strategy

Preteaching vocabulary presents tensions from both content and language perspectives. From a content perspective (knowledge-in-use), although students may be able to recite words and their definitions, vocabulary may have little meaning to students until they develop an understanding of the ideas those words represent and how those words are useful for disciplinary purposes (e.g., explaining a phenomenon in science). By introducing and defining words at the beginning of instruction, teachers may actually short-circuit opportunities for sense-making that result in deep and meaningful content learning. From a language perspective (language-in-use), preteaching vocabulary in isolation of content or context reinforces a simplified view of communication in the content areas that privileges lexical aspects of language (Moschkovich, 2015). By focusing narrowly on vocabulary, teachers could overlook ways that disciplinary meanings are communicated beyond the individual word level (Grapin, Llosa, Haas, Goggins, & Lee, 2019).

3.1.3 | Adaptations to strategy

In our curriculum development work, we have addressed these tensions by adapting when and how vocabulary is taught in instruction. In contrast to the traditional approach of preteaching vocabulary, teachers introduce terms in context after students have developed understanding of science ideas and when those terms are useful for furthering the class’s sense-making. In the garbage unit, a key science idea is that smell is made of gas particles too small to see. To investigate what happens to garbage, students put food materials in an open bottle and observe changes over several weeks. As the food materials in the bottle begin to decompose and create an unpleasant smell, the class engages in a series of investigations (e.g., compressing air in a syringe, weighing a balloon before and after it is inflated), which provide evidence that smell has weight and therefore is something. At this point in the unit, teachers introduce the term particles as a way to account for “those tiny things too small to see” that students experienced in their investigations. Introducing the term and its definition earlier in instruction would have risked short-circuiting this important conceptual work and may have led some students to parrot the term absent the underlying science understanding. Although introducing terms in context is not a new idea in language education (see, e.g., Gibbons, 2015), the tradition of preteaching vocabulary continues to be emphasized in classroom approaches with ELs in the content areas.

In subsequent instruction, teachers go beyond eliciting words and their definitions (e.g., asking “What is smell made of?”) to providing opportunities for students to put those words to use for a purpose. In the garbage unit, students use their understanding of particles to construct an argument that answers the following question: Did the amount of matter in the bottle change? Engaging in the science disciplinary practice of argument involves using language beyond the individual word level, for example, connecting claims and evidence at the discourse level (Lee et al., 2013). In their arguments, students support the claim that the amount of matter in the bottle decreased because the weight of the bottle and the smell it produced provide evidence that solid food materials escaped the bottle in the form of gas particles. When teachers provide opportunities for students to use vocabulary (e.g., particles) for a greater communicative purpose (e.g., engaging in argument to explain a phenomenon), vocabulary is put in its proper place—not as an end in itself but as a means to achieving disciplinary ends.
3.2 Providing sentence frames and sentence starters

3.2.1 Description of strategy

Sentence frames (e.g., One reason __ may occur is __) and sentence starters (e.g., I believe __) are partial sentences that guide students to express ideas in writing or speaking. The rationale for providing sentence frames and starters is that ELs may not yet have the language to respond to writing prompts or to engage in academic discussions. In addition to jumpstarting participation, sentence frames and starters can expose ELs to meaningful chunks of language that they can use independently in subsequent writings and discussions.

3.2.2 Tensions with strategy

Sentence frames and starters present tensions from both content and language perspectives. From a content perspective (knowledge-in-use), by restricting the range of possible responses, sentence frames and starters could foreclose unanticipated, off-script contributions to writings and discussions that are steps on the path to developing deeper content understanding (Gotwals & Songer, 2010). This concern is particularly acute with ELs and other traditionally marginalized student groups, who bring a wealth of knowledge and experiences from their homes and communities that can enrich content classrooms but may not fit neatly within normative expectations for participation (González, Moll, & Amanti, 2005). From a language perspective (language-in-use), sentence frames and starters reinforce a view of language as a set of discrete structures and language use as the mechanical application of those structures. By being overly formulaic, sentence frames and starters may send a message that using language in the content areas is about filling in blanks with predetermined answers and finishing the sentences of others rather than engaging in authentic and meaningful discourse as part of disciplinary communities (Valdés, 2004).

3.2.3 Adaptations to strategy

In our curriculum development work, we have addressed these tensions by adapting when and how sentence frames and starters are provided in instruction. Teachers avoid using sentence frames and starters too early in instruction when students are still in the “messy middles” (Gotwals & Songer, 2010, p. 277) of developing their science ideas. In the garbage unit, teachers invite students to make open-ended observations of the decomposing food materials using all of their linguistic and semiotic resources (e.g., students may say, “Something is coming out!” while gesturing at the bottle) without imposing a particular structure for responding (e.g., The food was in the form of __ but now is in the form of __). By inviting all student contributions, regardless of the particular form(s) in which they are expressed, teachers keep the focus on what students see as interesting and relevant about the phenomenon under study. In one class, for example, a student observed, “The ghost of the banana is leaving.” This student’s creative observation (which may have never surfaced if a sentence frame/starter had been enforced) became central to the class’s sense-making and eventually led to a consensus that the solid banana decomposed and changed into banana gas particles.

Whereas eliciting more open-ended responses is important as students are developing their science ideas, sentence frames and starters can be useful when students are ready to present those ideas in
more polished form. In the garbage unit, students construct an argument about the amount of matter in
the bottle (described above) using claim, evidence, and reasoning. To support students in constructing
their arguments, the following sentence starters are provided:

My claim to answer the question is __
My evidence to support the claim from investigations, models, and articles is __
The reason I included this evidence is __

In contrast to generic sentence starters that may be disconnected from disciplinary ways of know-
ing and communicating (e.g., I believe __ in science), these sentence starters are carefully constructed
to apprentice students into norms for engaging in the science disciplinary practice of argument.
Specifically, they guide students to understand what “counts” as a claim (i.e., answer to the question),
evidence (i.e., data from various sources to support the claim), and reasoning (i.e., link between evi-
dence and claim) in a science argument (Berland et al., 2016). When carefully constructed to promote
engagement in disciplinary practices, sentence frames and starters do more than jumpstart language;
they position students as active participants in a community (e.g., the science classroom community)
and support them in adopting epistemic goals and ways of using language characteristic of that com-
community (e.g., arguments in science are based on data, not opinion). Over the course of our yearlong
curriculum, these sentence starters are gradually removed as students develop proficiency with the
science disciplinary practice of argument.

3.3 | Using visual aids

3.3.1 | Description of strategy

Visual aids are nonlinguistic modes of representation (e.g., pictures, charts, realia) that assist ELs in
comprehending or producing language. For example, teachers may provide illustrative pictures to ac-
company a reading passage or allow students to express their understanding through drawing instead
of written language (Echevarría, Vogt, & Short, 2012). The rationale for using visual aids is that ELs
will be able to participate more fully in content area instruction with the support of nonlinguistic
modes than through language alone.

3.3.2 | Tensions with strategy

Using visual aids presents tensions from both content and language perspectives. From a content
perspective (knowledge-in-use), graphs, charts, tables, maps, and models are not just scaffolds to-
ward language; they are essential meaning-making resources of disciplinary communities (Lemke,
1998). However, visual aids posit nonlinguistic modes as useful only until ELs develop proficiency
with more privileged linguistic modalities. From a language perspective (language-in-use), treating
visuals narrowly as supports fails to recognize the multiple semiotic systems implicated in any com-
municative act (Canagarajah, 2018; van Lier, 2004). Rather than being simply compensatory, the
visual mode offers distinct affordances, or meaning-making potentials, that differ from those of the
linguistic mode in ways consequential for communication (Bezemer & Kress, 2008). For example, a
drawing can show spatial relations among entities that would otherwise be glossed over by a written
explanation (Kress, 2000).
3.3.3 | Adaptations to strategy

In our curriculum development work, we have addressed these tensions by adapting when and how visuals are used in instruction. Rather than using visuals as temporary scaffolds for ELs, teachers engage all students in multimodal science practices over the course of instruction. For example, in the garbage unit, students develop and iteratively revise models (i.e., a science disciplinary practice) using drawings and symbols (i.e., visual mode) and written language (i.e., linguistic mode) to communicate their understanding of how the smell of garbage travels across the room. Although using visuals to develop their models may be particularly beneficial to ELs, all students, regardless of English proficiency, use multiple modes to engage in this science practice just as scientists and engineers do in their work. When visuals are viewed as central to engaging in disciplinary practices and thus sustained over the course of instruction with all students, teachers turn a deficit view of ELs as requiring remediation (i.e., visuals as aids) into an asset view that recognizes the wealth of meaning-making resources these students bring to the task of “doing” science (Grapin, 2019; Grapin & Llosa, 2020).

As teachers engage students in multimodal science practices, they leverage the unique affordances of modes to elicit different aspects of students’ science ideas. In the garbage unit, students’ models of smell in visual and linguistic modes make visible different aspects of their emerging understanding. Whereas the linguistic mode foregrounds the cause–effect relationship between gas particles and the ability to detect a smell (e.g., “Gas particles going in different directions cause me to smell the garbage”), the visual mode foregrounds the relative position of gas particles, represented in students’ models as more concentrated closer to the food source and increasingly spread out as the particles move freely across the room. Thus, the visual mode is not just an illustrative support to the written; it communicates a key aspect of the science idea (i.e., diffusion of gas particles) that would otherwise be obscured by a focus on the linguistic mode alone. By valuing modes based their affordances (i.e., visuals as indicating spatial relations) beyond their compensatory function (i.e., visuals as aids), teachers expand the range of disciplinary meanings that all students, including ELs, communicate in the science classroom.

4 | DISCUSSION

In this section, we highlight several key points about these adapted instructional strategies for teachers working with ELs in content classrooms. First, given the demands of teaching the latest standards, there is a practical benefit to adapting strategies that teachers are familiar with and use regularly in their classrooms. Rather than “throw away the playbook” and abandon strategies they have found effective, teachers can adapt these strategies and build on them to deliver instruction that is more theoretically sound. As noted earlier, these strategies are neither “good” nor “bad” in the abstract, but it is when and how they are used that is most consequential. For example, visuals can indeed be beneficial to ELs, as the traditional strategy of using visual aids suggests. However, by reducing visuals to “what ELs do” until these students develop English proficiency, this strategy overlooks the significance of nonlinguistic modes of representation (e.g., models) for all students in content areas such as science. By recognizing visuals as both beneficial to ELs and essential to engaging in disciplinary practices for all students, teachers can bring this strategy more in line with contemporary perspectives.

Second, adaptations to instructional strategies will need to consider ELs’ levels of English proficiency. For example, even though providing sentence frames and starters too early in instruction has potential drawbacks, this scaffold may still be necessary for ELs at the beginning levels of English proficiency, who would otherwise struggle to participate meaningfully in writings or discussions. As
these students develop English proficiency, teachers may be able to remove the sentence frames and starters and elicit more open-ended responses. Thus, although contemporary theoretical perspectives offer broad guidelines for informing classroom instruction, teachers will need to apply these guidelines contingently in ways that account for ELs’ diverse strengths and needs across settings.

Third, specific adaptations to instructional strategies will likely vary across content areas and grade levels. This is because disciplinary practices, as articulated in the latest standards, differ in terms of their norms and developmental progressions (Lee, 2017). For example, although argument is emphasized in both English language arts and science standards, what “counts” as argument (i.e., disciplinary norms) is different in each of these content areas. Additionally, when argument is expected of students (i.e., developmental progressions) is different between English language arts and science as well as within each of these content areas. Thus, a sentence starter to support ELs’ engagement in argument writing may need to be constructed differently in English language arts versus science and in elementary school versus middle school. For language teachers who work with ELs across multiple content areas and/or grade levels, the content- and grade-specific nature of these adaptations could present challenges. For this reason, collaboration between language educators and content educators is essential (NASEM, 2018).

Finally, adaptations to instructional strategies will have their greatest impact if they are integrated as part of a coherent curriculum. As Walqui and Bunch (2019) describe, “Effectively educating English learners . . . must go beyond the implementation of discrete instructional ‘strategies,’ no matter how compelling those individual strategies are” (p. 3). Specifically, they argue that instructional strategies must be conceptualized in view of “the fundamental goals of instruction and how those goals are to be manifested through the organization of learning activities, lessons, and units” (p. 3). The importance of taking a broader view of strategies is evident in several of the examples described above. For example, deciding when in instruction to introduce a vocabulary term requires consideration of what learning experiences lead up to the introduction of the term and how the term will subsequently be used in instruction. Because such decisions go beyond the scope of any single lesson or moment in a lesson, adaptations to instructional strategies need to be carefully considered from the outset of designing curriculum.

5 | CONCLUSION

The adapted strategies provide a useful starting point for teachers to enact shifts in their instruction aligned to the latest standards. However, if these adapted strategies are to result in sustained and meaningful change, teachers must also become familiar with the theories underlying them. Without this theoretical foundation, any shifts in teachers’ instruction are liable to remain at the superficial level, and shiny new strategies (Hattie, 2009) will inevitably emerge and risk being uncritically adopted without consideration of whether they are consonant (or not) with the underlying theories. What is needed, and what we have attempted in this article, is to engage teachers in discussions about contemporary perspectives, how they are different from traditional thinking, and the associated pedagogical implications of these shifts. In this way, teachers can develop a repertoire of instructional strategies along with the theoretical underpinnings of those strategies to be able to deploy them in informed ways. At a larger scale, the adapted strategies could provide the impetus to begin reimagining widely adopted classroom approaches with ELs in the content areas (e.g., SIOP, GLAD, SDAIE), most of which were developed based on the previous generation of content standards. By going beyond a menu of strategies to more in-depth discussion of the theoretical basis for using strategies for particular purposes and in particular ways, researchers and teachers together can realize the “valuable transformative opportunity” (Kibler et al., 2015, p. 10) presented by the latest standards for ELs.
6 | THE AUTHORS

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