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Supporting English Language Learners

An annotated bibliography curated by Student Achievement Partners

Student Achievement Partners believes in the power of instruction, instructional materials, and assessments aligned to college- and career-ready (CCR) standards to improve outcomes for *all* students, including the 4.6 million[1] students identified as English Language Learners (ELLs) in the United States. This document outlines the research studies and existing criteria which have influenced the guidance for ELLs we include in our tools and resources.

Approach

Expectations for ELLs are often lower than they should be, and, as a result, in many settings ELLs are denied access to high-quality, grade-level content. The evidence-based guidance in our resources and tools reflects scaffolds that support students receiving Shifts-aligned, college- and career-ready instruction. We strongly believe ELLs must be given the opportunity to access rigorous Shifts-aligned practices such as citing evidence from text in ELA or focusing on Major Work of the Grade topics in mathematics. As a result, guidance for ELLs in our CCR-aligned materials is grounded in the following:

- ELLs deserve access to challenging, grade-level content.[2]
- ELLs can and should develop English language skills by engaging with grade-level content. The Discipline-Specific Language Development[3] that comes with grade-level content is a crucial component of any comprehensive language development strategy.
- ELLs' languages other than English should be considered a valuable asset, and leveraging ELLs' first language in the classroom is essential.
- ELLs will require different support based on their individual learning needs and their progress along the continuum of language development.

The classroom resources and tools on Achieve the Core are exemplars, not comprehensive sets of materials. We have included guidance in these classroom resources for ELLs based on the research studies and criteria referenced in this document. This document is not an all-inclusive list of best practices nor is it meant to replace or compete with existing criteria; rather, it looks to those sources as a foundation and evidence base.

Some scaffolds, depending on the learner, will require different sorts of resources than the ones on Achieve the Core. The scaffolds included in our resources are intended to support students receiving grade-level content instruction within a whole-class setting that includes both native speakers and ELLs. These types of resources won't be appropriate in every setting. Students brand new to English, for example, who are receiving pull-out Focused Language Study[4] support in lieu of whole-class instruction, are not the intended audience for these supports.

This document is organized around **Objectives** that illustrate the Shifts-aligned, researched-based learning opportunities we believe ELLs are capable of undertaking, and which are reflected in our resources and tools. The **Supporting Actions** beneath each Objective represent the concrete scaffolds and activities that will make these Objectives, and the ability to access college- and career-ready instruction in general, possible for ELLs. Beneath each Supporting Action, you'll find research explaining why it is effective.

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[1] National Center for Education Statistics. Fast Facts: English language learners. https://nces.ed.gov/fastfacts/display.asp?id=96. Retrieved April 24, 2018.

[2] As noted in the Council of the Great City Schools' *A Framework for Raising Expectations and Instructional Rigor for English Language Learners* (2014), instructional materials must: "Provide ELLs with the necessary rigor in language development, provide ELLs with full access to grade-level instructional content, integrate scaffolding for ELLs without compromising rigor or content, [and] provide ELLs access to text that increases in complexity, with intentional connections between ESL and ELA instruction, all anchored in the CCSS."(pg. 13)

[3] https://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/4/CGCS_ReinvisEngLang_pub_final.pdf

[4] https://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/4/CGCS_ReinvisEngLang_pub_final.pdf

The Big Picture

Comprehensive support for ELLs encompasses many components: professional development for teachers, standards-aligned, full-course instructional materials across content areas that reflect best practice for English language development, and a structured district-driven plan to support all ELLs that includes both Focused Language Study and Discipline-Specific Language Development. Student Achievement Partners' work will not address all of these needs, and we rely on other experts and expert practitioners to lead work to create a holistic system of supports for ELLs.

For districts and schools looking to select new curricular materials or examine their comprehensive support for ELLs, the Council of the Great City Schools' *A Framework for Raising Expectations and Instructional Rigor for English Language Learners* (2014), *A Framework for Re-envisioning Mathematics Instruction for English Language Learners* (2016), and *Re-envisioning English Language Arts and English Language Development* (2017) are resources for study and application.

Acknowledgements

Student Achievement Partners is grateful for the support, guidance, and feedback of a small group of experts in English Language Learner (ELL) instruction who served as valuable thought partners. From sharing criteria and research to reviewing our Objectives and adaptations, their insights were invaluable.

We'd particularly like to acknowledge George Bunch (University of California Santa Cruz), Amanda Kibler (University of Virginia), Crystal Gonzales (English Learners Success Forum), and Giselle Lundy-Ponce (American Federation of Teachers) for their ongoing guidance throughout the course of the project. Additionally, we're grateful for David Abel (UnboundEd/TNTP), Peter Coe (UnboundEd), Grace Kelemanik (Fostering Math Practices), Amy Lucenta (Fostering Math Practices), Luis-Gustavo Martinez (National Education Association), Renae Skarin (English Learners Success Forum), and Gabriela Uro (The Council of the Great City Schools), who advised us at key points throughout the project. Lastly, we'd like to thank our educator advisory panel—classroom teachers, administrators, and ELL specialists—who took time to explain their needs regarding ELL support and provide feedback on our resources and tools.

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ELA English Language Learner Objectives

In ELA, the Objectives are grounded in two underlying concepts:

1. ELLs must be given access to academically rigorous, grade-level appropriate, standards-aligned instruction that simultaneously builds their background knowledge, conceptual understanding, and language competence.
2. Scaffolds, supports, and teacher guidance that are consistent with the research, need to be provided to ELLs to supplement—not supplant—core instruction and ultimately foster student independence.

Objective 1: Provide English Language Learners with regular opportunities to negotiate meaning from grade-level complex texts, share their analyses, and argue from evidence, by integrating into instruction features that support English Language Learners to make the content comprehensible for themselves.

Supporting Actions

1A. Select grade-level complex anchor texts that:

- Are brief and engaging to students.
- Feature a variety of academic vocabulary words for potential study.
- Are connected to a given unit of study and build student knowledge on the topic.
- Provide details and examples that help students understand new concepts and vocabulary.
- Contain ideas that lend themselves to students thinking, writing, and talking about the text from a variety of perspectives.

Key Source: Council of the Great City Schools. (2017). *Re-envisioning English Language Arts and English language development for English language learners.*

This report from the Council of the Great City Schools explains what is needed to master content across grades and helps educators determine if their instructional materials are appropriate for ELLs, all while taking into consideration the requirements of college- and career-ready standards.

Notable Points:

- In regard to text selection, the report argues that:
  - "Engaging in complex thinking, reading, and engaging with complex text (reading and writing)" are what ELLs are capable of and educators should expect that these students will perform at high levels (p. 11).
  - Giving ELLs the opportunity to learn with grade-level appropriate, complex text will help them "acquire the reasoning, language skills, and academic registers they need to be successful across the curriculum and throughout the school day" (p. 11).
- The report also features criteria for text selection appropriate to instruction with English Language Learners. Applicable criteria include:
  - "1A: Materials include a range of grade-level and age-appropriate instructional texts (e.g., small group, guided and independent reading texts along a staircase of reading and linguistic complexity)." (pg. 24)
    - "Text sets are consistent with grade-appropriate content, themes, and topics, and promote the development of grade-level academic language and content." (pg.24).

- "1D: Materials provide sustained time on the themes, with opportunities (texts, tasks, talk) to reinforce conceptual development and extend the academic language that frames those concepts." (pg.24)
- "1E: Materials include "just-right" pre-reading activities that offer visuals and other types of supports and scaffolds for building essential and pertinent background knowledge on new or unfamiliar themes/topics." (pg.24)
- "1F: Materials include instruction in which text complexity is called out or highlighted, with specific emphasis on linguistic or structural complexity." (pg.24)

1B. Engage students in reading auxiliary texts and reviewing resources (illustrations, photographs, video clips) on the topic tied to the anchor text to build the knowledge and vocabulary necessary for students to tackle grade-level complex text.

Key Source: August, D., Fenner, D. S., & Snyder, S. (2014). *Scaffolding instruction for English language learners: A resource guide for English Language Arts*. Washington, DC: American Institutes for Research. Retrieved from https://www.engageny.org/resource/scaffolding-instruction-english-language-learners-resource-guides-english-language-arts-and

This resource guide outlines a series of research-cited best practices that help support ELLs in learning words, understanding complex sentences, and comprehending complex text. The document guidance is aimed at users of the EngageNY ELA curriculum, and several example lessons are included to illustrate what the recommendations look like in practice.

Notable Points

- The authors of the paper suggest having students read short texts to build background knowledge and vocabulary before tackling the main text. The text becomes much more accessible if the students have background knowledge beforehand.
- "The importance of providing ELLs with opportunities to read for multiple purposes is supported by research (August & Shanahan, 2008). First, if the text contains cultural, historical, or thematic information ELLs are unlikely to have acquired, they read short supplementary texts to help them acquire such knowledge" (p. 8).

Key Source: Council of the Great City Schools (2017). *Re-envisioning English Language Arts and English language development for English language learners*. Retrieved from https://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/4/CGCS_ReinvisEngLang_pub_final.pdf

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Notable Points:

- In regard to the use of auxiliary texts, Criterion 1B of the report's *Instructional Materials for ELLs: Evaluation Matrix* describes the need for text sets "connected by an essential question or overarching theme." (pg. 24)
- Criterion 1C says "text sets address and support ELA/ELD standards and language progressions in a spiraling and reciprocal manner without sacrificing content or rigor, providing abundant opportunities for students to hear, read, and experience the rhythms and patterns of English." (pg.24)

1C. Engage in a read-aloud of the text, perform choral reading, and/or utilize recordings of the text, before having students work with the text alone or in groups. Read-alouds can also be used to reinforce understanding and support fluency at subsequent points in working with a text.

Key Source: Solari, E. J., & Gerber, M. M. (2008). Early comprehension instruction for Spanish-speaking English language learners: Teaching text-level reading skills while maintaining effects on word-level skills. *Learning Disabilities Research & Practice, 23*(4), 155-168.

In this study of 82 ELL kindergarten students from four different classes in California, students were given interventions structured in three different ways:

- Group 1: Listening Comprehension Concentration - 70% of time was spent on listening comprehension and vocabulary, 10% on alphabetic knowledge, and 20% on phonological awareness.
- Group 2: Phonological Awareness Concentration - 70% of time was spent on phonological awareness, 10% on alphabetic knowledge, and 20% on listening comprehension and vocabulary.
- Group 3: Only Phonological Awareness and Alphabet Knowledge - received only word-level skill instruction; 20% of the time was allotted to alphabet knowledge, and 80% of the time was spent on phonological awareness.

Notable Point:

- The Listening Comprehension group (Group 1) performed better on nearly all measures of a post-test, including phonological awareness (the focus of Group 2), showing the importance of listening comprehension in all aspects of literacy instruction.

Key Source: August, D., Fenner, D. S., & Snyder, S. *Scaffolding instruction for English language learners: A resource guide for English Language Arts*. Washington, DC: American Institutes for Research. Retrieved from https://www.engageny.org/resource/scaffolding-instruction-english-language-learners-resource-guides-english-language-arts-and

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Notable Points:

- The authors recommend engaging in a routine of reading that involves five types of reading:
    - Engaging in reading of short supplementary texts to build background knowledge to engage with the anchor text.
    - Listening to a fluent read-aloud prior to engaging in reading themselves.
    - Reading and answering comprehension questions about key details.
    - Rereading to identify vocabulary and content they did not understand on a first read.
    - Revisiting the text to analyze craft and structure.

1D. Ask students to answer questions about relevant sections of the anchor text to engage students with the text; clarify the wording of questions if necessary, without reducing their conceptual rigor.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points:

- In regard to clarifying the wording of text-dependent questions, the panel recommended that:
    - Students be provided with a student-friendly dictionary to allow them to clarify the meaning of words in questions.
    - Teachers consider rephrasing a complex inferential question into one that is more clearly and explicitly written yet requires the same cognitive load in the student response. For example: "How do you think this historical event affects Mexico today?" could be rephrased as "How do you think Mexico changed because of the Aztec period? What examples of the changes do you still see today?"

1E. Provide opportunities for English Language Learners to reread the text with different purposes, foci, questions, and activities each time.

Key Source: August, D., Fenner, D. S., & Snyder, S. (2014). *Scaffolding instruction for English language learners: A resource guide for English Language Arts*. Washington, DC: American Institutes for Research. Retrieved from https://www.engageny.org/resource/scaffolding-instruction-english-language-learners-resource-guides-english-language-arts-and

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    - Revisit the text to analyze craft and structure.

Key Source: English Learners Success Forum. (2017). *Draft guidelines for improving English Language Arts materials for English learners and draft guidelines for improving mathematics materials for English learners.*

This guidance was developed by a working group of English Language Learner experts and includes research-based supports for ELLs that should be included in instructional materials.

Notable Points:

- Within the guidance, it is recommended that text is rarely, if ever, simplified for ELLs; instead, texts should include appropriate supports to help students access the unaltered text. When working with the text, students should read and reread, engaging with different foci. Teachers should make use of the following scaffolds to support these different reading purposes:
    - Applying text engineering (chunking a text in meaningful units, inserting headings, inserting questions) to alert students to key queries to keep in mind while reading the next chunk of texts. (Resource: Chunking Texts) (pg. 12)
    - Helping teachers indicate to students what is essential to understand. (pg.12)
    - Grouping of students for productive discussions about complex texts. (Resource: Assigning Roles) (pg.12)
    - Including parenthetical explanations, definitions, or a student-friendly glossary. (pg.12)
    - Using multiple texts (including multimedia) to build background knowledge on crucial topics and disciplinary practices. (pg.12)
    - Engaging in regular and explicit syntax development within reading tasks. That focus should occur in the context of collaboratively grappling with meaningful texts. (pg.12)
    - Focusing on vocabulary in reading tasks in the context of meaning-making and communicating. Materials should draw students' attention to high-value vocabulary words that are either essential for understanding the reading or that represent words students will encounter frequently along their educational journey. These are often referred to as Tier 2 and Tier 3 vocabulary. (Resources: Vocabulary Development; Word Wall; Context Clues; Tiered Vocabulary) (pg.13)

1F. Provide graphic organizers (or other tools, such as in-text highlighting and annotating) to help students capture and reflect on new knowledge. Graphic organizers can support students in preparing for content-focused writing and discussion.

Key Source: August, D., Branum-Martin, L., Cardenas- Hagan, E., & Francis, D. J. (2009). The impact of an instructional intervention on the science and language learning of middle grade English language learners. *Journal of Research on Educational Effectiveness, 2*(4), 345-376. doi:10.1080/19345740903217623

This study looked at the effectiveness of interventions designed to build knowledge and academic vocabulary within a whole class setting (both ELLs and native speakers). The study involved 890 sixth-grade students (562 were ELLs; 328 were English-proficient based on district language proficiency testing) in a high-poverty district in the Rio Grande Valley. Students were taught word-learning strategies such as using information from context, morphology, multiple meanings, and cognates to infer meaning. In addition to participating in biweekly meetings, teachers received detailed/semi-scripted plans, overhead transparencies, worksheets, homework assignments, and reading items.

Notable Points:

- Teachers found that scaffolds designed to support ELL students were effective in helping all students (both native and non-native speakers) increase their vocabulary.

Table 3. Descriptive statistics for vocabulary and science CBM assessments

Assessments and Language Group	Treatment Group	Pretest		Posttest		
		M	*SD*	*M*	*SD*	*N*
Vocabulary						
English proficient	Treatment	15.43	13.61	24.88	17.56	158
	Control	17.45	13.60	21.23	16.10	170
ELL	Treatment	8.41	9.14	15.22	14.23	266
	Control	9.24	9.62	12.22	12.59	296
Science						
English proficient	Treatment	9.36	4.00	14.06	7.42	158
	Control	9.93	4.51	13.88	7.10	170
ELL	Treatment	8.05	3.68	11.77	6.03	266
	Control	8.36	4.01	11.11	5.61	296

Note. CBM = curriculum-based measurement; LEP = Limited English proficient.

- Examples of the scaffolds used:
  - Visuals, including graphic organizers.
  - Opportunity for students to preview activities to ensure they understood what to do.
  - Explicit vocabulary instruction of both general and domain-specific words:
    - Glossaries with visuals, definitions, and Spanish translations.
    - Teacher-taught strategies to improve word learning.
  - Pairing of students with a native speaker.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to supporting ELL students in organizing and reflecting on new knowledge and concepts, the panel recommendations include:
  - "Clarifying and reinforcing vocabulary definitions using concrete examples and non-examples, graphic organizers, pictures, gestures, and actions" (p. 19).
  - "Anchoring new learning with videos, visuals, and graphic organizers" (p. 33).
  - "Supporting brainstorming activities, helping students make connections, understand patterns, and recognize relationships between facts, terms, and concepts" (p. 33).

Objective 2: Provide daily opportunities for students to talk (and listen to others talk) about content, anchored around topics present in the texts they are reading, to build their confidence and knowledge, and practice newly acquired skills.[5]

Supporting Actions

2A. Structure student groups around meaningful collaborative tasks (e.g., have students cite evidence from the text to support the position they take) that allow English Language Learners to use their full linguistic and cultural resources. This includes:

- Allowing English Language Learners to collaborate in their home languages to process content before participating in whole class discussions in English.
- Allowing English Language Learners to use English language that is still under development.
- Providing brief, additional comprehension and vocabulary instruction connected to the content being covered in small groups of English Language Learners who are struggling with language and literacy.

Key Source: English Learners Success Forum. (2017). *Draft guidelines for improving English Language Arts materials for English learners and draft guidelines for improving mathematics materials for English learners.*

This guidance was developed by a working group of English Language Learner experts and includes research-based supports for ELLs that should be included in instructional materials.

Notable Points:

- In this set of guidance, recommendations are made about strategic use of collaborative and group work, including:
  - "Units should include pair or group conversation activities which help students practice their abilities to develop and challenge ideas using evidence-based reasoning, allowing them to engage with ideas and engage with ELA practices (infer meaning from texts, make arguments, support claims with text evidence, organize ideas, etc.) before writing extensively about them." (Resources: Argumentation Activities; Fortifying Speaking and Listening Skills; Socratic Seminar; Jigsaw Project; Save the Last Word for Me) (pg.9)
  - "Teacher materials should include instruction on grouping strategies which encourage students to leverage their oral language resources to engage with complex disciplinary ideas and practices and to support each other in developing disciplinary language in English. This is especially important for newcomers for whom the cognitive load of simultaneous language and content knowledge development can prove to be a barrier to meaningful instruction. For example, homogeneous grouping by language background can allow the teacher to leverage bilingual language resources and accelerate content and language learning. Heterogeneous groupings can provide ELs with peer modeling of authentic communication and support by native English-speaking peers."(pg. 9)

[5] Note: This objective would not be applicable to mini-assessments where students are expected to work alone.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to supporting ELL students, the authors recommend frequent use of small group instruction for the following reasons:
    - It allows students "the opportunity to listen and speak through critical conversations about text and content in collaborative settings" (p. 51).
    - It allows students to brainstorm and support each other in preparing for a writing activity they might otherwise struggle to prepare for alone.
    - It allows them to provide feedback and react to others' ideas.
- Using different types of grouping is recommended to serve various learning goals for ELLs:
    - Homogeneous groupings allow for targeted support of a students' identified needs that would otherwise not be possible in a whole-class setting.
    - Heterogeneous groupings allow students to benefit from hearing the ideas and oral expression of students at different proficiency levels.
- When groups are composed of English Language Learners, the study recommends providing brief, fast-paced additional comprehension and vocabulary instruction connected to the content being covered.

2B. Ask students to arrive at a reasonable interpretation of extended discourse, rather than being asked to process every word literally.

Key Source: Bunch, G. C., Kibler, A., & Pimentel, S. (2012). *Realizing opportunities for English learners in the Common Core English Language Arts and Disciplinary Literacy Standards.*

This paper offers research-based recommendations for how to help English Language Learners achieve the requirements of college- and career-ready standards in ELA. The recommendations focus on four areas: Reading, Writing, Speaking and Listening, and Language.

Notable Points:

- College- and career-ready standards require students to be able to interpret information and use it to make claims. Similarly, it requires students to discern the most important or pertinent pieces of information within a text that can be used to construct logical claims.
- Preparing for and engaging in oral discourse in which students listen to others and make their own oral claims is especially valuable for language development of ELLs.
- It is important that ELLs are able to participate in discussions and other opportunities to formulate and deliver oral claims. To allow ELLs with still-developing English language skills to participate, teachers should "help ELs to "arrive successfully at a reasonable interpretation of extended discourse" (Brown & Yule, 1983, p. 57) rather than to process every word literally, which is impossible even for native English speakers to do (p. 7).

2C. Scaffold questions for discussions so that questioning sequences include a mix of factual and inferential questions and a mix of shorter and more extended responses.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to scaffolding question sequences, the panel recommended:
    - Introducing a mix of factual, more straightforward questions, with more complex inferential questions.
    - Examples: "Why did the Aztecs destroy their capital city rather than destroy the causeway?" (Factual) vs "Why do you think the Aztecs realized the Spanish were not gods?" (Inferential).
- Factual questions will help students hone in on key pieces of information from the text that can facilitate their discussion and can feature in their responses to more complex inferential questions.

2D. Present directions and tasks orally and visually; repeat often; and ask English Language Learners to rephrase.

Key Source: Echevarria, J., Vogt, M. J., & Short, D. J. (2012). *Making content comprehensible for English learners: The SIOP model* (4th edition). New York: Pearson Education.

The Sheltered Instruction Observation Protocol model (SIOP) is one model of instruction for ELLs. Based on empirical research, it aims to integrate content and language instruction for students learning a new language.

Notable Points:

- Features of the SIOP model related to student directions include:
    - Crafting clear explanations for what students are being asked to do:
        - Provide routines—the more practice students have with the types of tasks found in content classes, the better they will perform in class.
        - Present instructions in a step-by-step manner, preferably modeled or demonstrated.
        - Show a finished product—this allows students to know what the task entails.
        - Accompany oral directions with written ones so ELLs can refer back to them at a later point in time as they complete the assignment or task.
        - Go over every aspect of the lesson, showing visuals with each step, if needed.
        - Write out directions as you would for your students and ask a colleague to follow them as a check of how clear your task explanations are.
    - Using gestures, body language, pictures, and objects to accompany speech. Gestures and visual aids assist students in organizing and making sense of information that is presented verbally.
    - Providing a model of a process, task, or assignment. Doing so as the students are taken through the task verbally eliminates ambiguity and gives the message in more than one way.
    - Writing lesson-level objectives and using student-friendly language that suits the age and proficiency levels in the class.

- Writing objectives in terms of student learning, not as an agenda item. For example:
  - Students will be able to…
  - Students will…
  - We will…
  - Today I will…
  - The learning will…
  - Our job is to…
- Limiting the number of content objectives to only 1 or 2 per lesson to reduce the complexity of the learning task and to ensure that instruction can meet the objectives.
- Sharing objectives with the students orally and in writing.
- Reviewing the objectives at the end of the lesson to determine if students have mastered them.

Objective 3: Engage in intense academic vocabulary work before, during, and after reading over the course of several lessons.[6]

Supporting Actions

3A. Provide explicit instruction, using multiple modalities, on selected vocabulary words (e.g., 5-8 for a given text) that are central to understanding the text.

Key Source: Vaughn, S., Martinez, L. R., Linan-Thompson, S., Reutebuch, C. K., Carlson, C. D., & Francis, D. J. (2009). Enhancing social studies vocabulary and comprehension for seventh-grade English language learners: Findings from two experimental studies. *Journal of Research on Educational Effectiveness, 2*(4), 297-324.

This two-year study of more than 800 seventh-grade social studies students (both ELLs and native speakers) in Texas found improvement in word knowledge and comprehension for all students (ELLs and native speakers) receiving supports typically thought of as best practices for ELL instruction.

Notable Points:

- Among other interventions, the study included the following protocol:
  1. Teachers pronounced the word, identified a Spanish cognate or Spanish translation, gave a student-friendly definition, and used a visual representation.
  2. Teachers shared two sentences using each vocabulary word (one in a historical context from class text and one with the word based on students' experiences).
  3. Students then used the word and applied its meaning by discussing a prompt with their student partner.
- Teachers also employed graphic organizers, structured paired reading, introduction of questions prior to read-alouds, and use of media to reinforce vocabulary.
- The combination of vocabulary and concept instruction shifted the instructional emphasis from learning historical facts to using language and understanding the content.

[6] Note: Not all strategies must be addressed in set of adaptations.

Key Source: 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). Teaching academic content and literacy to English learners in elementary and middle school (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points

- In regard to vocabulary instruction, recommendations from the panel include:
  - Selecting a small number of words for intensive instruction over the course of several lessons to increase students' vocabularies. Evidence shows that when ELL students are taught large numbers of words in one day, they have only shallow understanding. Between 5–8 words should be selected for intensive instruction to allow for deep, meaningful learning.
  - Attending to these six criteria for choosing words for instruction with ELLs—words should:
    - Be central to understanding the text.
    - Be frequently used in the text.
    - Appear in other content areas.
    - Have multiple meanings.
    - Have affixes.
    - Have cross language potential, such as cognates.
  - Teaching vocabulary using multiple modalities (writing, speaking, and listening) with the goal of having students understand how the word is used in context, rather than having them memorize definitions.
  - Providing explicit instruction on vocabulary to help students pinpoint the word's meaning, using tools and strategies such as student-friendly glossaries, examples/non-examples, and concrete examples/visuals.
  - Providing multiple ways for students to practice with vocabulary and show their understanding, such as class discussion, written work, and games like crosswords or charades. This will allow for deep processing of the words' meanings, create a variety of experiences (reflecting how words are used in the real world), and keep students interested.
  - Teaching word-learning strategies to increase students' understanding of how words work, and how they can determine meaning independently.

3B. Read the text aloud, and then facilitate a discussion about specific words in the text.

Key Source: English Learners Success Forum. (2017). *Draft guidelines for improving English Language Arts materials for English learners and draft guidelines for improving mathematics materials for English learners.*

This guidance was developed by a working group of English Language Learner experts and includes research-based supports for ELLs that should be included in instructional materials.

Notable Points:

- Recommendations regarding the strategic integration of vocabulary work through text-based discussions include:
  - Vocabulary should be a regular focus in reading tasks but should be presented in the context of meaning-making and communicating, and not merely to acquire academic English. Materials should draw students' attention to high-value vocabulary words that are either essential for understanding the reading or that represent words students will encounter frequently along

their educational journey. These are often referred to as Tier 2 and Tier 3 vocabulary. (Resources: Vocabulary Development; Word Wall; Context Clues; Tiered Vocabulary)

Key Source: Echevarria, J., Vogt, M. J., & Short, D. J. (2012). *Making content comprehensible for English learners: The SIOP model* (4th edition). New York: Pearson Education.

The Sheltered Instruction Observation Protocol model (SIOP) is one model of instruction for ELLs. Based on empirical research, it aims to integrate content and language instruction for students learning a new language.

Notable Points:

- The SIOP model includes a variety of ways to effectively review academic vocabulary with students during a lesson:
    - Use analogies, the process of relating newly learned words to other words with the same structure or pattern. For example, using the root *photo* (meaning light) in a lesson on photosynthesis to refer students to other words with the same word root (photography, photocopy).
    - Point out multiple meanings, such as those that have one meaning in conversational English and another that is disciple specific (e.g., "the cleaning *product* I want to buy has bleach in it" v. "the *product* of 25 X 4 is 100").
    - Point out synonyms and antonyms for key vocabulary, when possible. Four corner charts can be helpful for review when they include (1) the vocabulary word, (2) a synonym, (3) an antonym, and (4) "what the word is not."
    - Draw students' attention to how words are used in various contexts (pragmatics), because they may differ across cultures and languages. It is important to talk to students about how language is used in different contexts and how what might be appropriate in one context may be inappropriate in another.
    - Repeat academic words and terms because doing so has benefits to students. Provide multiple exposures to new terminology to build familiarity, confidence, and English proficiency.
    - Include a final vocabulary review at the conclusion of a lesson. Students may share understandings with a partner while teachers check their explanations. Have students write a quick definition (in student speak) on individual white boards and hold them up to show; do a match of words and definitions on the board or in an interactive presentation on devices; write two to three sentences including the words on an exit slip that they turn in as they leave the classroom.

3C. Emphasize meanings of everyday words that are not necessarily part of the academic curriculum.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points:

- In regard to supporting ELLs with everyday vocabulary, the panel found that:
    - Because ELLs are new to English, they may struggle with vocabulary words that do not hinder native speakers and that do not justify instructional time yet may impact ELLs overall comprehension:

        - It is likely that ELLs will still find unfamiliar vocabulary within texts they are asked to read, even after teachers engage in direct vocabulary instruction on a small number of new vocabulary words.
        - Students may turn to dictionaries or glossaries to find the meaning of these words but find that these dictionaries are also well-beyond their reading ability.
        - Teachers should be conscious of the fact that vocabulary words native speakers have learned through everyday speech have not yet been encountered by ELLs and may pose barriers to comprehension.
    - Reinforcing the meaning of these words through whole-class discussion or one-on-one work can help bolster that vocabulary knowledge, even if these words do not warrant in-depth instruction activities.

3D. Explicitly clarify and reinforce definitions of words using examples, non-examples, synonyms, antonyms, and concrete representations.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to supporting ELLs with vocabulary acquisition, the panel found that:
    - It is valuable to use example and non-examples, tying a word to a concrete visual (e.g., "dinosaur" and "skyscraper" as examples and "ant" and "baby" for non-examples of *enormous*.
        - Examples and non-examples may also be reinforced by using gestures or actions.
    - Synonyms and antonyms of a new vocabulary word can help students hone in on meaning and place the new word in the context of their existing vocabulary.
    - In writing activities, asking students to check their written work by ensuring the sentence still makes sense when they inserted a synonym reinforces definitions.
    - Synonyms can also be used to create a student-friendly dictionary.

3E. Provide opportunities to practice using newly acquired vocabulary in the context of their discussions and writing:

- Provide a range of engaging activities (e.g., crosswords, charades, sketching) to represent word meanings in texts they are reading.
- Ask students to respond to questions where they have to show their understanding of subtle differences in usage and meaning.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points:

- ELL students benefit from repeated exposure to new vocabulary through a variety of interactions.
- Providing a range of activities helps students review previously taught vocabulary and further cements those words in their working knowledge.
- These strategies (if not overused) can also boost engagement for students.

Key Source: Lesaux, N. K., Kieffer, M. J., Faller, S. E., & Kelley, J. G. (2010). The effectiveness and ease of implementation of an academic vocabulary intervention for linguistically diverse students in urban middle schools. *Reading Research Quarterly, 45*(2), 196-228. doi:10.1598/ RRQ.45.2.3

This study was conducted over the course of the 2007–2008 academic year in 21 classrooms in seven middle schools in a large urban district with 476 sixth-grade students (346 ELLs and 130 native English speakers). It showed the positive effects of strategic academic vocabulary instruction. The study was 18 weeks in length and consisted of multiple "units" based around an informational text and 8–9 high-utility vocabulary words per unit.

Notable Points

- Instruction was designed to build knowledge of words incrementally by providing multiple exposures to the words in different forms and in different meaningful contexts. The intervention included a variety of whole-group, small-group, and independent activities designed to promote deep processing through opportunities for listening, speaking, reading, and writing with the words.
- The intervention resulted in statistically significant effects on several aspects of vocabulary knowledge (for both ELLs and native speakers), including meanings of taught words, morphological awareness, and the word meanings as presented in expository text. The intervention also yielded marginally significant but promising effects on both a depth of word knowledge measure and a norm-referenced measure of reading comprehension.

3F. Teach English Language Learners strategies that help them determine word meanings on their own by focusing on:

- cognates;
- word parts;
- context clues;
- Looking at a word as different part of speech (e.g., environment, environmental, environmentally).

Demonstrate and model how to use word parts (prefixes, affixes, roots) to build an understanding of new words. Highlight words in materials that should be prioritized for this purpose.

Key Source: Francis, D., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for serving adolescent newcomers* (Under cooperative agreement grant S283B050034 for U.S. Department of Education). Portsmouth, NH: RMC Research Corporation, Center on Instruction. Retrieved from: https://www2.ed.gov/about/inits/ed/lep-partnership/newcomers.pdf

These guidelines are based on a literature review for best practices in supporting adolescent newcomer ELL students.

Notable Points:

- The research points to the need for students to learn meaning-making strategies for encountering new vocabulary. Teaching of definitions and copying sentences, while the most common strategies for vocabulary instruction are not sufficient. Strategies recommended by the authors include:
    - Using glossaries and dictionaries.
    - Using cognates (estimates show that more than 30% of English words are cognates of Spanish words).
    - Breaking up words.
    - Using context.

Key Source: Echevarria, J., Vogt, M. J., & Short, D. J. (2012). *Making content comprehensible for English learners: The SIOP model* (4th edition). New York: Pearson Education.

The Sheltered Instruction Observation Protocol model (SIOP) is one model of instruction for ELLs. Based on empirical research, it aims to integrate content and language instruction for students learning a new language.

Notable Points:

- Features of the SIOP model related to helping students determine word meanings independently include:
    - Analyzing and using forms and patterns in English, such as the prefix + root + suffix pattern.
    - Making logical guesses based on contextual and syntactic information.
    - Purposefully grouping and labeling words.
    - Pointing out cognates to promote comprehension for students whose native language has a Latin base.

Key Source: Carlo, M., August, D., Snow, C., Dressler, C., McLaughlin, B., Lippman, D., Lively, T., & White, C. E. (2004). Closing the gap: Addressing the vocabulary needs of English language learners in bilingual and mainstream classrooms. *Reading Research Quarterly, 39*(2), 188-215.

This 15-week study looked at literacy intervention for approximately 200 emerging bilingual and monolingual fifth-grade students. The intervention strategy focused on teaching strategically-chosen words and word-learning strategies.

Notable Points:

- Teachers taught 10–12 words weekly. Each day had a structure and flow to promote depth of word knowledge, and words were encountered several times in different tasks/contexts.
- Instruction focused on depth of meaning, polysemy, morphological structure, and cross-language relationships (cognates).
- Students received explicit instruction in using context to infer word meaning, including strategies to understand words with multiple meanings, using prefixes and affixes to determine meaning, and understanding subtle differences in usage and meaning.
- Students were tested in the fall and spring on:
    - Reading comprehension
    - Word mastery
    - Morphology
    - Word association
- Growth occurred for ELLs and English-only speakers in the tested areas and demonstrated the potential for increased vocabulary knowledge and comprehension by teaching word-analysis strategies.

3G. Provide student-friendly dictionaries that will allow English Language Learners to look up words essential to comprehending the texts they are reading.

Key Source: Francis, D. J., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2012). *Research-based recommendations for the use of accommodations in large-scale assessments: Practical guidelines for the*

education of English language learners. **Houston, TX: Texas Institute for Measurement, Evaluation, and Statistics at the University of Houston for the Center on Instruction.**

These guidelines drew upon research looking at accommodations on large-scale assessments such as NAEP and state summative assessments.

Notable Points:

- In looking at various accommodations, the researchers found that providing English dictionaries to students during assessments improved their performance and ability to access the test content.

Accommodation	Results for Fixed Effects Analysis									
	Number of Samples	Effect Size and 95% Confidence Interval				Test of Mean Effect = 0		Test of Heterogeneity in Effect Sizes		
		Mean Effect Size	s.e.	Lower Limit	Upper Limit	Z	p	Q	df(Q)	p(Q)
Bilingual Dictionary-Glossary	5	-.096	.065	-.223	.031	-1.479	.139	13.53	4	.009
Dual Language Booklet	1	-.177	.148	-.467	.112	-1.199	.231			
Dual Language Questions + Read Aloud in Spanish	1	.273	.195	-.109	.654	1.401	.161			
English Dictionary-Glossary	11	.146	.043	.063	.230	3.427	.001	14.804	10	.139
Extra Time	2	.209	.142	-.069	.488	1.473	.141	0.155	1	.693
Simplified English	15	.020	.043	-.064	.104	.473	.637	19.830	14	.136
Spanish Version[h]	2	-.263	.102	-.463	-.062	-2.572	.010	14.465	1	<.001
TOTAL WITHIN								62.789	30	<.001
TOTAL BETWEEN								25.540	6	<.001
OVERALL MEAN	37	-.034	.025	-.016	.084	-1.342	.180	87.330	36	<.001

Key Source: Fenner, D. S. (2014). ***Advocating for English learners: A guide for educators.*** **Thousand Oaks, CA: Corwin.**

This book is dedicated to supporting teachers in advocating for ELLs inside and outside the classroom. It makes recommendations on strategic collaborations between classroom teachers and ELL specialists, offers ideas for working with school and district administrations, makes recommendations on how to involve families, and offers practical guidance on supporting ELLs through effective instruction and assessment.

Notable Points:

- Student friendly-dictionaries can be organized in a variety of ways to help ELLs make meaning of new vocabulary, including:
    - Presenting visuals to illustrate words.
    - Providing straight explanations/student-friendly definitions.
    - Providing synonyms.

Objective 4: Engage English Language Learners in instructional conversations in which their attention is drawn to words, phrases, and clauses in texts they are working with.

Supporting Actions:

4A. Highlight "juicy" sentences that feature grade-appropriate complex structures, vocabulary, and language features. Guide students to break apart these sentences, analyze different elements, and determine meaning:

- Create questions that help to build English Language Learners' understanding of syntax and how it can be used to determine word meanings.
- Focus on pronouns and their use.

Key Source: Fillmore, L. W., & Fillmore, C. J. (2012). *What does text complexity mean for English language learners and minority students?* Retrieved from http://ell.stanford.edu/sites/default/files/pdf/academic-papers/06-LWF%20CJF%20Text%20Complexity%20FINAL_0.pdf

In this white paper, the authors argue that complex text poses particular challenges to ELLs and other students who struggle with language. Because written and spoken language vary significantly, many students will only be exposed to the features of academic, written English at school. The paper explains why academic language acquisition is so important and offers recommendations for building language within the context of reading and writing.

Notable Points:

- ELLS and Language Minority students (LMs) do not receive access to the academic language used in writing via conversational English.
    - In a study of classroom transcripts from lesson videos compiled by the Trends in International Mathematics and Science Study (TIMSS), even the language spoken by teachers in the context of instruction doesn't constitute academic language.
- Written English includes many features not found in spoken English such as much greater informational density (each phrase is packed with information critical to making meaning), heavy noun phrases (phrases containing nouns which are modified or expanded upon), and metaphors.
    - Elaboration of nouns is far less common in spoken rather than written English. In informational and expository writing, 60% of nouns are elaborated upon, while in spoken English it is, on average, only 15%.
- After third grade, instructional texts shift from helping students learn to read to *learning from what is read.* This means that students are no longer scaffolded by features such as easily decodable words, simple sentences patterns, and high-frequency words learned mostly by sight.
- To ensure students are able to access the more complex writing they will see, it is important for students to engage in structured discussions around complex features of writing.
- Teachers in high school lab sites in New York saw increased numbers of ELLs passing the ELA proficiency test (and even outperforming non-ELLs) after engaging in 15–20 minutes per day of this kind of close analysis of a single sentence or phrase.

Key Source: August, D., Fenner, D. S., & Snyder, S. (2014). *Scaffolding instruction for English language learners: A resource guide for English Language Arts.* Washington, DC: American Institutes for Research. Retrieved from https://www.engageny.org/resource/scaffolding-instruction-english-language-learners-resource-guides-english-language-arts-and

This resource guide outlines a series of research-cited best practices that help support ELLs in learning words, understanding complex sentences, and comprehending complex text. The document guidance is aimed at users of the EngageNY ELA curriculum, and several example lessons are included to illustrate what the recommendations look like in practice.

Notable Points:

- ELLs will benefit from additional support because of the complexities of English language writing including reference chains where the same people, things, or events are linked throughout a text and the use of pronouns (e.g., he, they, it).

- An example of pronoun work to support ELL instruction is included below as a supplement to a traditional curriculum:

Syntactic Awareness Activity

AIR Additional Supports

Supplement the CK activities that teach singular personal pronouns with an activity that includes concrete objects. An example follows:

- Ask three students to come to the front of the class. Make sure there is a mix of boys and girls. Give each student an object. Have each student enact the following routine: I am _____. I have a _____. I have it. He is _____ [Robert]. He has a _____. He has it. She is _____ [Maria]. She has a _____. She has it. Let them switch objects and the next child talks through the routine.

Objective 5: Provide regular, structured writing opportunities anchored in content to build, extend, and solidify student learning and knowledge.

Supporting Actions:

5A. Allow ELLs to use their home language as they prepare for writing—including researching, discussing, reading, and writing on the topic in their home language prior to writing in English.

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points:

- In regard to supporting ELL students, the panel recommended frequent use of small group instruction for the following reasons:
  - It allows students "the opportunity to listen and speak through critical conversations about text and content in collaborative settings" (p. 51).
  - It allows students to brainstorm and support each other in preparing for a writing activity they might otherwise struggle to prepare for alone.
  - It allows them to provide feedback and react to others' ideas.
- Using different types of grouping is recommended to serve various learning goals for ELLs:
  - Homogeneous groupings allow for targeted support of a students' identified needs that would otherwise not be possible in a whole-class setting.
  - Heterogeneous groupings allow students to benefit from hearing the ideas and oral expression of students at different proficiency levels.
- When groups are composed of English Language Learners, the study recommends providing brief, fast-paced additional comprehension and vocabulary instruction connected to the content being covered.

5B. Provide students with meaningful exposure to writing exemplars/mentor texts that highlight specific elements of a well-structured response.

Key Source: Council of the Great City Schools. (2017). *Re-envisioning English Language Arts and English language development for English language learners.*

This report from the Council of the Great City Schools explains what is needed to master content across grades and helps educators determine if their instructional materials are appropriate for ELLs, all while taking into consideration the requirements of college- and career-ready standards.

Notable Points:

- The report features criteria for materials to be used with English Language Learners. Criterion 6C reads: "Mentor texts across writing genres and registers are routinely used as vehicles for instruction and models for students, as they learn to determine the appropriate register for each writing task (e.g., formal, casual, content-specific)." (pg.26)

Key Source: Bunch, G. C., Kibler, A., & Pimentel, S. (2012). *Realizing opportunities for English learners in the Common Core English Language Arts and Disciplinary Literacy Standards.*

This paper offers research-based recommendations for how to help English Language Learners achieve the requirements of college- and career-ready standards in ELA. The recommendations focus on four areas, one of which is writing.

Notable Points:

- One of the recommendations is to "provide ELs with meaningful exposure to the types of texts they will be writing, guiding students through the linguistic and rhetorical patterns found in different genres" (p. 6).

5C. Provide language-based supports (e.g., linking phrases, sentence frames, word banks) to facilitate students' entry into, and continued development of, writing. (Note: These should not be mandated "fill in the blanks" exercises.)

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to supporting ELL students in developing writing skills, the panel recommends:
    - The use of language-based supports such as graphic organizers to support students at the start of writing assignments (e.g., a compare and contrast graphic organizer before a related writing prompt).
    - The use of sentence starters for text-based analytical writing to help students summarize and analyze material for the assignment.

5D. Provide positive substantive feedback that is specific, constructive, and narrowly tied to the lesson's or week's instructional objectives (i.e., do not assess spelling, grammar, and accuracy of understanding all in one piece of writing--that is an overwhelming amount of feedback).

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

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Notable Points:

- In regard to teacher feedback on writing assignments for ELLs, the panel recommends:
    - Providing feedback tied to the lesson's or week's instructional objective, rather than on multiple objectives (e.g., if the focus of the lesson is on subject-predicate agreement, then do not also provide feedback on spelling and capitalization).
    - Assessing ELL students periodically using a set of pre-shared objectives to determine instructional focus needs.

5E. Focus explicit lessons on meaning-critical grammatical structures and text structure (e.g., transitions and linking phrases).

Key Source: Aguirre-Muños, Z., Park, J. E., Amabisca, A., & Boscardin, C. K. (2008). Developing teacher capacity for serving ELLs' writing instructional needs: A case for systematic functional linguistics. *Bilingual Research Journal, 31*, 295-322.

This study explains Systemic Functional Linguistics (SFL) Theory in the context of training teachers to use the features of the theory to support English Language Learners.

Notable Points:

- The authors describe academic writing in terms of the lexical and grammatical choices made to create ideational, interpersonal, and textual meanings and advocate for explicit instruction on these choices/features:
    - Field: how ideas (or content) are expressed through content words such as participants (noun groups), processes (verbal groups), and adverbial expressions.
    - Tenor: the way that the writer (or speaker) conveys to the reader (or listener) a stance toward the text being created. Such interpersonal meanings are rendered through modal verbs/adverbs, evaluation-laden lexical choices, and constructions such as "I think that…"
    - Mode: the way that language is delivered, rendering textual meanings.
- The authors argue that the SFL approach benefits academic language growth because it deconstructs linguistic structures, making academic language linguistic expectations explicit and discernable to students.

Key Source: Francis, D., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for serving adolescent newcomer*s (Under cooperative agreement grant S283B050034 for U.S. Department of Education). Portsmouth, NH: RMC Research Corporation, Center on Instruction. Retrieved from: https://www2.ed.gov/about/inits/ed/lep-partnership/newcomers.pdf

These guidelines are based on a literature review of best practices in supporting adolescent newcomer ELL students.

Notable Points:

- In regard to writing instruction:
  - The report found that "explicit grammar instruction that is taught in isolation, outside of meaningful contexts—a fairly common practice in English-as-a-Second-Language classrooms—has not been shown to be effective and can actually detract from writing proficiency" (p. 19).
  - The authors argue that a more effective method than isolated grammar instruction is to encourage students to use grammatical elements within the context of writing to communicate meaning. For example: sentence combing—a method by which students are encouraged to use more complex syntax through combining two or more sentences—can be more effective.

Objective 6: Provide focused direct instruction to English Language Learners using a systematic approach to phonological awareness, phonics, and reading fluency, even for those learners who don't have oral proficiency in English.

Supporting Actions:

6A. Provide daily, targeted instruction to ELLs using a systematic scope and sequence for taught phonological awareness, phonics, and reading fluency skills for 30 to 50 minutes, depending on the need.

Key Source: Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. (2007). *Effective literacy and English language instruction for English learners in the elementary grades: A practice guide* (NCEE 2007-4011). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/20074011.pdf

In this Institute of Education Sciences practice guide, the authors formulate specific and coherent evidence-based recommendations for use by educators. They outline actionable recommendations to improve outcomes for English Language Learners. Relevant recommendations include use of formative assessment, targeted small group intervention, and time for student practice (recommendations 1 and 2).

Notable Points:

- For students in kindergarten and grade 1, use early screening for phonological awareness, letter knowledge and letter-sound correspondence, and assessment of single word reading and phonics rules. For middle first grade and beyond, assess accurate and fluent reading of connected text. In grades 2 through 5, screen for oral reading fluency.
- Provide additional instructional support for students who demonstrate areas of need and continue to monitor progress.

- Provide intensive, small-group, explicit, direct reading instruction daily, starting in grade 1. These small groups should be made of students at the same reading skill level but can be a mix of both ELLs and native speakers. This should take place for 30 to 50 minutes depending on the degree of risk or weakness. For these students, explicit and direct instruction should be the primary means of instructional delivery. These groups should utilize an intervention program with explicit instruction on the five core reading elements (phonological awareness, phonics, reading fluency, vocabulary and comprehension) and multiple practice opportunities for students.
- Emphasize vocabulary instruction throughout all content areas. Teach essential selected words, connected to core content, in depth and explicitly. Instruct on the meaning and use of everyday words.
- Schedule about 90 minutes a week in which pairs of students at different English language proficiencies work together on academic tasks that practice and extend what has been taught.

6B. Utilize focused, intensive small group direct reading instruction in phonics, phonological awareness, and reading fluency in small homogeneous groups (made-up of ELLs and native speakers).

Key Source: 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). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://ies.ed.gov/ncee/wwc/publications_reviews.aspx

After reviewing many rigorous studies of instructional interventions for ELL students, a panel compiled four recommendations (and accompanying instructional strategies) that are supported by causal evidence as effective for supporting ELLs. The document is intended as practitioner guidance for educators teaching elementary and middle school ELLs.

Notable Points:

- In regard to supporting ELL students, the panel recommended frequent use of small group instruction for the following reasons:
  - It allows students "the opportunity to listen and speak through critical conversations about text and content in collaborative settings" (p. 51).
  - It allows students to brainstorm and support each other in preparing for a writing activity they might otherwise struggle to prepare for alone.
  - It allows them to provide feedback and react to others' ideas.
- Using different types of grouping is recommended to serve various learning goals for ELLs:
  - Homogeneous groupings allow for targeted support of a students' identified needs that would otherwise not be possible in a whole-class setting.
  - Heterogeneous groupings allow students to benefit from hearing the ideas and oral expression of students at different proficiency levels.
- When groups are composed of English Language Learners, the study recommends providing brief, fast-paced additional comprehension and vocabulary instruction connected to the content being covered.
- For students who struggle with foundational skills such as phonemic awareness and decoding, use small-group time to bolster these skills. Couple foundational skills support with vocabulary development, listening, and reading comprehension.

6C. Use systematic assessment, weekly or biweekly, to monitor ELLS at high risk of reading problems.

Key Source: Gersten, R., Baker, S. K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. (2007). *Effective literacy and English language instruction for English learners in the elementary grades: A practice guide* (NCEE 2007-4011). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/20074011.pdf

In this Institute of Education Sciences practice guide, the authors formulate specific and coherent evidence-based recommendations for use by educators. They outline actionable recommendations to improve outcomes for English Language Learners. Relevant recommendations include use of formative assessment, targeted small group intervention, and time for student practice (recommendations 1 and 2).

Notable Points:

- For students in kindergarten and grade 1, use early screening for phonological awareness, letter knowledge and letter-sound correspondence, and assessment of single word reading and phonics rules. For middle first grade and beyond, assess accurate and fluent reading of connected text. In grades 2 through 5, screen for oral reading fluency.
- Provide additional instructional support for students who demonstrate areas of need and continue to monitor progress.
- Provide intensive, small-group, explicit, direct reading instruction daily, starting in grade 1. These small groups should be made of students at the same reading skill level but can be a mix of both ELLs and native speakers. This should take place for 30 to 50 minutes depending on the degree of risk or weakness. For these students, explicit and direct instruction should be the primary means of instructional delivery. These groups should utilize an intervention program with explicit instruction on the five core reading elements (phonological awareness, phonics, reading fluency, vocabulary and comprehension) and multiple practice opportunities for students.
- Emphasize vocabulary instruction throughout all content areas. Teach essential selected words, connected to core content, in depth and explicitly. Instruct on the meaning and use of everyday words.
- Schedule about 90 minutes a week in which pairs of students at different English language proficiencies work together on academic tasks that practice and extend what has been taught.

Math English Language Learner Objectives

In mathematics, the Objectives are grounded in two underlying concepts:

1. ELL students must be given access to grade-level appropriate, standards-aligned mathematics content. All adaptations and guidance must be in service of helping ELLs access mathematics content. Watered-down or extraneous activities not tied to the mathematics itself are not acceptable.
2. All routines and activities to support ELLs must have a mathematical purpose (i.e., they should enhance, not distract from, the mathematics learning).

Objective 1: Support the majority of mathematical language acquisition within the context of the mathematical learning. Limit explicit language instruction to the occasions when the necessary terminology is a prerequisite for engaging with the content.[7]

Supporting Actions

1A. Provide, and invite students to produce, multi-modal representations of terms and concepts, including: pictures, diagrams, presentations, written explanations, gestures, and non-examples.

Key Source: Council of the Great City Schools. (2016). *A framework for re-envisioning mathematics instruction for English language learners.*

This document seeks to define a new vision for mathematics instruction that addresses the learning needs of ELLs. Based on the belief that grade-level mathematics are for ALL students, the framework articulates a theory of action for allowing ELLs to participate fully in grade-level instruction, identifies instructional practices that allow ELLs to participate, and lays out criteria that should be present in instructional materials supportive of ELLs.

Notable Points:

Specifically related to the concepts of multi-modal representations, the framework says that:

- "Students' understanding deepens when they are given the opportunity to create and analyze diagrams, tables, and graphs to represent a problem concretely or pictorially, as well as verbally or in writing, and to make explicit connections between and among these various representations" (p. 14).
- Developing a classroom culture that frequently makes use of multi-modal communication and representations in teacher talk, problem annotations, written explanations, and classroom discourse support and advance students' understanding of mathematics.
- "It is important to keep in mind that 'multi-modal' and 'multiple representations' mean more than just listening, speaking, reading, and writing. For example, teachers' use of visual representations—such as gestures, drawings, mathematical symbols, models, and diagrams—can support mathematical thinking for ELLs and other students with language-related needs" (p. 14).

[7] Note: Not all strategies must be addressed in every set of adaptations.

1B. Acknowledge words with multiple meanings (polysemy) and support students in identifying which is the mathematical definition (e.g. round, left, product).

Key Source: Key Source: Driscoll, M., Nikula, J., & DePiper, J. N. (2016). *Mathematical thinking and communication access for English learners.* Portsmouth, NH: Heinemann.

Created out of a decade of work with mathematics teachers, this book explores the role of language in learning mathematics.

Notable Points:

- In discussing the development of academic language in context, the authors clarify the various components of mathematical language within classroom discourse.
- The words and phrases in mathematics take on a variety of forms: "words referring to thinking and communicating (e.g., analysis, deny); words common across subjects but with different meanings depending on subject (e.g., base, element); and words that have common meanings that differ from discipline-specific meanings (e.g., prove, property)" (Driscoll, Heck, and Malzahn, 2012, p. 170).
- They introduce a language routine entitled Clarifying Vocabulary that requires teachers to anticipate which terms or phrases in a problem need clarification and which do not, and when and how during the lesson specific terms or phrases should be clarified. Identifying when clarity and formal definitions are necessary within a lesson aids students in acquiring new language related to the problem at hand while providing them freedom to use imprecise language as they develop mathematical understanding.
- "Defining terms should not replace students' involvement in the mathematical work of the lesson but instead should help students understand formal or informal definitions of words to strengthen both students' communication and their understanding of the task."

1C. Listen for students' articulation of concepts and do not penalize students for using imprecise language. Build on students' contributions through revoicing imprecise student language into precise mathematical language.

Key Source: Khisty, L., & Chval, K. (2002). *Pedagogic discourse and equity in mathematics: When teachers' talk matters.*

This paper analyzes the pedagogy of a fifth-grade math teacher and her "rich and powerful use of talk" within the classroom to support students develop language and mathematical meaning.

Notable Points:

- "Ms. Martinez frequently used mathematical words in her talk and students began using these same words in written and oral discourse." She helps students construct meaning of mathematical language in the context of a problem. Through mathematical discourse, the teacher then builds off of imprecise student language to more formal mathematical language.
- The teacher generalizes student thinking for the benefit of the class, extends that thinking and connects it to meaning of mathematical vocabulary from the problem. She is "teaching the academic second language through content."
- "Ms. Martinez guides her entire class in thinking via her questions and when she provides oral examples of mathematical discourse – and in general, academic talk in their second language….She has made speaking mathematically a critical part of learning mathematics."

Key Source: Moschkovich, J. (2012). *Mathematics, the Common Core, and language: Recommendations for mathematics instruction for ELs aligned with the Common Core*. Retrieved from http://ell.stanford.edu/sites/default/files/pdf/academic-papers/02-JMoschkovich%20Math%20FINAL_bound%20with%20appendix.pdf

This paper outlines recommendation for designing college- and career-ready math instruction for ELLs. The recommendations are not intended to be "quick-fixes" but rather principles to help educators, curriculum developers, and teacher trainers to develop their own principles based on a strong foundation of research.

Notable Points:

- The first recommendation, aimed at connecting mathematics content to language, is to "Focus on students' mathematical reasoning, not accuracy, in using language." Moschkovich explains that when engaging in the mathematical practices, students are likely to use imperfect English. Teachers should not be sidetracked by correcting language but instead focus on the meaning of students' contributions and their ability to exhibit the mathematical practices.
- Eventually, after students have exhibited proficiency in the mathematical practices, teachers can move students toward accuracy in language.
- It can be difficult to understand what errors in students' contributions are due to language development and which are due to lack of conceptual understanding, but teachers can employ strategies such as asking for clarification, re-phrasing student statements, accepting and building on what students say, and probing what students mean. It is important, when probing or clarifying, to focus on the content, not directly on vocabulary.

1D. Provide opportunities for students to practice and refine their use of mathematical language through using the Four Skills approach: Reading, Writing, Speaking, and Listening (e.g., in modalities such as small group and class discussion, written work, classroom activities).

Key Source: Zwiers, J., Dieckmann, J., Rutherford-Quach, S., Daro, V., Skarin, R., Weiss, S., & Malamut, J. (2017) *Principles for the design of mathematics curricula: Promoting language and content Development*. Retrieved from http://ell.stanford.edu/sites/default/files/u6232/ULSCALE_ToA_Principles_MLRs__Final_v2.0_030217.pdf

Developed by faculty from Stanford University's Graduate School of Education, this report offers guidance to mathematics teachers as they support students' "language development processes in the context of mathematical sense making." Four design principles (support sense making, optimize output, cultivate conversation, maximize linguistic and cognitive meta-awareness) are the framework put forth to guide curriculum development and planning, and execution of instruction. From these design principles a series of eight language routines were developed for teachers to use in the classroom.

Notable Points:

- Mathematical Language Routine 1: Stronger and Clearer Each Time
  - In this routine, "students think or write individually about a response, use a structured pairing strategy to have multiple opportunities to refine and clarify the response through conversation, and then finally revise their original written response. Throughout this process, students should be pressed for details, and encouraged to press each other for details. Subsequent drafts should show evidence of incorporating or addressing new ideas or language. They should also show evidence of refinement in precision, communication, expression, examples, and/or reasoning about mathematical concepts." (pg. 9)
- Mathematical Language Routine 4: Information Gap
  - In this routine, "teachers facilitate meaningful interactions by giving partners or team members different pieces of necessary information that must be used together to solve a problem or play a game. With an information gap, students need to orally (and/or visually) share their ideas and

information in order to bridge the gap and accomplish something that they could not have done alone. Teachers should model how to ask for and share information, clarification, justification, and elaboration. This routine cultivates conversation." (pg. 13)

Key Source: Kelemanik, G., Lucenta, A., & Creighton, S. (2016). *Routines for reasoning.* Portsmouth, NH: Heinemann.

This book outlines practical mathematical routines teachers and students can do repeatedly "until the steps to follow, thinking skills to employ, and questions to ask become automatic — enabling *all* students to engage more fully in learning opportunities while building crucial mathematical thinking habits."

Notable Points:

- The authors highlight *providing a language-rich learning environment* as one of five guiding principles of instruction that promote the Standards for Mathematical Practices, with a particular focus on the needs of ELLs and students with learning disabilities.
- "Providing opportunities through instructional techniques such as think-pair-share and turn-and-talks is not only critical to student sense making, it is essential to developing two of the math practices – *construct viable arguments and critique the reasoning of others* and *attend to precision."*
- The authors introduce four instructional routines that promote mathematical thinking and reasoning through a repetitive structure. All routines contain core elements, including:
    - individual think time
    - partner work
    - full-group discussion of ideas

Key Source: Chval, K. B., & Chávez, O. (2011). Designing math lessons for English language learners. *Mathematics Teaching in the Middle School*, *17*(5), 261-265. Retrieved from http://www.jstor.org/stable/10.5951/mathteacmiddscho.17.5.0261

The authors of this paper provide recommendations for mathematics teachers to enhance and adapt their pedagogy and curricular materials for English Language Learners through a four-part instructional practice routine.

Notable Points:

- The relevant step of this four-part process is: "establish, facilitate, and maintain productive classroom interactions." (pg. 264)
- One recommendation is for teachers to look for opportunities for ELLs to share their work during whole-class discussions, for example, by displaying tasks on the SMART Board while students share their solution strategies. To implement this specific strategy, the teachers needed to change their beliefs that such experiences would make ELLs feel uncomfortable.
- Teachers must also change their expectations and adjust their practice to take into account highlighted research-based strategies. For example, teachers should carefully select partnerships, recognizing that some students who dominate partnerships would not help ELLs gain confidence in group activities.

Objective 2: Provide supports to allow all English Language Learners access to the mathematical concepts being introduced.[8]

2A. Build in opportunities for students to demonstrate understanding through activities tailored to student needs

1. Check for understanding by encouraging students to rephrase or demonstrate (via acting out or drawing) their understanding of the problem.
2. Encourage use of pictures/graphics (e.g. graphs, tables, formulas) as a way to make sense of a task versus only as a method for getting an answer.
3. Build in opportunities for whole class, small group, and paired discussion for the purpose of developing mathematical concepts and language.
4. Integrate structures and frames within student-facing work to help them demonstrate their mathematical work and thinking, while being careful to avoid over-scaffolding or over-proceduralization of tasks.

Key Source: Chval, K. B., & Chávez, O. (2011). Designing math lessons for English language learners. *Mathematics Teaching in the Middle School, 17*(5), 261-265. Retrieved from http://www.jstor.org/stable/10.5951/mathteacmiddscho.17.5.0261

The authors of this paper provide recommendations for mathematics teachers to enhance and adapt their pedagogy and curricular materials for English Language Learners through a four-part instructional practice routine.

Notable Points:

- The steps in the process are:
  - Support the development of mathematics.
    - Use gestures, drawings, or students' native language to make meaning of the mathematics.
    - Develop language skills and vocabulary in the context of mathematical learning.
  - Support the development of language.
    - Do not reduce the rigor or complexity of the content.
    - Create a language-rich classroom, writing essential terminology on the board, and having students discuss and revise their work.
    - Do not avoid using math vocabulary when discussing problems; build it over time.
    - Discuss multiple meanings of words, including the mathematical definition.
  - Enhance mathematical tasks.
    - Use visual supports to help build contextual meaning.
    - Create problem sets that have a single context to allow the focus to be on the mathematics, not understanding varied contexts and vocabulary.
    - Build and enhance vocabulary within the context of the mathematics.
  - Establish, facilitate, and maintain productive classroom interactions.
    - Strategically select groups and partnerships to allow ELLS to gain confidence and engage in group work.
    - Create opportunities for ELLs to share their work during whole-class discussions.

Key Source: Brooks, F. B., & Donato, R. (1994). Vygotskyan approaches to understanding foreign language learner discourse during communicative tasks. *Hispana, 77*(2), 262-274.

In this study of third-year high school students, student pairs sat opposite from each other with a wooden barrier between them & were directed to work together in a second language on an information-gap, jigsaw

[8] Note: Not all strategies must be addressed in a set of adaptations.

task to find and draw in what the other had on his or her part of a diagram that was both similar to and different from the other's diagram. When finished, the partners (theoretically) will each have drawn a representation of the same diagram.

Notable Points

- When individuals are faced with a task, they sometimes need to speak in their own language to externalize the goal or end result of their activity. Even though teachers (and researchers) often provide task goals, there are moments where confusion still exists.
    - An example from the data shows a participant who—after being given instructions—felt compelled to interrupt his own talk and use his first language to reacquaint himself with the purpose of the activity. He took control of the activity to reorient himself to the task goal.
- The authors agree that use of the first language during an assignment intended to be done in a second language is a natural and necessary part of the process, and actually supports use of the second language in the long-term.
- Allowing use of the second language increases student engagement and gives students control over the communicative interactions—thus allowing them to engage more meaningfully with the tasks rather than simply using a second language.

2B. Highlight the tier two words that cut across all subjects that may be challenging for ELLs (describe, illustrate, etc.). Prompt teachers with strategies to help students practice tier two vocabulary in an authentic way within the math classroom.

1. Use synonyms when introducing new tier two words.
2. Model the action described by a tier two word before asking students to engage in it (e.g. model what it means to "interpret" data).

Key Source: Francis, D., Rivera, M., Lesaux, N., Kieffer, M., & Rivera, H. (2006). *Practical guidelines for the education of English language learners: Research-based recommendations for serving adolescent newcomers* (Under cooperative agreement grant S283B050034 for U.S. Department of Education). Portsmouth, NH: RMC Research Corporation, Center on Instruction. Retrieved from https://www2.ed.gov/about/inits/ed/lep-partnership/newcomers.pdf

In this literature review, the authors outline several evidence-based practices for helping ELLs develop the academic language skills they need in order to access content across subject areas

Notable Points:

- Content-area instruction must include support for the language and literacy demands of material. A content-based literacy approach incorporates explicit instruction in language and literacy, addresses the needs of all adolescent learners, and can draw on the cognitive skills and knowledge of many newcomers.
- Content-based support for language acquisition features several components:
    - Pre-identification of potential sources of students' comprehensions difficulties.
    - Explicit instruction on language and literacy skills within the context of meaningful content-specific work.
    - Instruction focused on the demands facing students in their grade-level work, not remediation of "basic" reading skills.
    - Planning that includes pre-identification of the content knowledge and concepts students need to learn in a particular lesson and then identification of potential challenges.
    - Development of two goals for each lesson: a content knowledge goal and a language/literacy objective.

2C. Write essential ideas/concepts on the board as a reference for students.

Key Source: Chval, K. B., & Chávez, O. (2011). Designing math lessons for English language learners. *Mathematics Teaching in the Middle School*, *17*(5), 261-265. Retrieved from http://www.jstor.org/stable/10.5951/mathteacmiddscho.17.5.0261

The authors of this paper provide recommendations for mathematics teachers to enhance and adapt their pedagogy and curricular materials for English Language Learners through a four-part instructional practice routine.

Notable Points:

- The authors develop a four-part process for designing math lessons for ELLs. Based on experience working with teachers, the array of supports can seem overwhelming, so these inter-connected steps are intended to streamline support. The authors cite seven research-backed strategies to support the different stages of the process. The sixth strategy is "Write essential ideas, concepts, representations, and words on the board without erasing so that students can refer to them throughout the lesson."

Fig. 1 These 7 research-based strategies are key to supporting ELLs' mathematical proficiency.

1. Connect mathematics with students' life experiences and existing knowledge (Barwell 2003; Secada and De La Cruz 1996).
2. Create classroom environments that are rich in language and mathematics content (Anstrom 1997; Khisty and Chval 2002).
3. Emphasize meaning and the multiple meanings of words. Students may need to communicate meaning by using gestures, drawings, or their first language while they develop command of the English language and mathematics (Moll 1988, 1989; Morales, Khisty, and Chval 2003; Moschkovich 2002).
4. Use visual supports such as concrete objects, videos, illustrations, and gestures in classroom conversations (Moschkovich 2002; Raborn 1995).
5. Connect language with mathematical representations (e.g., pictures, tables, graphs, equations) (Khisty and Chval 2002).
6. Write essential ideas, concepts, representations, and words on the board without erasing so that students can refer to them throughout the lesson (Stigler, Fernandez, and Yoshida 1996).
7. Discuss examples of students' mathematical writing and provide opportunities for students to revise their writing (Chval and Khisty 2009).

2D. Point out metacognitive strategies, such as making connections to other concepts and prior learning.

Key Source: Zwiers, J., Dieckmann, J., Rutherford-Quach, S., Daro, V., Skarin, R., Weiss, S., & Malamut, J. (2017) *Principles for the design of mathematics curricula: Promoting language and content development*. Retrieved from http://ell.stanford.edu/sites/default/files/u6232/ULSCALE_ToA_Principles_MLRs__Final_v2.0_030217.pdf

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conversation, maximize linguistic and cognitive meta-awareness) are the framework put forth to guide curriculum development and planning, and execution of instruction. From these design principles a series of eight language routines were developed for teachers to use in the classroom.

Notable Points:

- Principle 4 is: Maximize Meta-Awareness: Strengthen the meta-connections and distinctions between mathematical ideas, reasoning, and language.
    - "Meta-awareness is consciously thinking about one's own thought processes or language use." (pg. 8)
    - Meta-awareness is developed through classroom activities or discussion about how students can improve communication and reasoning about mathematical concepts.
    - An example of a meta-awareness activity is to ask students to explain their strategies in solving a multi-step problem since students must think about how to convey their thought processes.
    - Metacognitive questions (e.g., How does yesterday's method connect with the method we are learning today?) help students reflect on their own and others' learning.
    - Students can also compare the language they use to describe their work to that of their peers; this is known as meta-linguistic work.
- The Mathematical Language Routines are a "structured but adaptable format for amplifying, assessing, and developing students' language," (pg. 9) and they support students in learning mathematical content, practices, and language. Each MLR is accompanied by example scenarios derived from educators and researchers to support classroom implementation. There are eight MLRs in total, two of which include:
    - Mathematical Language Routine 2: Collect and Display – "The teacher listens for, and scribes, the language students use during partner, small group, or whole class discussions using written words, diagrams and pictures. This collected output can be organized, revoiced, or explicitly connected to other language in a display that all students can refer to, build on, or make connections with during future discussion or writing…This routine provides feedback for students in a way that increases sense-making while simultaneously supporting meta-awareness of language." (pg. 11)
        - Example 1 – Gather and Show Student Discourse (Dieckmann, 2017) – "During pair/group work, circulate and listen to student talk during pair work or group work, and jot notes about common or important words and phrases, together with helpful sketches or diagrams. Scribe students' words and sketches on visual display to refer back to during whole class discussions throughout the unit. Refer back to these words, phrases, and diagrams by asking students to explain how they are useful, asking students to clarify their meaning, and asking students to reflect on which words and visuals help to communicate ideas more precisely." (pg. 11)
    - Mathematical Language Routine 7: Compare and Connect – "Students should be prompted to reflect on and linguistically respond to these comparisons (e.g., exploring why or when one might do/say something a certain way, identifying and explaining correspondences between different mathematical representations or methods, wondering how an idea compares or connects to other ideas and/or language.) Teachers should model thinking out loud about these questions. This routine supports meta-cognitive and meta-linguistic awareness, and also supports mathematical conversation." (pg. 16)
        - Example 2 – Which One Doesn't Belong? "Pairs of students are provided with sets of four numbers, equations, expressions, graphs, or geometric figures. They must decide together how to group the sets so that three of the items fit within a category they have created and one does not. Both partners should be prepared to explain to a different group how they agreed on a category and justify which item did not fit." (pg. 17)

Key Source: Kelemanik, G., Lucenta, A., & Creighton, S. (2016). *Routines for reasoning.* Portsmouth, NH: Heinemann.

This book outlines practical mathematical routines teachers and students can do repeatedly "until the steps to follow, thinking skills to employ, and questions to ask become automatic — enabling *all* students to engage more fully in learning opportunities while building crucial mathematical thinking habits."

Notable Points:

- The authors introduce four instructional routines that promote mathematical thinking and reasoning through a repetitive structure, including Connecting Representations**.** This routine is used to support students in the metacognitive work of identifying and connecting equivalent representations with a focus on mathematical structure through a series of consistent steps (e.g., launch routine, interpret and connect representations, create representations, discuss representations, and reflect on your thinking).
    - This routine is designed to help students see mathematical connections between representations to support learning.
    - The sentence starters and sentence frames that are embedded in this routine help students communicate structural elements of representations.
    - "The same language that supports the development of structural thinking poses challenges for ELLs. However, throughout this routine, whenever language is spoken, it is also supported with gestures, annotation, and/or recording."

2E. Provide students with support in negotiating written word problems through multiple reads and multi-modal interactions with the problem.

Key Source: Driscoll, M., Nikula, J., & DePiper, J. N. (2016). Mathematical thinking and communication access for English learners. Portsmouth, NH: Heinemann.

Created out of a decade of work with mathematics teachers, this book explores the role of language in learning mathematics. The authors introduce four principles for designing instruction: challenging tasks, multimodal representations, development of mathematical communication, and repeated structure practice are meant to serve as guidance for teachers to create access to mathematics for English Language Learners.

Notable Points:

- "Multimodal mathematical communication refers to the various ways in which students convey their mathematical thinking, including language, gestures, drawings, or the use of tools (e.g., physical models, manipulatives, and technology)."
- Acting Out and Realia are two language routines described in the book wherein students and teachers can use physical objects or simply pretend as they act out a mathematical problem. Seeing objects and actions as students listen to the vocabulary of the problem in context supports meaning making for English Language Learners.

Key Source: Kelemanik, G., Lucenta, A., & Creighton, S. (2016). *Routines for reasoning.* Portsmouth, NH: Heinemann.

This book outlines practical mathematical routines teachers and students can do repeatedly "until the steps to follow, thinking skills to employ, and questions to ask become automatic — enabling *all* students to engage more fully in learning opportunities while building crucial mathematical thinking habits."

Notable Points:

- The authors introduce four instructional routines that promote mathematical thinking and reasoning through a repetitive structure, including:
    - Three Reads - This routine is used to support students to make sense of word problems and is typically used when introducing a mathematics problem to a class. Between each read there is a time for partner and full group share-out.
        - The first read is to get a sense of what the problems is about. Students should not focus on the quantities or relationships between them during this reading.
        - The second read is to figure out the question. The problem is read again in its entirety, looking specifically for information that answers the question, "What am I trying to find out?"
        - The third read is to identify important information that is needed to solve the problem.

Objective 3: Write tasks with care to allow English Language Learners to engage with the mathematical concepts.

3A. Avoid unnecessarily complex language that impedes students from accessing the mathematics of the lesson and consider:

1. Using active instead of passive voice.
2. Using short, simple sentences -- splitting apart complex sentences or ones that have conditional clauses into two sentences.
3. Including terms that point directly to what is being asked for in the mathematics (e.g. "what fraction of the pasta is left?" if the answer should be a fraction.
4. Using present tense and simple past tense verbs instead of more complex tenses.

Key Source: Young, J. W., Pitoniak, M. J., King, T. C., & Ayad, E. (2012). *Smarter Balanced Assessment Consortium: Guidelines for accessibility for English language learners*. Retrieved from https://portal.smarterbalanced.org/library/en/guidelines-for-accessibility-for-english-language-learners.pdf

This presentation lays out best practices for allowing ELLs to access large-scale, grade-level assessments.

Notable Points:

- The authors make the following recommendations within the presentation:
    - Design test directions to maximize clarity and to minimize the potential for confusion.
    - Use vocabulary in test items that is widely accessible to all students and avoid unfamiliar vocabulary that is not directly related to the construct (August, Carlo, & Snow, 2005; Bailey, Huang, Shin, Farnsworth, & Butler, 2007).
    - Avoid the use of syntax or vocabulary that is above the test's target grade level (Borgioli, 2008). The test item should be written at a vocabulary level no higher than the target grade level, and preferably at a slightly lower grade level, to ensure that all students understand the task presented (Young, 2008).
    - Keep sentence structures as simple as possible while expressing the intended meaning. In general, ELLs will find a series of simpler, shorter sentences to be more accessible than longer, more complex sentences (Pitoniak, Young, Martiniello, King, Buteux, & Ginsburgh, 2009).
    - Consider the impact of cognates (words with a common etymological origin) when developing test items. More importantly, be particularly aware of false cognates (or more precisely, false friends), which are word pairs or phrases that appear to have the same meaning in two or more languages, but in fact, do not. Spanish and English share literally thousands of cognates, and because the large majority of ELLs speak Spanish as their first language (nationally, more than

75%), the presence of cognates can inadvertently confuse students and alter the skills being assessed by a test item. Examples of false cognates include: billion (the correct Spanish word is *mil millones*; not billón, which means trillion); deception (*engaño*; not decepción, which means disappointment); large (*grande*; not largo, which means long); library (*biblioteca*; not librería, which means bookstore).
    - Do not use cultural references or idiomatic expressions (such as "being on the ball") that are not equally familiar to all students (Bernhardt, 2005).
    - Avoid sentence structures that may be confusing or difficult to follow, such as the use of passive voice or sentences with multiple clauses (Abedi & Lord, 2001; Forster & Olbrei, 1973; Schachter, 1983).
    - Do not use syntax that may be confusing or ambiguous, such as using negation or double negatives in constructing test items (Abedi, 2006; Cummins, Kintsch, Reusser, & Weimer, 1988).
    - Minimize the use of low-frequency, long, or morphologically complex words and long sentences (Abedi, 2006; Abedi, Lord & Plummer, 1995).

3B. Allow for multi-modal representations

Key Source: Council of the Great City Schools. (2016). *A framework for re-envisioning mathematics instruction for English language learners*.

This framework lays out research-based criteria that should be present in instructional materials supportive of ELLs.

Notable Points:

- Criteria related to multi-modal representations include:
    - 1.8 - Materials reference and require students to make connections between linguistic and non-linguistic representations. This includes using a student's primary language, mathematical symbols, and using a variety of representations such as pictures, diagrams, drawings, graphs, tables, etc.
    - 2.5 - Materials strategically use a variety of representations for students to make meaning of procedural skills as they engage in repeated practice.
    - 3.6 - Materials facilitate students making sense of quantities expressed in different representations for solving problems.
    - 3.7 - Materials reference and require students to make connections between linguistic and non-linguistic representations.
    - 4.5 - Materials highlight opportunities for students to make connections between representations, generate and discuss multiple representations of mathematical concepts or procedures, communicate their thinking about multiple representations, and justify their reasoning while using multiple representations.
    - 5.7 - Materials prompt teachers to prepare for a lesson by considering ahead of time how students might use multiple representations to describe, analyze, critique mathematical reasoning, and correct errors in problem solving.
    - 5.8 - Materials encourage students to relate multiple representations to academic language by requiring them to use multiple approaches and mathematical representations in solving problems and describing their reasoning.
    - 6.8 - Materials provide alternative ways to acquire new information, share mathematical reasoning, and participate in mathematical practices such as listening, reading, speaking, and writing in addition to engaging students in multiple modes of input (e.g., visual, kinesthetic).
    - 6.9 - Materials use multi-modal representations to support development of academic language and mathematical concepts, and materials model for students how to use the various representations to communicate their knowledge.

- 6.10 - Materials require that students use multiple representations (talk, text, drawings, diagrams, math symbols, graphs, tables, etc.) as an intermediate step between the text (for example, a word problem or textbook passage) and the symbolic (math symbols such as numbers, operations, or variables) phases of solving a mathematical task.

3C. Elicit evidence of thinking both verbally and in written form (e.g., explain your thinking, draw a picture to illustrate your solution).

Key Source: Moschovich, J. (2012). *Mathematics, the Common Core, and language: Recommendations for mathematics instruction for ELs aligned with the Common Core*. University of California, Santa Cruz. Retrieved from http://ell.stanford.edu/sites/default/files/pdf/academic-papers/02-JMoschkovich%20Math%20FINAL_bound%20with%20appendix.pdf

This paper outlines recommendation for designing college- and career-ready math instruction for ELLs. The recommendations are not intended to be "quick-fixes" but rather principles to help educators, curriculum developers, and teacher trainers to develop their own principles based on a strong foundation of research.

Notable Points:

- Recommendation three is: Recognize and support students to engage with the complexity of language in math classrooms.
  - Language in mathematics classrooms should involve multiple modes (oral, written, receptive, expressive).
  - Language needs to go beyond talking and consider the interaction of: natural language, mathematics symbol displays, and visual displays.
- Mathematical Language Routine 1, Stronger and Clearer Each Time, provides a "structured and interactive opportunity for students to revise and refine both their ideas and their verbal and written output" (Zwiers, 2014).
- This routine provides a purpose for student conversation as well as fortifies output. The main idea is to have students think or write individually about a response, use a structured pairing strategy to have multiple opportunities to refine and clarify the response through conversation, and then finally revise their original written response.
- Throughout this process, students should be pressed for details, and encouraged to press each other for details….They should also show evidence of refinement in precision, communication, expression, examples, and/or reasoning about mathematical concepts.
  - Example 2 – Convince Yourself, a Friend, a Skeptic: "Students create three iterations of a mathematical argument or justification for three different audiences.
    1. For the first draft, students explain or justify their argument in whatever way initially makes sense to them.
    2. In the second draft, students are encouraged to explain WHAT they know and HOW they know it is true. Their explanations should include words, pictures, and numbers. They trade their written arguments with a peer who acts as a 'friend' giving feedback on these components (WHAT and HOW).
    3. In the third draft, students are encouraged to explain WHY what they know is true by supporting their claims with evidence. Their explanations should include words, pictures, numbers, and examples. They should include examples that look like they might not be true but actually are. They should anticipate and address counter-arguments. They trade their written arguments with a peer who acts as a 'skeptic' giving feedback on these components (WHY, examples, counter-arguments)."

Key Source: Council of the Great City Schools. (2016). *A framework for re-envisioning mathematics instruction for English language learners*.

This document seeks to define a new vision for mathematics instruction that addresses the learning needs of ELLs. Based on the belief that grade-level mathematics are for ALL students, the framework articulates a theory of action for allowing ELLs to participate fully in grade-level instruction, identifies instructional practices that allow ELLs to participate, and lays out criteria that should be present in instructional materials supportive of ELLs.

Notable Points:

- Criteria related to the speaking and writing about mathematics include:
    - 4.5 - Materials highlight opportunities for students to make connections between representations, generate and discuss multiple representations of mathematical concepts or procedures, communicate their thinking about multiple representations, and justify their reasoning while using multiple representations.
    - 4.6 - Materials and assignments provide abundant and diverse opportunities for speaking, listening, reading, and writing, encouraging students to take risks, construct meaning, and seek reinterpretations of knowledge.
    - 4.8 - Materials afford students the opportunity to actively use mathematical language to master the major work of the grade, focusing on students' mathematical reasoning, not on accuracy of language.