Contents

Language and Literacy

Instruction fosters ELLs' autonomy by equipping them with the strategies necessary to comprehend and use language in a variety of academic settings.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

ELLs must learn to use a broad repertoire of strategies to construct meaning from academic talk and complex text, to participate in academic discussions, and to express themselves in writing across a variety of academic situations. Tasks must be designed to ultimately foster student independence.

ELD instruction should explicitly teach forms of English (e.g., vocabulary, syntax, morphology, functions, and conventions).
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

Language forms refer to standard, formal aspects of a language— words, sentence constructions, and generally what is considered to be "correct" or "grammatical" usage, such as subject-verb agreement, possessives, the order of adjectives and the nouns they modify, and so on. The essential body of evidence on teaching language forms explicitly comes from studies in primarily college and adult-level foreign-language contexts, where explicit instruction consistently produced stronger results than implicit instruction. Here, explicit instruction means either (a) instructors explain a language element (a rule or a form) to students and then provide opportunities for them to study or practice the element with many examples, or (b) instructors engage students in tasks containing many examples of a particular form or rule and then direct students' attention to the language element so that students arrive at the rule by themselves or with the teacher's guidance. Explicit instruction included both approaches to studying features of the second language. Instructional treatments were classified as implicit in cases where instructors did not present or explain the language element and did not direct students' attention to the language form. On average, explicit instructional approaches were more than twice as effective as implicit approaches.

Provide Explicit Instruction in Literacy Components
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Research focused on developing literacy in ELs builds on literacy research conducted with English-proficient students. This research indicates that it is helpful to teach young children explicitly to hear the individual English sounds or phonemes within words (phonemic awareness); to use the letters and spelling patterns within words to decode the words' pronunciations (phonics); to read text aloud with appropriate speed, accuracy, and expression (oral reading fluency); to know the meanings of words and affixes (vocabulary); to think about what they are reading (reading comprehension); and to write with the organization, development, substance, and style appropriate to the task and audience.

A review of effective literacy instruction for ELs found 12 studies published between 1997 and 2002 (see Shanahan and Beck, 2006, pp. 421- 423, for a table of these studies) indicating that the general pattern found with English-proficient students appears to hold for ELs. Explicit classroom instruction focused on developing key aspects of literacy—phonemic awareness, phonics, oral reading fluency, and reading vocabulary—provides clear learning benefits for elementary school-aged ELs. More recent studies report similar findings (e.g., Llosa et al., 2016; Tong et al., 2014). However, because ELs are developing language proficiency while they are acquiring content area knowledge in a second language, research indicates that there are important considerations to keep in mind regarding instruction, as described below.

Provide Regular Structured Opportunities to Develop Written Language Skills; Develop Reading and Writing Abilities of ELs Through Text-Based, Analytical Instruction Using a Cognitive Strategies Approach; and Provide Direct and Explicit Comprehension Strategy Instruction
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

The Pathways Project provides excellent examples of instructional efforts to develop reading and writing abilities and skills through text-based instruction. Descriptions of such lessons are reported in papers by researchers who have studied the project's effects on student learning in the Santa Ana School District in California (Kim et al., 2011; Matuchniak et al., 2014). The Pathways Project has tackled the problems many ELs experience in reading and writing in a language in which they are not yet fully proficient.

The approach taken by the Pathways Project to improve literacy skills for ELs was characterized as a "cognitive strategies approach," in which teachers received sustained professional development and coaching in working with ELs in mainstream (integrated) classrooms. Teachers learned techniques for teaching students the thinking tools and cognitive strategies that experienced readers and writers use to understand and interpret the texts they read or to compose and express their thoughts and ideas in writing.

Teachers helped students learn strategies for reading with greater understanding and engaging in higher-level thinking as they did so through direct instruction and modeling by their teachers (Kim et al., 2011; Matuchniak et al., 2014, p. 980). Students learned to apply these strategies during reading and writing activities and to practice their use in collaborative groups and independently over time. The project forcefully demonstrated that after 2 years of such instructional support, the ELs in this study had internalized these strategies and could apply them in the reading and writing they had to do in school (Matuchniak et al., 2014). The project has now entered an expansion phase that involves training middle and high school teachers from four Southern California school districts.

Provide Regular, Structured Opportunities to Develop Written Language Skills.
IES Practice Guide: Teaching academic content and literacy to English learners in elementary and middle school. Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. 2014.

A key expectation of the Common Core State Standards is that all students, starting as early as first grade, will engage in analytical writing activities, during which they will learn to support their opinions, arguments, and claims with evidence from texts. In response to these Standards, all students, including English learners, will be assigned challenging writing assignments, ranging from short writing prompts extending over a day or two, to long-term writing projects extending over many days, for a variety of tasks, purposes, and audiences. Note that the Standards ask that teachers move away from primarily assigning writing projects that rely largely on students' personal reflections and responses. Personal writing, at best, captures only what a student already knows and is thus less likely to prepare students for writing that requires analysis or interpretation—the type of writing that leads to academic success in high school and college.

As they move up through the grades, English learners increasingly need to respond to informational texts through writing and, in doing so, generate well-organized essays that are progressively longer and more complex. The purpose of this recommendation is to provide concrete guidance on how to accomplish this goal for English learners.

Summary of evidence: Minimal Two studies met WWC standards and contribute to the evidence for this recommendation. One study examined the impact of a professional development intervention in text-based analytical writing on English learners' written language ability and found positive, statistically significant effects. The second study also examined impacts in the writing domain; however, in this study, instruction in writing was only one aspect of a complex intervention focused on academic vocabulary. For this study, the impacts in the writing domain were non-discernible. The panel assigned a *minimal evidence* rating to this recommendation because of this inconsistent pattern of findings. The recommendation is based largely on the panel's expertise.

How to Carry Out the Recommendation

- Provide writing assignments that are anchored in content and focused on developing academic language as well as writing skills.
- For all writing assignments, provide language-based supports to facilitate students' entry into, and continued development of, writing.
- Use small groups or pairs to provide opportunities for students to work and talk together on varied aspects of writing.
- Assess students' writing periodically to identify instructional needs and provide positive, constructive feedback in response.

Progress Monitoring and Intervention

Screen for Language and Literacy Challenges and Monitor Progress
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Findings from numerous studies cited in previous reviews of promising and effective instructional practices for ELs (Baker et al., 2014; Gersten et al., 2007) suggest that "districts establish procedures for and provide training for schools to screen ELs for reading problems; consider collecting progress monitoring data more than three times a year for ELs at risk of reading problems; and use data from screening and progress monitoring assessments to make decisions about the instructional support ELs need to learn to read" (Gersten et al., 2007, p. 5). Further, these studies suggest "using currently available measures, such as standardized tests, district benchmark tests, or English language assessments to screen and identify students in need of additional instructional support" (Baker et al., 2014, p. 60).

The studies specify the types of assessments that are useful at different grade spans for determining whether ELs are in need of additional instructional support. For kindergarten and 1st grade, measures include those that assess phonological awareness, familiarity with the alphabet and alphabetic principle, ability to read single words, and knowledge of basic phonics rules. For children at the end of 1st grade and in the next few grades, assessments include those that measure reading connected texts accurately and fluently. For students in grades 2-5, oral reading fluency measures are valid screening measures.

Two other recommendations are that districts with performance benchmarks use the same standards for ELs and English-proficient students in the early grades, but make adjustments in instruction when EL progress is not sufficient, and that teachers be trained to use formative data to guide instruction (Gersten et al., 2007, pp. 6-7). With regard to formative data, Black and Wiliam (1998) suggest that students' writing samples be used on an ongoing basis to determine areas for improvement. Students' writing samples are excellent sources for formative assessment because they shed light on language challenges that are common to all children, as well as on challenges and opportunities related to primary language influence on English (Kim et al., 2011).

Provide Small-Group Support in Literacy and English Language Development for English Learners Who Need Additional Support
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Many of the studies of ELs in grades 1-5 support the use of small-group academic support for ELs who require more time to develop prereading and reading skills, as well as in other areas of literacy and language development (e.g. Burns, 2011; Denton et al., 2004; Gunn et al., 2002; Nelson et al., 2011; Ransford-Kaldon et al., 2010; Solari and Gerber, 2008; Vaughn et al., 2006a, 2006b). Recommendations related to these studies (Gersten et al., 2007, pp. 10-11) call for ensuring the programs are implemented for at least 30 minutes in small homogeneous groups

and providing training and ongoing support for teachers, interventionists, and other school personnel on how to deliver small group instruction effectively, as well how to use effective teaching techniques that can be used outside of small group instruction. An additional important recommendation related to the studies (Baker et al., 2014) is that additional supports address language and literacy skills, such as vocabulary, listening, and reading comprehension.

Provide Small-Group Instructional Support for Students Struggling with Literacy and English Language Development
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Among high school students classified as ELs are those whose struggles with language and literacy require instructional support beyond what teachers can ordinarily provide in the regular classroom. These students include newcomers with little prior formal education or disrupted educational experiences and LTELs who have been instructed inappropriately in previous grades. The educational needs of these two types of ELs are quite different, however.

For newcomers, the greatest need for instructional support, especially in high schools where support for students' L1 is not available, is intensive ESL. At Newcomer Academy at the Boston International High School, newcomers receive high-intensity courses in English for 2 years or a sheltered English immersion program, which is designed to give them access to academic content along with the development of English skills. Newcomers who have had interrupted formal education or limited prior schooling receive skill-building courses in their native language to prepare them for the intensive language training program.

On the other hand, LTELs who are struggling in school because of literacy problems tend to be quite proficient in spoken English but much less so in the academic English in which texts are written. Some of these students may even have fairly good decoding skills in reading but be unable to make much sense of the materials they read. As a result, their academic progress is hampered, and they may believe that they lack the ability to perform well in school. These students have varied needs, but what they do not need is more ESL or remedial reading courses, where they are provided more of what they have often been receiving for years (Olsen, 2014). Instead, what LTELs need is rigorous, intensive, and relevant support in small groups, supported by teachers who can offer the kind of attention they need to discover how language works in texts. They need to learn to use strategies such as those used in the Pathway Project.

Provide Small-Group Instructional Intervention to Students Struggling in Areas of Literacy and English Language Development
IES Practice Guide: Teaching academic content and literacy to English learners in elementary and middle school. Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. 2014.

Some students require instructional support in various aspects of literacy and/or English language development above and beyond what typical classroom instruction provides. In the

past decade, most school districts have implemented some form of a Response to Intervention (RtI) model to provide such services to students. The panel recommends using these and other types of systems, which emphasize providing small-group instructional interventions for early intervention and support with English learners, because evidence suggests that such interventions are often beneficial to English learners. Depending on the identified needs of students, these interventions can include instruction on not only phonemic awareness and decoding skills but also listening and reading comprehension (especially when involving inferential questions), as well as on sophisticated writing and speaking skills. Not all currently used interventions in literacy (especially for primary grade students) include adequate attention to these areas, and thus they may need to be augmented for English learners.

RtI systems make the implicit assumption that before providing struggling students with supplemental instructional opportunities in small groups based on their needs (i.e., Tier 2 interventions), schools must provide all students with a solid, core classroom instructional program (i.e., a Tier 1 system). The first three recommendations in this guide provide guidelines for enhancing the core instructional program to ensure that it is appropriate for English learners. In addition, in the primary grades, this core classroom instruction needs to incorporate what we know about effective early reading instruction for all students, including explicit and systematic attention to foundational reading skills (i.e., phonological awareness, phonics, and fluency). Effective core (or Tier 1) instruction is important for reducing the number of students who are identified for supplemental instructional opportunities (or Tier 2 interventions), and to ensure that this supplemental instruction is prioritized for those students who continue to struggle after having received appropriate opportunities to learn language and literacy skills.

In this recommendation, the panel suggests ways to provide high-quality instructional interventions in literacy and language to small groups of students who are struggling in these areas. This instruction, provided on a daily basis, should be teacher-directed, with ample scaffolds to make learning easier and plenty of opportunities to practice what is being learned.

Summary of Evidence: Moderate. Six studies that met WWC standards provide evidence for this recommendation and for all but one of the suggested *How-to* steps. The interventions tested in these studies focused not only on foundational reading skills but also on vocabulary, listening comprehension, and/or reading comprehension. These six studies resulted in impacts across the domains of pre-reading, reading, vocabulary, and English language development. Across the set of studies, five of the fourteen domain effect sizes were positive, and nine were non-discernible. Given these inconsistent findings, the panel decided on a *moderate evidence* rating for the recommendation.

How to Carry Out the Recommendation

- Use available assessment information to identify students who demonstrate persistent struggles with aspects of language and literacy development.
- Design the content of small-group instruction to target students' identified needs.
- Provide additional instruction in small groups consisting of three to five students to students struggling with language and literacy.

- For students who struggle with basic foundational reading skills, spend time not only on these skills but also on vocabulary development and listening and reading comprehension strategies.

Academic Language and Register

Develop Academic Language During Content Area Instruction
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Academic language is the language used in school, in written communications, in public presentations, and in formal settings (Snow and Uccelli, 2009). Bailey (2007, pp. 10-11) defines being academically proficient as "knowing and being able to use general and academic vocabulary, specialized or complex grammatical structures, and multifarious language functions and discourse structures—all for the purpose of acquiring new knowledge and skills, interacting about a topic, imparting information to others." A series of experimental studies developed academic language in the context of teaching content (e.g., Brown et al., 2010; Carlo et al., 2004; Llosa et al., 2016; Ryoo, 2009; Silverman and Hines, 2009; Tong et al., 2014). The majority of these studies developed language during science instruction; one did so during language arts instruction. All the studies used multifaceted instructional approaches that combined professional development for teachers with enhanced instructional routines that focused concurrently on teaching content and the associated academic language.

In one study (Tong et al., 2014), implemented with 5th-grade Hispanic ELs, the instructional approach consisted of ongoing professional development for teachers and paraprofessionals, an academic science approach that used the 5-E model of science instruction (Engage, Explore, Explain, Elaborate, and Evaluate), and the infusion of reading and writing activities into instruction (e.g., leveled questions using such verbs as "identify," "describe," "explain," and "analyze" to help ELs understand text). A second study (Llosa et al., 2016), implemented with 5th-grade ELs from a variety of first language (L1) backgrounds, also included teacher and student components. Teacher components comprised a teacher guide and professional development workshops, while student components consisted of a stand-alone, year-long, 5th-grade curriculum aligned with state science standards and using an inquiry-based approach. Language development included providing opportunities for students to discuss science in small and whole groups and engage in language development activities posted on a project website.

Teach a Set of Academic Vocabulary Words Intensively Across Several Days Using a Variety of Instructional Activities
IES Practice Guide: Teaching academic content and literacy to English learners in elementary and middle school. Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. 2014.

Many English learners lack opportunities to develop the sophisticated, abstract, academic vocabulary necessary to support reading, writing, and discussion of the academic topics covered in school. This can, and frequently does, lead to struggles with complex texts that are loaded with abstract content and academic vocabulary. The Common Core State Standards for English Language Arts require that students acquire grade-appropriate general academic and domain-specific vocabulary, and use these words accurately. This provides a window of

opportunity for English learners and their teachers because building academic vocabulary is now a key part of the core curriculum in most states.

Summary of evidence: Strong Six studies met WWC standards and found positive effects across a variety of outcomes from the vocabulary, English language, and reading domains. Three of these six studies directly tested the practice articulated in this recommendation and found that it is beneficial to provide intensive instruction on a few select words across several days using a variety of instructional activities. The remaining three studies provide evidence for some of the instructional practices described in this recommendation. As the panel has a high degree of confidence in the effectiveness of the practice described in this recommendation, and as there is no contradictory negative evidence, the panel has assigned a *strong evidence* rating for this recommendation.

How to Carry Out the Recommendation

- Choose a brief, engaging piece of informational text that includes academic vocabulary as a platform for intensive academic vocabulary instruction.
- Choose a small set of academic vocabulary for in-depth instruction.
- Teach academic vocabulary in depth using multiple modalities (writing, speaking, listening).
- Teach word-learning strategies to help students independently figure out the meaning of words.

Develop academic English
IES Practice Guide: Effective Literacy and English Language Instruction for English Learners in the Elementary Grades. Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. 2007.

Ensure that the development of formal or academic English is a key instructional goal for English learners, beginning in the primary grades. Provide curricula and supplemental curricula to accompany core reading and mathematics series to support this goal. Accompany with relevant training and professional development.

Level of evidence: Low (primarily expert opinion) Because there is little empirical research on the topic and primarily just expert opinion, the level of evidence is low. Two studies reviewed by the What Works Clearinghouse demonstrate that focused interventions in two relatively narrow areas of academic English (quality of oral narrative and syntax) are potentially effective. That is, evidence suggests that they lead to better outcomes in highly specific areas of formal, academic English. But because the studies address very selective aspects of academic English and only indirectly address classroom instruction, we cannot conclude that the studies affirm the effectiveness of instruction of academic English at this time.

Brief summary of evidence to support this recommendation: Despite the paucity of experimental research, the strong consensus of expert opinion is that English learners require considerable explicit and deliberate instruction to learn the features of the type of formal English used in the schools and in academic discourse. This consensus applies to the importance of teaching academic English from the earliest grades.

How to carry out the recommendation:

- Adopt a plan that focuses on ways and means to help teachers understand that instruction to English learners must include time devoted to development of academic English. Daily academic English instruction should also be integrated into the core curriculum.
- Teach academic English in the earliest grades.
- Provide teachers with appropriate professional development to help them learn how to teach academic English.
- Consider asking teachers to devote a specific block (or blocks) of time each day to building English learners' academic English.

Academic Language Seems To Be Important in EL Instruction
Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature. U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service. 2012.

Many experts have argued or found evidence for a conceptually distinct linguistic register that is specific to the school setting (Cummins 1979a; Cummins 1980; Belcher 2006; Scarcella 2003a; Bailey 2007). This register, most commonly referred to as academic language, academic English or academic English language, is distinct enough from social language that ELs may need special instruction to ensure that they acquire it. Preliminary descriptive research suggests that, like their non-EL counterparts, English learners must be proficient in this kind of language in order to meet grade-level standards in content areas and on assessments (Bailey, Butler, and Sato 2007; Bailey, Butler, Stevens et al. 2007; Stevens, Butler and Castellon-Wellington 2000; Butler and Castellon-Wellington 2000).

ELD instruction should emphasize academic language as well as conversational language.
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

Nearly two decades ago, a pair of researchers provided a succinct definition of academic language: "the language that is used by teachers and students for the purposes of acquiring new knowledge and skills ... imparting new information, describing abstract ideas, and developing students' conceptual understanding." Expanding on this definition, we think *academic language* refers to the specialized vocabulary, grammar, discourse/textual, and functional skills associated with academic instruction and mastery of academic material and tasks. In the simplest terms, *academic language* is the language that is needed in academic situations such as those students encounter during classroom instruction or reading texts. These would obviously refer to academic texts but also include many newspaper and magazine

articles or other nonfiction that the Common Core State Standards call for, which are information-dense and presume certain background knowledge as well as familiarity with key vocabulary and sentence structures.

It is widely believed that successful performance in school requires proficiency in academic language and that a major objective of education for both majority- and minority-language students is teaching the academic language skills they need to master the diverse subjects that make up the curriculum. For example, a group of researchers found that performance on highly decontextualized tasks, such as providing a formal definition of words, predicted academic performance, whereas performance on highly contextualized tasks, such as face-to-face communication, did not.

Definitions of academic language often contrast it with language used in everyday social situations. The first researcher to propose a distinction between basic communication and academic language, for example, characterized academic language as decontextualized and cognitively demanding, whereas social language tends to be more contextualized and less cognitively demanding. As a result, academic language tends to draw on more-specialized technical vocabulary, to use more-complex grammatical constructions, and to be more precise in its intended meaning. Others have highlighted the nature of the vocabulary that characterizes academic versus everyday language use: academic language tends to use less-common, more-technical, and highly specialized vocabulary in contrast to that which is used in everyday conversations.

The premise that ELD instruction should focus on both social, interpersonal language and academic language is not controversial. ELs require both kinds of proficiency. That there should be greater emphasis on academic language within ELD instruction, however, is a more recent hypothesis. Although there is, as yet, virtually no research that has examined empirically the effects of instruction focused specifically on academic language, the hypothesis emerges from at least two interrelated findings. First, studies consistently find that ELs require from five to seven years to achieve native-like proficiency in oral language and literacy. Since academic language probably plays an increasingly important role in defining what actually constitutes language proficiency as students go up the grade levels, it is reasonable to hypothesize that a focus on academic language might help students attain advanced language proficiency more quickly. The second finding is that the rate at which students acquire proficiency tends to slow or even plateau as they move to higher levels of proficiency. Since higher levels of proficiency tend to be characterized by more-academic uses of language, it is reasonable to hypothesize that a greater focus on academic language, especially at the middle and upper levels of proficiency, might minimize that plateauing effect.

Grade-level and Disciplinary Content and Language

Instruction focuses on providing ELLs with opportunities to engage in discipline-specific practices which are designed to build conceptual understanding and language competence in tandem.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

Learning is a social process that requires teachers to intentionally design learning opportunities that integrate reading, writing, speaking, and listening with the practices of each discipline.

Standards-aligned instruction for ELLs is rigorous, grade-level appropriate, and provides deliberate and appropriate scaffolds.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

Instruction that is rigorous and standards-aligned reflects the key shifts in the CCSS and NGSS. Such shifts require that teachers provide students with opportunities to describe their reasoning, share explanations, make conjectures, justify conclusions, argue from evidence, and negotiate meaning from complex texts. Students with developing levels of English proficiency will require instruction that carefully supports their understanding and use of emerging language as they participate in these activities.

Provide ELs Access to Grade-Level Core Course Content
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

For ELs, exposure to grade-level core course content and literacy development provides necessary and crucial access to the forms of language required for academic achievement, and indeed for attaining full proficiency in English (Fillmore, 2014). Moreover, such exposure develops in ELs the concepts and skills needed to continue to master grade-level coursework. Providing middle school ELs with materials at the same grade level as that of materials provided to their peers is important to enable them to meet the requirements for deep understanding, interpretation, and reflection on academic texts in English, as long as such instruction is coupled with evidence-based methods that support ELs in comprehending the core content. Grade-level coursework also helps ensure that students perceive such materials as worth working on, as engaging and meaningful to them (Skinner and Pitzer, 2012). Not surprisingly, engagement in reading (Guthrie, 2004), as Cummins (2011) argues, is an important factor in both language and literacy development. The texts ELs are provided within school, however, may be several years below the level appropriate for their grade (Walqui et al., 2010, pp. 52-53).

In all the studies cited above, ELs were given access to core course content. The interventions were aligned with state grade-level standards, and the support materials, such as textbooks, were grade-level texts. The science experiments conducted in two of the studies (August et al., 2009, 2014) were the same as those required of students across the grade level, including students who were gifted and talented.

Support Comprehension and Writing Related to Core Content
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

When students are not entirely familiar with the academic language teachers use for instruction or the language of the texts they are using, learning grade-level core content is at best effortful. Thus, students require support from teachers, both linguistically and strategically, to make sense of classroom discourse and course materials. As noted above, characteristics shared by intervention studies were the use of visual supports (e.g., graphic organizers, illustrations, multimedia) and language supports (e.g., bilingual glossaries) to help ELs comprehend complex course content and write about the core content. In several studies, students were taught strategies to support learning. In one study (Kim et al., 2011), students were taught strategies to help them write. These strategies were focused at the word, sentence, and connected text levels. At the text level, for example, students distinguished among plot summaries, evidence or supporting details, and commentary through color coding. In a second study (August et al., 2014), students were taught strategies that enabled them to draw on cognate knowledge to comprehend challenging text and summarize text.

Develop Academic English as Part of Subject-Matter Learning
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

For ELs at the secondary level in particular, acquiring the forms and structures of academic English is vital to reading, writing, and engagement in the curricular content (Bailey, 2007; Scarcella, 2003; Schleppegrell, 2001). The language used in texts and other instructional materials across the curriculum is sufficiently different from the spoken language of social discourse to constitute a barrier to understanding and learning for students who have not yet developed academic English as used in content areas (Anstrom et al., 2010; Cummins, 1979; Fillmore and Snow, 2000; Schleppegrell, 2004). Overcoming this barrier requires that teachers intentionally develop ELs' language skills in the context of the curricular subjects they teach (Derewianka and Jones, 2013).

Comparisons of the use of academic language in science or social studies with the use of language in literary narratives reveal how language can vary among disciplines. No one arrives at school already proficient in specialized language, which is learned through meaningful literacy activities. The way one learns such language, whether as a native speaker of English or an EL, is by reading and engaging with materials written in that language, discussing their meaning with others, and attempting to express one's thoughts using the forms and structures one has encountered in those materials. Students who lack the requisite language or literacy skills require structured, coordinated instructional support—scaffolding (Walqui and van Lier, 2010), discussion (Zwiers et al., 2014; Zwiers, 2017, and attention to the way language is used to convey information (Bailey, 2007; Fillmore and Fillmore, 2012; Schleppegrell, 2001).

Studies of high schools provide many examples of academic language and vocabulary instruction, but rarely in isolation from content. The language development framework at Boston's International High School and Newcomer Academy (BINcA), one of the schools studied

by Castellón and colleagues (2015), serves as an example of an instructional endeavor in which ELs received contextualized support for learning academic language. The school provides ESL/ELD classes, but language and literacy goals are aspects of all content courses. Teachers also work together to ensure that such goals are core practices.

Engaging students in STEM disciplinary practices.

English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

As students engage in STEM content learning, they grapple with the language, ideas, concepts, and practices of the discipline, transforming what they learn into different representations or presenting it to a different audience, moving between concrete and abstract knowledge. They communicate their ideas with peers and the teacher and construct disciplinary meaning with the STEM classroom community. Capitalizing on ELs' prior knowledge and interests is an important starting point for linking disciplinary practices and language. For example, research has demonstrated how argumentative discussion is a major feature of social interaction among Haitian adults and how this discourse pattern can be leveraged as a resource for students as they practice argumentation in class.

Integrate Oral and Written English Language Instruction into Content-Area Teaching

IES Practice Guide: Teaching academic content and literacy to English learners in elementary and middle school. Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. 2014.

The adoption of the Common Core State Standards in most states, along with the adoption of more rigorous academic standards in others, has increased expectations for students' oral and written academic communications. Students are expected to read, comprehend, and articulate the meaning of increasingly complex informational texts, write opinion pieces justifying their arguments and conclusions by citing evidence from these texts, and participate in discussions with their peers about issues resulting from their work. New standards pose a unique set of challenges not only for English learners, who are already facing the double demands of building knowledge of a second language while learning complex grade-level content, but also for teachers who must find effective ways to make challenging content comprehensible for students.

The rigors posed by the new standards provide an important window of opportunity for teachers to help English learners build English language skills while learning challenging new content. In this recommendation, the panel provides suggestions for effectively addressing English learners' content and language needs in content-area classes. Specifically, the panel recommends providing structured opportunities for engaging students in academic discussions about the content, using instructional tools strategically to clarify and anchor the content, and teaching explicitly academic vocabulary that is central for understanding the content.

Summary of evidence: Strong Five studies that met WWC standards provide evidence for this recommendation. All five studies resulted in positive impacts on content-area acquisition measures in science or social studies. Two studies essentially investigated the effectiveness of

interventions that provide comprehensive instruction in content-area classes by employing all the practices articulated in this recommendation. The remaining three studies furnish evidence for some of the instructional practices described in this recommendation. Given the overall consistently positive impacts across all five studies and as there are no discernible or contradictory negative effects, the panel has assigned a *strong evidence* rating for this recommendation.

How to Carry Out the Recommendation

- Strategically use instructional tools—such as short videos, visuals, and graphic organizers—to anchor instruction and help students make sense of content.
- Explicitly teach the content-specific academic vocabulary, as well as the general academic vocabulary that supports it, during content-area instruction.
- Provide daily opportunities for students to talk about content in pairs or small groups.
- Provide writing opportunities to extend student learning and understanding of the content material.

High Standards and Challenging Content Are Good for ELs
Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature. U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service. 2012.

Various authors (Henze and Lucas 1993; Collier and Thomas 1997; Minaya-Rowe 2004; August and Pease-Alvarez 1996; Ray 2009) found or argued based on research that ELs benefit from being held to high expectations and challenging content and achievement standards. Callahan (2005), for example, found that the classes into which an EL is placed are a greater predictor of the child's ultimate academic outcomes than linguistic proficiency, suggesting that reducing the rigor or substance of content instruction does not help, and may ultimately hurt, ELs' academic achievement. While it is important that ELs receive instruction that is tailored to their language-based needs, this finding suggests that it is equally important that ELs not be held to lower academic standards as they build their linguistic proficiency. This finding also suggests, in combination with theme 7 ("ELs need instruction that is specifically cognizant of their needs as second-language learners"), that teachers who provide ELs with content instruction should be equally prepared to deliver challenging content instruction and to address ELs' linguistic needs as they do so.

Asset-based Approach

Capitalize on Students' Home Language, Knowledge, and Cultural Assets
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

In studies of schooling, such socioeconomic variables as race/ethnic group, immigration status, parental education level, parental employment status and income, family composition, and marital status of parents are considered if not examined (e.g., National Research Council, 1984). Cultural factors, while mentioned, are seldom examined. Yet in schools that serve as diverse a student population as those in the United States do, a sociocultural perspective on teaching and learning is arguably a necessity (John-Steiner and Mahn, 2012) if the goal is to interpret the relationship between instructional practices and learning outcomes. Analyses of the effectiveness of instructional practices requires, in addition to evidence of learning outcomes, examination of how children respond to those practices.

Children's learning behaviors and responses to instruction, especially in the early years of schooling, are culturally influenced by the socialization practices of the home and family. Ethnographic studies of socialization for learning, for example, have found that learning through observation is promoted in diverse indigenous communities around the world (Barnhardt and Kawagley, 2005; Rogoff, 2003). An experimental study by Silva and colleagues (2010), building on that ethnographic work, found that Mexican heritage children paid close attention to and were able to learn complex tasks just by attending to instructions directed at their siblings, and the practice of learning by keen observation and intent participation documented among indigenous peoples in Mexico is one that appears to carry over in immigrant groups, even after they leave their places of origin. In considering sociocultural influences, it is important to keep in mind that a view of home-school relationships as either match or mismatch is a nuanced one, and that there are practices that are similar in some ways and different in others. Relationships shift over time as the practices in the two domains interact (Rueda et al., 2006: Volk and Acosta, 2001).

Some school districts across the nation have been experimenting with departmentalization, or "platooning," of instruction (see, e.g., Gewertz, 2014; Hood, 2009). This practice appears to be driven by policy changes, increased testing pressures, and spending cuts in education that have placed teachers at risk for burnout and emotional distress, leading ultimately to high teacher turnover rates in many districts. The argument for departmentalization in elementary schools is that teachers can be specialists in such subjects as math or science instead of having to meet the full gamut of student needs. In addition, departmentalization could help alleviate the shortage of teachers who are able to speak the home languages of ELs. One teacher could provide subject matter instruction in a language such as Spanish or Haitian Creole for five or six groups of students each day.

Elementary school teachers of self-contained classes are, by definition, generalists—they cover all or most academic subjects for their students for a school year. The most compelling argument for this traditional arrangement derives from the "whole child" movement, in which

the child is the focus of education rather than curricular subjects, and the school itself is viewed as an ecological system in which students learn more than is taught (Eisner, 2005). Students also are influenced by their close and stable relationships with teachers and classmates, and teachers are able to know their students' needs and issues. For ELs, some departmentalization is inevitable. Instruction in English as a second language (ESL)/English language development (ELD) is usually provided by specialists, and whether they push in to classes or students are pulled out of their regular classes for instruction, ELs are taught these subjects by a teacher different from their principal teacher. At present, little research is available on the effects of these different instructional arrangements on ELs.

With this complexity in mind, the experimental studies reviewed (e.g., Carlo et al., 2004; Liang et al., 2005; Llosa et al., 2016, Saunders and Goldenberg, 1999) suggest that instructional routines that draw on students' home language, knowledge, and cultural assets support literacy development in English. Examples of the instructional routines in these studies include previewing and reviewing material in children's L1, storybook reading in students' L1 (Liang et al., 2005), providing opportunities for students to engage in conversational exchanges during instruction that permit some interpretation to take place in the L1 (Saunders and Goldenberg, 1999), providing L1 definitions for the targeted vocabulary (Carlo et al., 2004; Llosa et al., 2016), providing instruction in word-learning strategies that help ELs uncover the meanings of cognates when encountered in English texts (Carlo et al., 2004), and introducing key concepts by connecting them with children's prior knowledge or experiences in the home and community contexts (Llosa et al., 2016).

Findings from correlational and evaluation studies also provide support for these methods. Studies on cross-language transfer (Dressler and Kamil, 2006) indicate significant relationships between performance in ELs' L1 and L2 in word reading, spelling, vocabulary, comprehension, and reading strategies. Findings from evaluation studies comparing bilingual programs with mostly English-only programs (see Chapter 7) indicate that ELs instructed bilingually either perform on par with or outperform ELs instructed only in English over time.

ELs Need Instruction That Is Specifically Cognizant of Their Needs as Second-Language Learners

Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature. U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service. 2012.

In addition to using high-quality general instructional practices, teachers may serve ELs better if they understand and adopt instructional practices that are cognizant of these students' specific needs (Goldenberg 2008). Preliminary research on such practices suggests benefits for ELs, as well as increased confidence and competency for teachers (Aguirre-Munoz et al. 2001; Echevarria, Powers, and Short 2006; Linan-Thompson et al. 2003; Vaughn et al. 2006; Young 1996). While some studies have found that general instructional practices show promise for improving outcomes for all students, ELs and non-ELs alike (D'Angiulli, Siegel, and Maggi 2004; Lee et al. 2008; Williams, Hakuta, and Haertel 2007), these practices, while promising, do not pledge to close the existing gaps between ELs and their English-speaking peers. At least one

study also found that the effects of such "high-quality practices" may be smaller for ELs than for non-ELs (O'Day 2009).

Instruction leverages ELLs' home language(s), cultural assets, and prior knowledge.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

ELLs' home language(s) and culture(s) are regarded as assets and are used by the teacher in bridging prior knowledge to new knowledge, and in making content meaningful and comprehensible.

Instruction moves ELLs forward by taking into account their English proficiency level(s) and prior schooling experiences.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

ELLs within a single classroom can be heterogeneous in terms of home language(s) proficiency, proficiency in English, literacy levels in English and student's home language(s), previous experiences in schools, and time in the U.S. Teachers must be attentive to these differences and design instruction accordingly.

English learners should be carefully grouped by language proficiency for ELD instruction, but they should not be segregated by language proficiency throughout the rest of the day.
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

Should ELs be grouped with other ELs or kept with English speakers? If grouped with other ELs, should they be with others at similar language levels, or should they be in mixed language-level groups? If they are grouped with others at similar language levels, for what purposes and for how much of the school day? We know of no research that answers these questions directly. However, many studies have examined the pros and cons of different types of grouping arrangements in other content areas, primarily reading and mathematics. This research suggests the following:

a. Keeping students of different achievement/ability levels in entirely separate (homogeneous) classes for the entire school day (and throughout the school year) leads to depressed achievement among lower-achieving students with little to no benefit for average and higher-achieving students. A possible exception is extremely high-achieving students (sometimes referred to as "gifted"), whose achievement can be significantly enhanced in homogeneous classes with other extremely high-achieving students. We have found no studies that have looked at grouping practices for extremely high-achieving English learners.

b. Students in mixed (heterogeneous) classrooms can be productively grouped by achievement level for instruction in specific subjects (e.g., math or reading). Groups can be formed with students in the same classroom or students in different classrooms (the latter is sometimes called the "Joplin plan"). In contrast to keeping students in homogeneous classes throughout the day, grouping students by achievement level in certain subjects will result in enhanced achievement at all ability levels if (1) instruction

is tailored to students' instructional levels, and (2) students are frequently assessed and regrouped as needed to maintain an optimal match with their instructional needs (that is, students are taught what they need to know to make continual progress).

To the extent that second-language learning is analogous to learning in other curriculum areas, findings from the ability-grouping literature serve as a useful starting place to make decisions about how to group ELs. These findings suggest that English learners should not be segregated into classrooms consisting of only ELs, much less into classrooms consisting of all low-achieving ELs. Instead, English learners should be in mixed-ability classrooms and then grouped by English language proficiency specifically for ELD instruction. Moreover, they should be regularly assessed to monitor their progress and to make certain that instruction and group placement are well suited to their language learning needs. Presumably, as ELs attain proficiency in English, they can and should receive increasing amounts of instruction with students who are already proficient in English.

Use of English during ELD instruction should be maximized; the primary language should be used strategically.
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

This guideline does not negate the fact that many studies have shown the advantages of maintenance and development of English learners' home languages, in particular the benefit to English literacy of teaching ELs literacy skills in their primary language (see "Unlocking the Research on English Learners," which begins on page 4 of this issue). We do not know with certainty, however, the impact that use of the primary language during ELD instruction will have on oral English language acquisition. In general, the evidence suggests that students' language choices tend to align with the dominant language of instruction. For example, one study investigated the language choices of Spanish-speaking ELs in bilingual preschool classes. In classes where teachers tended to use more English for instruction, ELs tended to use more English with their peers. In classes where teachers tended to use more Spanish, learners tended to use more Spanish. A follow-up study reported language-use data for first-grade Mexican American ELs, half of whom were enrolled in "English" classes, and half of whom were enrolled in Spanish bilingual classes. In the English classes, ELs used English during peer interactions most of the time. English learners in the bilingual classes used Spanish most of the time. Among second-grade English learners in Spanish bilingual programs where at least most instruction was delivered in Spanish, two studies[75] found that ELs were more likely to use Spanish during peer interactions. One of these studies[76] found students using Spanish over English by a ratio of 6 to 1. Finally, among fourth grade English learners who had participated in Spanish bilingual classrooms through grade 3 and were then placed in an "English-only" class, a study found a substantial increase from the beginning to the end of the year in students' use of English in their classroom interactions (53 percent to 83 percent).

Based on these studies, we conclude the following: If a practical goal of ELD instruction is increased use of English, that goal will be served best by instruction delivered and tasks carried out primarily in English. However, we can imagine using the primary language in a limited but strategic manner

during ELD instruction to ensure that students understand task directions, pay attention to cognates, and master language learning and metacognitive strategies.

Leveraging multiple meaning-making resources.
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

By the time ELs come to school, they already possess a range of knowledge, values, and ways of looking at the world that have developed during their socialization into their families and communities that could be leveraged to support STEM learning. For example, everyday language, ways of talking, and out-of-school experiences are all resources students use as they participate in STEM-based discussions.

Peer-assisted Learning and Collaboration

Encourage Peer-Assisted Learning Opportunities
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Studies conducted with elementary school-aged ELs (e.g. Calderòn et al., 1998; Calhoun et al., 2007; McMaster et al., 2008; Ryoo, 2009; Sàenz et al., 2005) that were effective in developing their literacy implemented peer-assisted learning in pairs or cooperative groups of four to six students. For example, Peer Assisted Learning Strategies (PALS) was implemented in 1st-grade classrooms in a dual language program (Calhoun et al., 2007). PALs consisted of a structured routine in which a teacher modeled the code-focused activities of the day; students practiced the code-focused activities in pairs for 15 minutes while the teacher supervised; and students then turned to story sharing, a partner reading activity that lasted for another 15 minutes. Teachers paired students so that one was a high-performing reader and the other was low-performing, and then taught the students to use PALS procedures. During each segment of the session, the high-performing student performed the role of coach first, and the low-performing student followed. On average, PALS students demonstrated significantly greater growth than control students on phoneme segmentation, nonsense word fluency, and oral reading fluency. Both ELs and English-proficient students responded positively to PALS, but the ELs responded with differential effects depending on the outcome measure.

A feature of all these studies is that they enabled students to talk about course content in pairs or small groups. An important principle related to second language learning is that students benefit from opportunities to interact (via speaking, listening, reading, and writing) in the second language (L2). Speaking is important to generate feedback, force syntactic processing, and challenge students to engage at higher proficiency levels (Johnson and Swain, 1997).

Use Collaborative, Peer Group Learning Communities to Support and Extend Teacher-Led Instruction
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Adolescents' growing awareness of their social status in peer groups in school and their community (Smetana et al., 2006), especially how they are perceived as ELs, needs to be considered in planning classroom practices (Cisco and Padrón, 2012; Kim and Viesca, 2016). It is important as well to foster the capacity to engage in dialogue with peers and teachers, especially in science (González-Howard and McNeill, 2016). Such capacities can be developed first during the primary grades and then built upon in middle school to facilitate continued, deeper learning. As discussed earlier, opportunities for middle school ELs to work collaboratively are practices used in studies that show promising learning outcomes for ELs (August et al., 2009, 2014; Lesaux et al., 2010, 2014; Vaughn et al., 2009).

Provide Regular Peer-Assisted Learning Opportunities
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

While thoroughly prepared professional teachers provide the essential support required by ELs for linguistic and academic development, peers can play important roles as well. At one of the high schools in the Schools to Learn From study—Marble Hill School for International Studies—project-based learning is practiced, whereby teams of students work together on inquiry-based projects across the curriculum. Project work for newcomers or beginning ELs takes place primarily in their ESL or sheltered content classes, where teachers provide the support needed by the students to conduct research and to ensure that they receive the language and literacy instruction they require. ELs are not placed in groups with English-dominant students until they have learned enough English in ESL and sheltered classes to feel confident about working with their English-dominant peers as equals. At that point, ELs benefit from working closely with these peers, not as tutees and tutors, but as co-participants in the work of the project. Scaffolding of learning is not viewed as the exclusive responsibility of teachers, but one that students are encouraged to assume for one another as well. In a 9th-grade algebra class observed for the Schools to Learn From study, ELs worked in groups on quadratic equations that had been set up at four stations. The problem at the first station was the most difficult, so the teacher provided the support needed by students until they understood the concept well enough to move on. The problem at the next station called for the students to recall what they had already learned and to apply it to solve another problem, and so on. Finally, when students arrived at the fourth station, they found word problems, which they had to solve without teacher support. Here, they were encouraged to work together and to provide mutual support in dealing with the problems at hand (Castellon et al., 2015, pp. 139-180).

Engage EL students in productive discourse and interactions with others
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

For ELs, experiencing science and mathematics through engagement in the disciplinary practices is especially important, as the disciplinary practices are both cognitively demanding and language-intensive. While engaging in the disciplinary practices, ELs comprehend (receptive language functions) and express (productive language functions) disciplinary ideas using their emerging English. For example, in science, the practice of developing and using models involves both science analytical tasks (e.g., make revisions to a model based on either suggestions from others or conflicts between a model and observation), receptive language functions (e.g., interpret the meaning of models presented in texts and diagrams), and productive language functions (e.g., describe a model using oral and/or written language as well as illustrations [Council of Chief State School Officers, 2012, pp. 27–28]). Swanson, Bianchini, and Lee (2014) found that a high school teacher who conceived of science as including both practices and discourse defined science discourse as generating and evaluating arguments from evidence, sharing ideas and understandings with others in public forums, and using precise language. In taking this approach, the teacher provided her EL students with multiple, scaffolded opportunities to articulate their ideas about natural phenomena; engage in the process of

developing arguments from evidence; and read, interpret, and evaluate scientific information. Such instruction offers students repeated, extended access to participation in disciplinary practices such as conjecturing, explaining, and arguing with appropriate scaffolding.

Scaffolding

Scaffolding for ELs is not simply one kind of support. Scaffolding can be provided at different levels (van Lier, 2004), in different settings (individual or collective), or for different pedagogical purposes (i.e., to support procedural fluency, conceptual understanding, or participation in classroom discussions, Moschkovich, 2015). It is not simply the ways in which tasks are structured to "help" the learner. Scaffolding is contingent upon the reaction of the learner to something new (Walqui, 2006). As such, scaffolding can occur as structure and as process (Walqui, 2006; Walqui and van Lier, 2010) and can be provided in multiple levels or time scales such as micro, meso, or macro (van Lier, 2004). Macro-level scaffolding involves the design of long-term sequences of work or projects, with recurring tasks-with-variations over a protracted time period. Meso-level scaffolding involves the design of individual tasks as consisting of a series of steps or activities that occur sequentially or in collaborative construction. Micro-level scaffolding involves contingent interactional processes of appropriation, stimulation, give-and-take in conversation, collaborative dialogue (Swain, 2000), and so on.

Structuring Interaction

Gibbons (2004) pointed out that teachers plan activities, but rarely plan for how they will interact with students. In particular, interaction that involves shifting back and forth between registers can highlight the relationship between the specific task that students are engaged with and the general and more abstract disciplinary concepts that the students are learning. Haneda's (2000) case study of interaction between a teacher and two 3rd-grade ELs as they discussed an experiment on refraction describes how, with teacher support in interaction, one of the children was able to move beyond just recounting the procedures she had followed to also explain and reason about what she had done. The other student never reached this goal, suggesting that the move from recounting to explaining is quite challenging, as it calls for moving beyond concrete experiences and drawing on more abstract registers. McNeil (2012) found that after an instructional intervention, a 5th-grade teacher scaffolded her classroom talk in new ways, utilizing multiple new communicative moves that served to better engage her ELs in disciplinary discourse.

Research on interaction with ELs stresses the role of contingent responses in enabling learners to build their knowledge of language and subject matter. For example, Boyd and Rubin (2002) analyzed the kinds of interaction in the classroom that enable 4th- and 5th-grade ELs to produce what they call student critical turns (SCTs) in a literacy-rich science unit. They defined SCTs as coherent and topic-focused contributions of 10 seconds or more, and they studied the local discourse conditions that appear to foster production of SCTs. They found that contingent questioning by the teacher or other students at strategic junctures promoted extended contributions by ELs. The teacher initiated 58 percent of episodes that led to SCTs, and two-thirds of the time she had the turn of talk immediately prior to the SCT. Often the questions that preceded the SCTs were display questions that asked students to report on what they had

learned. Although display questions are often considered less helpful to students than questions that authentically seek information, the researchers found that display questions could be contingently responsive teaching that pushes a student to elaborate on what has already been said. These questions pushed students to expand their thinking and talk. Authentic questions also worked this way, as did clarification requests.

Boyd and Rubin ask for reconsideration of the role of the often maligned Initiation-Response-Feedback (IRF3) participation structure, as these question-answer sequences can be used in different contexts to achieve different purposes. Gibbons (2004) noted that the Feedback move can increase the demands on a student and support language development by pushing the student to expand on what has been said. Cervetti, DiPardo, and Staley (2014) showed how a teacher used an IRF structure to adeptly nudge students to ask their own questions, make their own evaluations, and connect their contributions as they worked in an inquiry science context with 6th- and 7th-grade ELs. She used "shaping moves" that invited students into the discussion and encouraged collaborative listening, keeping the conversation going. The authors noted that IRF structures can be used strategically, striking "a balance…between more authoritative and more dialogic forms of discourse" (p. 560) as they engage students in participation that supports their conceptual understanding. (See Wells [1993] for further discussion of the potential of IRF participation structures to support language development.)

Disciplinary Talk and Talk Moves

Chapter 3 introduced the notion of linguistic register to highlight the ways students' language choice vary, depending on the activity, the interlocutors, and the modalities available for meaning-making. Herbel-Eisenmann, Steele, and Cirillo (2013) pointed out that not all talk is formal and whether students use more or less formal ways of talking depends on the context. They described how students may use more informal talk that involves pointing and reference to features of the situational context (e.g., "Why did you do that? When I did this, I got the wrong answer") when talking in a small group with writing or computations in front of them. That talk may become more formal when presenting a solution at the board (e.g., "When I multiplied by seven, I got the wrong answer"). And, finally, when presenting a final solution in writing, that talk would then become even more formal (e.g., "My calculation was initially wrong, but I changed the operation from multiplication to division and then the result made more sense").

Science talk formats and talk moves are one important way to support ELs to engage with locally relevant phenomena (Gallas, 1994; Herrenkohl and Guerra, 1998; Michaels and O'Connor, 2012). These moves make explicit the types of talk that are critical for making sense of phenomena collectively in the science classroom. Teachers can use a variety of formats (e.g., whole class, small group, pair work, and individual thinking time) and a set of moves to support particular kinds of reasoning. These moves include sharing; expanding clarifying reasoning; listening to and understanding others' ideas; providing evidence and examples to support reasoning; or asking questions or making comments to agree with, add on to, or explain what someone else means. These strategies help students know how they can contribute productively to make sense of phenomena in the science classroom community. These strategies also address issues of equity, as they can help teachers monitor turn-taking to ensure

that ELs have ample opportunities to participate in classroom discourse (Michaels and O'Connor, 2015).

Work on teacher talk moves in mathematics classrooms has documented how teachers support whole-class discussions (Chapin, O'Connor, and Anderson, 2003, 2009; Herbel-Eisenmann, Steele, and Cirillo, 2013; Michaels and O'Connor, 2015; Razfar and Leavitt, 2010, 2011). Chval (2012) reported on specific features of the discourse of one 5th-grade teacher who spoke and wrote sophisticated words. She used these words frequently and in the context of solving problems and supported students as they built understanding of the meanings of these words. These talk moves create opportunities for students to draw upon the linguistic resources they bring to class and move toward more formal registers. They also enable productive classroom discussions in mathematics (Anderson, Chapin, and O'Connor, 2011). According to Anderson, Chapin, and O'Connor (2011), a productive classroom discussion supports students' mathematical understandings by proceeding through four steps:

- Step 1. Helping individual students clarify and share their own thoughts
- Step 2. Helping students orient to the thinking of other students
- Step 3. Helping students deepen their reasoning
- Step 4. Helping students to engage with the reasoning of others

Several "teacher moves" (Michaels and O'Connor, 2015) have been described that can support student participation in a discussion: revoicing, asking for clarification, accepting and building on what students say, probing what students mean, and using students' own ways of talking. Teachers can use multiple ways to scaffold and support more formal language, including revoicing student statements (Moschkovich, 2015).

Revoicing (O'Connor and Michaels, 1993) is a teacher move describing how an adult, typically a teacher, rephrases a student's contribution during a discussion, expanding or recasting the original utterance (Forman, McCormick, and Donato, 1997). Revoicing has been used to describe teacher talk moves in several studies (for example, Herbel-Eisenmann, Drake, and Cirillo, 2009). A teacher's revoicing can support student participation in a discussion as well as introduce more formal language (see Box 4-4). First, it can facilitate student participation in general, by accepting a student's response, using it to make an inference, and allowing the student to evaluate the accuracy of the teacher's interpretation of the student contribution (O'Connor and Michaels, 1993). This teacher move allows for further student contributions in a way that the standard classroom Initiation-Response-Evaluation (IRE) pattern (Mehan, 1979; Sinclair and Coulthard, 1975) does not (although see above for studies that show such IRE/IRF interaction has a place in instruction for ELs). The work cited above on talk moves can provide resources for STEM teachers, with the important consideration that applying talk moves for instruction with ELs will require teachers to have experience, professional development, and resources that include ELs and consider issues particular to ELs, for example, the fact that the language ELs use may be different than that used by monolingual English speakers (Bunch, 2013; Moschkovich, 2007).

Schedule regular peer-assisted learning opportunities.
IES Practice Guide: Effective Literacy and English Language Instruction for English Learners in the Elementary Grades. Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. 2007.

Ensure that teachers of English learners devote approximately 90 minutes a week to instructional activities in which pairs of students at different ability levels or different English language proficiencies work together on academic tasks in a structured fashion. These activities should practice and extend material already taught.

Level of evidence: Strong. This recommendation is based on several high-quality experiments and quasi experiments with English learners. In addition, many peer-assisted studies also have been conducted with native-English-speaking students, and the results have consistently supported the positive impact of peer tutoring on student learning outcomes.

Brief summary of evidence to support this recommendation: Three high-quality experiments and quasi experiments have evaluated the effectivness of English learners working in pairs in a structured fashion several times a week. These studies spanned virtually all of the elementary grade levels. All these studies demonstrated positive impacts on reading achievement for students at various ability levels. Two additional studies provide evidence of the positive impact of student activities in cooperative groups of four to six students. Although less evidence supports cooperative groups than pairs of students working together, the guidance here is relevant for districts wanting to implement some type of cooperative learning structure in their schools.

Of the five studies, two were reviewed by the What Works Clearinghouse and rated as providing potentially positive effects on reading achievement. One of the two met the Clearinghouse evidence standards and the other met the standards with reservations.

Partner work is an opportunity for students to practice and extend what the teacher has taught during regular instruction. Partner work is excellent for tasks in which correct and incorrect responses can be clearly determined (word and text reading and phonological awareness activities, such as identifying sounds in words).

However, evidence also demonstrates that partner activities can build skills for tasks in which correct and incorrect responses are harder to determine, such as reading comprehension and other tasks that require student explanations. In three of the five studies, students worked in pairs to practice, consolidate, and extend prereading, decoding, comprehension, and spelling skills. In each of the studies student pairs, with different abilities in either reading or English language proficiency, were provided with clear instructional activities and taught procedures for working effectively with peers. Teachers used guides that included prompt cards and activities for students.

How to carry out the recommendation

1. **Develop plans that encourage teachers to schedule about 90 minutes a week with activities in reading and language arts that entail students working in structured pair**

activities. Kindergarteners can learn peer-assisted learning techniques if the routines are reasonably simple and taught in an explicit fashion. Older elementary students can learn fairly sophisticated strategies for providing peers with feedback on comprehension and vocabulary. Students can also assist each other in learning or clarifying the meanings of words in English.

The Panel recommends that the focus of the pair activities be tied to areas that emerge as key targets from a district's evaluation data. These could include oral reading fluency, vocabulary development, syntax, and comprehension strategies.

Districts should provide professional development for teachers setting up peer-assistance learning systems. Professional development should be scheduled during the early part of the school year, so that teachers can practice immediately with their own students. Training need not be lengthy and could be provided by reading coaches. Coaches should also observe teachers as they get started and help teachers during the difficult early phases.

2. **Also consider the use of partnering for English language development instruction.** The Panel members know that there was no experimental research on this topic, but we still consider this to be a promising practice, based on the documented success of peer-assisted learning in other areas of language arts. During the part of the day reserved for English language development, for example, peers would work together on reading connected text to each other and then discussing the text in a structured way. Students could read short passages of text and then practice summarizing the text for a few minutes, using specific summarization strategies. Or, after reading the text, they could answer questions, generate "gist" statements, or use another comprehension procedure, such as "prediction relay," thinking ahead in the text and predicting what might happen based on the story content to that point.

ELD instruction should include interactive activities among students, but they must be carefully planned and carried out.
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

If interactive activities are to benefit ELs, careful consideration must be given to the following factors:

- The design of the tasks in which students engage;
- The training or preparation of the more-proficient English speakers with whom the ELs interact; and
- The language proficiency of the ELs themselves.

Without attention to these factors, interactive activities tend not to yield language-learning opportunities at all. For example, in a study of cooperative learning groups comprised of grade 6 ELs and native English speakers, researchers found that paper-and-pencil tasks designed to spur interaction actually minimized interaction and language-learning opportunities.80 ELs and non-ELs tended to cut short their interactions in order to complete assigned paper-and-pencil

tasks in the allotted time: "Just write that down. Who cares? Let's finish up." Other researchers drew a similar conclusion based on their review of EL studies that focused on reading outcomes: interactive activities that effectively mix ELs and more-proficient ELs or native English speakers typically involve carefully structured tasks that required or at least strongly encouraged productive interaction.

This guideline regarding interactive activities is supported by research on older second-language learners. A meta-analysis found that treatments with carefully constructed interactive tasks produced a significant and substantial effect on language-learning outcomes. It examined two critical features of interactive tasks: essentialness and output. Essentialness has to do with the extent to which the targeted language form is essential to the task the group is trying to complete: Does successful completion of the task require, or is it at least facilitated by, correct oral comprehension or production of the meaning of certain target words (e.g., modes of transportation: cars, trucks, trains, etc.) or language constructions (e.g., if-then, before-after)? Learning outcomes were stronger when the language forms or rules were essential for successful completion of a group task. A second analysis with the same studies focused on interactive tasks that required attempts to actually produce the language form, for example, tasks that required students to produce oral utterances using the target words, such as modes of transportation, or the target construction, such as an if-then construction. Interactive tasks that required learners to attempt to produce the language form more consistently yielded stronger effects on both immediate and delayed posttests than tasks that did not require learners to produce the language form. Another review found similar results based on studies involving students ages 7 to 14: to be effective in supporting language development, interactive tasks need to be designed so that learners must use specified language forms in order to communicate successfully.

Oral Language Development

Integrate Oral and Written Language Instruction into Content Area Teaching
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

The integration of both oral and written language into content instruction was widely practiced in all of the high schools included in the Schools to Learn From Study, as illustrated by the BINcA example in Box 8-3. Indeed, this practice was evident in all of the instructional vignettes included in the Castellon et al. (2015) report, whether the lesson was on science, global history, or literature.

Provide Opportunities for Extended Discussion of Text Meaning and Interpretation
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Opportunities for extended discussion of text are important for all students but are crucial to the development of text understanding for ELs. The report on the Schools to Learn From study documents various instructional methods, such as Socratic Seminar and the Danielson Framework, for engaging students in such discussion. At the High School for Dual Language and Asian Studies, for example, 11th-grade students in a U.S. history class performed a close reading and analysis of *Korematsu v. U.S.* (1944), the landmark Supreme Court case on the constitutionality of Executive Order 9066, which ordered the placement of Japanese Americans in internment camps irrespective of their citizenship (Castellon et al., 2015, pp. 46-50). ELs and non-ELs worked together, guided by probing questions about the complex and difficult language of the court ruling. Students took turns as "discussion director" or "discussion facilitator" and prepared questions that guided group discussion of the arguments contained in this historical text.

Provide Specialized Instruction Focused on Components of Oral Proficiency
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Across the studies included in this review, explicit instruction in oral language components was found to be beneficial; it led to students acquiring these component skills to higher levels relative to students in the control groups who were not exposed to the interventions. ELs in the primary grades who were struggling readers benefited from instruction that developed their phonological awareness skills (e.g., Ransford-Kaldon et al., 2010; Scientific Learning Corporation, 2004; Solari and Gerber, 2008; Vaughn et al., 2006a). In one study (Vaughn et al., 2006a), this was the case for instruction in English as well as Spanish. The promising practices in these studies provided practice in phoneme discrimination, phoneme segmentation, and blending.

Explicit in-depth vocabulary teaching was beneficial for developing vocabulary knowledge and skills. For example, two studies that focused on kindergarten children (Crevecoeur et al., 2014;

Silverman and Hines, 2009) provided direct instruction of vocabulary in the context of story reading. The Crevecoeur et al. (2014) study explored the effects of multimedia enhanced instruction in the form of videos aligned with the book themes (habitats). It found that the multimedia support had a positive effect on vocabulary acquisition for ELs but had no such effect for students who were English-proficient.

Several studies focused on text-level skills such as listening comprehension. One study (Uchikoshi, 2005) was successful in building kindergarten ELs' auditory comprehension and narrative skills through exposure to a high-quality children's television program that presented stories with a plot, conflict, and resolution. Narrative skills were measured by the number of words and mean clause length in stories children told based on slides that represented the story plot. Children's stories also were coded for story structure, number of main events, evaluation, temporality, reference, and storybook language. A second study conducted with kindergarteners (Solari and Gerber, 2008) found that instruction in summarizing text, identifying the main ideas in text, recalling textual facts, and making predictions and inferences resulted in improvements in listening comprehension (Solari and Gerber, 2008).

A third study (Greenfader et al., 2015) that improved the speaking skills of ELs in grades K-2 implemented a year-long drama and creative movement intervention that used movement, gesture, and expression to stimulate engaging in English verbal interactions. Language skills targeted were vocabulary, dialoging, story construction, and story recall. The students in the treatment group outperformed those in the control group who did not receive the intervention on the California English Language Development Test, a standardized language proficiency test used throughout California. Findings from this study also indicate that ELs with the most limited abilities at baseline benefited the most. A fourth study (Tong et al., 2008) made enhancements to two types of language instruction educational programs—transitional bilingual programs and structured immersion programs. A multifaceted approach was used that included daily tutorials in intensive English, storytelling and retelling that emphasized higher-order thinking skills, and a teacher-directed academic oral language activity. ELs in the intervention developed oral language proficiency (indexed by measure of expressive vocabulary as well as listening comprehension) at faster rates than students in the control groups.

A fifth study (Scientific Learning Corporation, 2004) was successful in building the auditory comprehension of elementary school ELs who were identified as at risk through Fast ForWord, an adaptive computer training program that uses games to train acoustic reception abilities and improve semantic and syntactic skills. In a sixth exploratory study, high school ELs who participated in listening strategy instruction (Carrier, 2003) showed significant improvements between pre-and posttests in discrete and video listening ability on assessments that measured discrete and video listening skills.

Several themes emerge from the above studies that are consistent with previous reviews of instructed second language acquisition (Ellis, 2005; Saunders and Goldenberg, 2010). First, as noted above, specialized instruction in components of oral language proficiency led to better outcomes for students in intervention groups compared with controls. Second, in most of the studies, oral language components were taught explicitly. Third, while this was the case, in these studies the language components were taught in language-rich environments such as

read-alouds of narrative and informational texts (e.g., Crevecoeur et al., 2014). Finally, efforts were made to address the specialized needs of ELs learning content in a second language. Instruction in English was made comprehensible through such methods as multimedia use (Silverman and Hines, 2009); children's television (e.g., Uckikoshi, 2005); on-screen animation (e.g., Scientific Learning Corporation, 2004); movements and gestures (e.g., Greenfader et al., 2015); dramatization and movement (e.g., Tong et al., 2008); ongoing clarification of word meanings in multiple contexts before, during, and after reading (e.g., Crevecoeur et al., 2014); and ongoing questioning and discussion about the content presented (e.g., Solari and Gerber, 2008; Tong et al., 2008).

Provide Opportunities for Interaction with Speakers Proficient in the Learner's Second Language
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

Reviews of instructed second language learning (Dixon et al., 2012; Ellis, 2005; Saunders and Goldenberg, 2010) highlight the importance of interaction between second language learners and learners proficient in their second language. Several of the studies cited in the previous section provided structured opportunities for ELs to engage with English-proficient speakers (e.g., Calhoon et al., 2007; Silverman and Hines, 2009; Solari and Gerber, 2008). In one study (Greenfader et al., 2015), part of the lesson was dedicated to peer-to-peer interactions involving discussion and dramatization related to stories that had been read. Speaking is important because it generates feedback, forces syntactic processing, and challenges students to engage at higher proficiency levels (Johnson and Swain, 1997; Saunders and Goldenberg, 2010). It also generates more input, and substantial differences in the rate of second language acquisition are related to the amount and quality of the input students receive (Ellis, 2012).

A qualitative study by O'Day (2009) found that while coefficients for opportunities to engage in discussion with peers in the classroom are positive for both ELs and English-proficient students with regard to reading comprehension, the magnitude is small and insignificant for English-proficient students but large and significant for ELs. Some evidence suggests that for peer interactive activities to be effective, they must be carefully planned and carried out (Saunders and Goldenberg, 2010).

Engage in Interactional Feedback
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

The relationship between interactional feedback and second language learning has been an important focus of research. While many of the studies reviewed created opportunities for interaction between ELs and native English speakers, two studies explicitly examined the types of interactional feedback during conversational interactions that support ELs' language development. One study (Ammar and Spada, 2006) provides evidence that corrective feedback is beneficial. This quasi-experimental study investigated the benefits of two corrective feedback techniques—recasts and prompts—for 6th-grade ELs in Montreal acquiring English (Ammar and

Spada, 2006). The intervention targeted third-person possessive determiners, "his" and "her," a difficult aspect of English grammar for French ELs. One group was a control group, one group received corrective feedback from the teacher in the form of recasts, and the third group received corrective feedback from the teacher in the form of prompts. All three groups benefited, but the experimental groups benefited the most. An interesting finding is that high-proficiency learners benefited equally from recasts and prompts, but low-proficiency learners benefited significantly more from prompts than recasts.

A second study (Mackey and Oliver, 2002) explored the effects of interactional feedback on the language development of 22 ELs in an intensive ESL center in Perth, Australia. The children ranged from ages 8 to 12 and were from a variety of L1 backgrounds. The children carried out communicative tasks in dyads with adult native English speakers. The experimental group received interactional feedback in response to their non-target-like production of question forms. That is, in the interaction and feedback group, children were engaged in tasks that provided context for the targeted structure to occur (e.g., story completion, picture sequencing). The child learners asked whatever questions were necessary to carry out the task, and the native speakers answered their questions and asked their own when necessary. Interactional feedback, including negotiation and recasts, was provided to the child learners. The control group carried out the same tasks as the interaction group but did not receive feedback. Results showed that the experimental group improved more than the control group in terms of question formation.

Dedicate Time for Instruction Focused on Oral English Proficiency
Promoting the Educational Success of Children and Youth Learning English. National Academies of Sciences, Engineering, and Medicine. 2017.

While research cited at the beginning of this section (August and Shanahan, 2006) suggests that oral language development is important in helping ELs succeed in text-level literacy skills (e.g., comprehension), several studies suggest that a daily block of time focused on the development of oral English language proficiency can be beneficial. One study (Saunders et al., 2006) found small positive effects on oral language proficiency for kindergarten children who received oral English language proficiency instruction during a separate block of time compared with similar children who received oral language proficiency instruction that was integrated with language arts instruction. A second study (O'Brien, 2007) found that 1stgrade Spanish-speaking ELs who received English language instruction in a separate English language development block using an explicit English language proficiency program outperformed ELs who were learning English language proficiency only as part of their language arts program. In a third study (Tong et al., 2008), a separate block of time in kindergarten and 1st grade was focused on direct teaching of English. ELs in this study outperformed control group students who did not have a separate block of time. It should be noted that this additional time block was only one component of a multifaceted approach to developing oral English language proficiency in ELs. While the research reviewed here indicates that additional time dedicated to developing oral language English language proficiency is beneficial, additional research would help clarify whether differential outcomes are attributable to a separate time block or such associated factors as

fewer students, more homogeneity in classroom composition, method of instruction, or increased time or dosage itself.

Integrate oral and written English language instruction into content area teaching
IES Practice Guide: Teaching academic content and literacy to English learners in elementary and middle school. Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., Gersten, R., Haymond, K., Kieffer, M. J., Linan-Thompson, S., & Newman-Gonchar, R. 2014.

…The panel recommends providing structured opportunities for engaging students in academic discussions about the content, using instructional tools strategically to clarify and anchor the content, and teaching explicitly academic vocabulary that is central for understanding the content.

Summary of evidence: Strong. Five studies that met WWC standards provide evidence for this recommendation. All five studies resulted in positive impacts on content-area acquisition measures in science or social studies. Two studies essentially investigated the effectiveness of interventions that provide comprehensive instruction in content-area classes by employing all the practices articulated in this recommendation. The remaining three studies furnish evidence for some of the instructional practices described in this recommendation. Given the overall consistently positive impacts across all five studies and as there are no discernible or contradictory negative effects, the panel has assigned a strong evidence rating for this recommendation.

How to carry out the recommendation:

Strategically use instructional tools—such as short videos, visuals, and graphic organizers—to anchor instruction and help students make sense of content. Use short video clips (less than five minutes long) and visuals—such as pictures, experiments, demonstrations, and 3-D models—to anchor content instruction in a common shared experience. Many of these tools can be downloaded from public websites, and grade-level teams might consider building a library of website addresses. Video clips and visuals are useful because they are engaging for students (when not overused), and they help prepare students for a lesson by providing necessary background knowledge and raising issues and/or articulating themes to be pursued in the lesson. In addition, by anchoring the learning of new content in a common shared experience, materials can help stimulate discussions among students and can be used as a lead-in for small-group and paired discussions. To more easily stimulate a rich discussion on the topic, it is important to select short video clips and visuals that are engaging and interesting to the students. Encourage students to be active learners during these activities, by providing them with some thought-provoking questions before the video is shown to guide their viewing or examination of the visual material.

Literacy and oral language development in English are critical instructional components for any LIEP.
Language Instruction Educational Programs (LIEPs): A Review of the Foundational Literature. U.S. Department of Education; Office of Planning, Evaluation and Policy Development; Policy and Program Studies Service. 2012.

Native language literacy and English oral language were emphasized repeatedly as important in the literature reviewed, and these elements transcended any particular approach or model. Two large-scale research syntheses (August and Shanahan 2008; Genesee et al. 2006) found that oral language proficiency in L2 appears to facilitate literacy in L2, and multiple research studies argued or studied the effects of instruction designed to develop proficiency in these areas (Dalton 1998; Echevarria, Vogt, and Short 2004; August and Pease-Alvarez 1996; Garcia 1991; Gersten et al. 2007; Knight and Wiseman 2006; Rubinstein-Avila 2003; Saunders et al. 1999; Saunders and Goldenberg 2010; Young 1996). Experts recommended, based on extensive research reviews, that incorporating oral language practice and development into the structure of any LIEP seems likely to help ELs develop second-language (L2) literacy (Saunders and O'Brien 2006; Saunders and Goldenberg 2010); oral language was also found to play a potentially important role in the development of academic language specifically (Anstrom et al. 2010).

ELD instruction should incorporate reading and writing, but should emphasize listening and speaking.

English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

Along with explicit ELD instruction, programs for ELs should include literacy instruction,51 sheltered content area instruction as needed, and primary language support or instruction where possible. In such a comprehensive program, it would seem most beneficial to emphasize speaking and listening during ELD instruction. Although speaking and listening are emphasized in other parts of the instructional day, the textual demands of literacy and content area instruction no doubt need to be given priority during those instructional times. It is likely that time allotted for ELD is the one opportunity to make speaking and listening a priority.

The importance of oral English proficiency for ELs is well established in the research literature. With increasing oral English proficiency, English learners are more likely to use English, and more frequent use of English tends to be correlated with subsequent gains in oral English proficiency. In addition, with increasing oral proficiency in English, ELs are more likely to interact and establish relationships with native English-speaking peers, leading to more opportunities to use English. With increasing oral English proficiency, ELs also tend to use more complex language learning strategies that allow them to monitor language use and interact more effectively with others.56 Finally, as oral English proficiency develops, ELs demonstrate a wider range of language skills, including skills associated with more-academic uses of language, specifically higher-level question forms and the capacity to define words.

Several studies have documented a positive relationship between oral English proficiency and English reading achievement. Moreover, the relationship between oral English proficiency and English reading achievement is stronger for measures that are associated with more-academic aspects of oral language proficiency. For example, the number of different words English learners use during an interview correlates more strongly with reading achievement than the total number of words they use (r=.63 and r=.40, respectively).60 The relationship between oral English proficiency and English literacy strengthens across the grades, arguably because both are similarly influenced by schooling and both are indicative of academic success. In one study,

correlations between English reading achievement and quality measures of English learners' word definitions increased from r=.16 in grade 2 to r=.50 in grade 5.

Two studies provide evidence suggesting that devoting more instructional time to listening and speaking yields significantly higher levels of oral language proficiency. Among kindergarten ELs, one study found that more time spent on oral English language instruction leads to stronger oral language outcomes without compromising literacy outcomes. Teachers who produced the strongest outcomes (oral and literacy) devoted approximately 60 percent of their ELD block time to oral language activities (without text) and 40 percent to literacy-related activities (the average daily time allotment for ELD was 37 to 40 minutes). Among first-grade ELs, another study found that more time on listening and speaking (approximately 90 percent of the ELD block time) targeted toward language elements produced significantly higher oral English language outcomes than less time on listening and speaking (approximately 50 percent of the ELD block time) that did not target specific language elements.

ELD instruction should provide students with corrective feedback on form.
English Language Development Guidelines for Instruction. Saunders, W., Goldenberg, C., Marcelletti, D. 2013.

Providing ELs with feedback on form is not a matter of whether to do it but how best to do it. During ELD instruction wherein the primary objective is studying and learning language, corrective feedback can be beneficial. A meta-analysis that examined the effects of corrective feedback specifically on grammar included studies with a mixture of foreign-language, second-language, and English-as-a-second-language contexts, some of which were conducted in classrooms and some conducted under laboratory conditions. Despite several limitations, all of the studies involved a treatment group that received some form of grammar-focused corrective feedback, a comparison group that did not receive corrective feedback, and a measure of language learning. In all of the studies, the treatment group outperformed the comparison group, and in two-thirds of the studies, the effects were large. Another review examined the effects of implicit and explicit forms of corrective feedback: recasts versus prompts. When teachers recast a student's utterance, they rearticulate what the student was trying to say with an utterance that includes corrections of one or more errors the student made. For example, if a student says, "My brown cat more big than my white," the teacher would say, "Oh, you mean your brown cat is bigger than your white one?" In contrast, prompts explicitly draw a student's attention to an error and encourage or require the student to attempt to repair (linguistics-speak for "to correct") the utterance. So in the previous example, the teacher would say something like, "Oh, your brown cat is bigger than your white one. Can you say it that way?" And if the student hesitates, the teacher might help get him or her started (e.g., "My… brown…") and try to have the student formulate as much of the utterance as possible. All of the studies found positive effects for both recasts and prompts but with stronger effects for prompts.

The same review also provides an analysis of how feedback given through more- and less-explicit forms might function differently depending on teachers' relative emphasis on form versus meaning. Based on a review of studies that looked at recasts and prompts in French and Japanese immersion classes, it concludes that the general classroom orientation influences the

potential benefits of either recasts or prompts. In form-focused classrooms where teachers spend some time engaging students in oral drills and repetition of correct forms, the more subtle or implicit recast can serve as meaningful feedback, yielding student repairs, because the students are used to attending to form and repetition of teacher utterances. Recasts are less effective in meaning-oriented classrooms where students are more accustomed to attending to communication and less likely to attend to corrections embedded in teacher utterances. In meaning-oriented classrooms, prompts may be more effective because they explicitly mark the need for the repair of an utterance and therefore purposefully redirect students' attention, at least momentarily, away from meaning to the language itself.

In sum, feedback should not be taken for granted. Where and when implicit feedback, such as recasts, seem to be relevant, ELD teachers will want to help students recognize them and understand their function, most likely as a broader orientation to the instruction block. ELD teachers should provide similar orientation to interactional activities and lessons that involve explicit feedback, so as to alert students to the fact that interactions will be momentarily interrupted to give students feedback intended to help them refine their language use. Most important, the evidence suggests that ELD teachers should not avoid or hesitate in providing corrective feedback. Rather, the central issue is how to do it effectively so that students respond to it, benefit from it, and understand it as a productive part of language learning rather than a negative evaluation of their language learning.

Assessment

Diagnostic tools and formative assessment practices are employed to measure students' content knowledge, academic language competence, and participation in disciplinary practices.
Key Principles of ELL Instruction. Understanding Language Project at Stanford. 2013.

These assessment practices allow teachers to monitor students' learning so that they may adjust instruction accordingly, provide students with timely and useful feedback, and encourage students to reflect on their own thinking and learning.

Develop high-quality STEM curricular materials and integrate formative assessment into classroom practice to both facilitate and assess ELs' progress through the curriculum.
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

- Curriculum developers, educators, and EL researchers should work together to develop curricular materials and resources that consider the diversity of ELs' needs as the materials are being developed and throughout the design process.
- EL researchers, curriculum developers, assessment professionals, teacher educators, professional learning providers, and teachers should work collaboratively to strengthen teachers' formative assessment skills to improve STEM instruction and promote ELs' learning.

Design comprehensive and cohesive STEM assessment systems that consider ELs and the impact of those assessments on STEM academic achievement for all students.
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

- Developers of large-scale STEM assessments need to develop and use population sampling frameworks that better reflect the heterogeneity of EL populations to ensure the proper inclusion of statistically representative samples of ELs in the process of test development according to socio-demographic variables including language proficiency, first language, geographical distribution, and socioeconomic status.
- Decision makers, researchers, funding agencies, and professionals in the relevant fields need to develop standards on the numbers and characteristics of students that need to be documented and reported in projects and contracts involving EL STEM assessment.

Review existing assessment accommodation policies and develop accessibility resources.
English Learners in STEM Subjects: Transforming Classrooms, Schools, and Lives. National Academies of Sciences, Engineering, and Medicine. 2017.

- States, districts, and schools need to review their existing policies regarding the use of accommodations during accountability assessments to ensure that ELs are afforded

access to those linguistic accommodations that best meet their needs during instruction as well as during assessment.

- States, districts, and schools should also examine their implementation of accommodations to ensure that accommodations are implemented with high fidelity for all ELs, take steps to improve implementation when high fidelity is not realized, and improve poor implementation when it is present.

- States and districts involved in developing new computer-administered assessments or revising existing computer-administered assessments, should develop those assessments to incorporate accessibility resources rather than rely on accommodations.

- States involved in the development of new STEM assessments should apply universal design principles in the initial development and consider ELs from the beginning.

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