



What Teachers Should Know About Instruction for English Language Learners

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Education Northwest (formerly Northwest Regional Educational Laboratory) was founded almost 50 years ago as a nonprofit corporation. Our mission is to improve learning by building strong schools, families, and communities. We draw on many years of experience designing and conducting educational and social research, as well as providing consultation for a broad array of research and development efforts. One of our particular areas of focus is equity and serving English language learners. This report is excerpted from a research summary conducted at the request of the Washington state legislature in 2008.

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WHAT TEACHERS SHOULD KNOW ABOUT INSTRUCTION FOR ENGLISH LANGUAGE LEARNERS

Executive Summary

Originally commissioned by the Washington state legislature, this report is intended to inform lawmakers and other policymakers about educational research findings on effective instructional practices for English language learners (ELLs). In turn, this may influence training for teachers at both the preservice (teacher preparation) and inservice (on-the-job professional development) levels.

This report responds to a direct request made in 2007 by the Washington state legislature (SB 5481). One piece of that multifaceted legislation requested that Education Northwest conduct a literature review and consult with nationally recognized experts to address the following questions:

1. What should mainstream classroom teachers know (“foundational competencies”) in order to work effectively with ELLs?
2. How should ELL specialists and mainstream classroom teachers work together for the benefit of their ELLs?

This report addresses these questions by reviewing existing research, assessing the strength of its evidence, and summarizing it in language that makes sense to legislators and other policymakers.

Rigorous research studies on effective instruction for ELLs are, unfortunately, all too rare. Many questions remain that cannot be answered as definitively as policymakers and educators might wish. Nevertheless, we were able to identify a series of 14 key principles that teachers of ELLs should know. These principles are “big ideas” or concepts about second language acquisition and the academic

challenges ELLs face. Following each principle, we lay out the instructional implications that stem from it; that is, what teachers should do in their classrooms to support their ELLs.

The first five principles apply to all teachers, regardless of what grade or subject area they teach. Additional principles apply to teachers of particular subject areas: language arts, mathematics, social studies, and science.

WHAT ALL TEACHERS SHOULD KNOW

Principle 1: ELLs move through different stages as they acquire English proficiency and, at all stages, need comprehensible input.

Beginning ELLs typically understand a little but may not speak very much. These students face different challenges than those with intermediate level skills, who may be able to communicate interpersonally but lack specific vocabulary. Regardless of students’ proficiency levels, they need “comprehensible input” or information that is conveyed in a manner that ensures they can understand, even if they do not know every word. For example, for some students, that might mean communication through gestures or pictures; for other students, it might mean conveying new ideas with reference to terms already learned.

Teachers should:

- Scaffold their instruction and assignments and provide multiple representations of concepts
- Promote student interaction that is structured and supported

Principle 2: There is a difference between conversational and academic language; fluency in everyday conversation is not sufficient to ensure access to academic texts and tasks.

The language used in everyday communication is distinct from the language used in classroom discourse. It is all too easy to misinterpret a student’s ability to communicate with classmates on the playground or in the lunchroom—that is, a student’s facility with conversational English—as an ability to understand English in any setting, whether in chemistry labs or historical debates.

Teachers should:

- Provide explicit instruction in the use of academic language
- Provide multi-faceted and intensive vocabulary instruction with a focus on academically useful words

Principle 3: ELLs need instruction that will allow them to meet state content standards.

It takes multiple years (perhaps as many as five to seven) for ELLs to learn English to a level of proficiency high enough to perform on par with their native English-speaking peers. ELLs therefore cannot wait until they are fluent in English to learn grade-level content. Instead, they must continue to develop their math and reading skills as well as their

knowledge of social studies and science, even while learning English. This can happen through a variety of program models.

Teachers should:

- Provide bilingual instruction when feasible, which leads to better reading and content area outcomes
- In English-language instructional settings, permit and promote primary language supports
- In English-language instructional settings, use sheltered instruction strategies¹ to combine content area learning with academic language acquisition

Principle 4: ELLs have background knowledge and home cultures that sometimes differ from the U.S. mainstream.

It is all too easy for educators to see the “gaps” in the knowledge of new immigrant children who have never heard of Abraham Lincoln or old-growth forests. In fact, ELLs bring just as much background knowledge as any other student, but it is often knowledge of different histories, cultures, and places and not the background knowledge expected by schools and texts in the U.S.

Teachers should:

- Use culturally compatible instruction to build a bridge between home and school
- Make the norms and expectations of the classroom clear and explicit

¹ In sheltered instruction, ELLs learn the mainstream curriculum but often work with modified materials and extra supports to accommodate their linguistic needs. The term “sheltered” is used to indicate that this creates a more learner-friendly environment for the students (Brown, 2007).

- Activate existing background knowledge and build new background knowledge to increase comprehension

Principle 5: Assessments measure language proficiency as well as actual content knowledge.

Oral or written assessments inevitably measure ELLs’ English skills as well as, or even more than, the content being tested. It is easy for English-language difficulties to obscure what students actually know.

Teachers should:

- Use testing accommodations as appropriate

WHAT LANGUAGE ARTS TEACHERS SHOULD KNOW

Principle 6: The same basic approach to learning to read and write applies to ELLs and non-ELLs, but ELLs need additional instructional supports.

There is substantial research available on good literacy instruction for students in general. Up to a point, these same findings are also applicable for ELLs. However, ELLs need additional supports, both when they are first learning to read, and later on as they develop more advanced reading and writing skills.

Teachers should:

- Provide opportunities for additional work in English oral language development
- Ensure that adolescent ELLs receive ongoing literacy instruction and supports
- Provide explicit instruction in writing for academic purposes

Principle 7: Many literacy skills transfer across languages.

Despite tremendous variation, many languages use some of the same sounds we use in English. Sometimes, they represent them using the same letters, and even when they do not use the same letters, many still work with the alphabetic principle that letters represent sounds. Also, since English draws from multiple language traditions, some important vocabulary words are similar to related words in other languages (especially, but not only, Spanish). Students can generally transfer knowledge they have in their own language about sounds, letters, and vocabulary quite easily to the task of learning English. This is easiest to do when languages are similar (such as English and Spanish), but transfer is also possible across languages as different as English and Korean. Building on this transfer saves instructional time—teachers do not have to spend time teaching students who already read in Spanish the idea that letters represent sounds.

Teachers should:

- Use primary language literacy as a starting place for English literacy instruction
- If feasible, teach students to read in their primary language as well as in English

WHAT MATHEMATICS TEACHERS SHOULD KNOW

Principle 8: Mathematics has its own language and representational system, and ELLs struggle to understand math concepts in this language.

Mathematics has its own language that includes distinct terminology, syntax, and symbols. It uses some words (for example,

“root,” or “set”) differently than they are used in standard, conversational English. It also phrases problems and solutions in a content-specific way that can be confusing for students learning English.

Teachers should:

- Provide explicit instruction on how to read and use mathematical terms, syntax, and symbols
- Use concrete materials, which help develop mathematical understanding when linked to the concepts they represent

Principle 9: Mathematic word problems are particularly challenging for ELLs.

Applying math generally means reading a word problem and figuring out the underlying mathematical principles before solving it. While the words used might seem simple, they are part of complex phrases that are particularly challenging to those still learning English. A single misunderstanding can lead students to a logical but incorrect solution. Even when ELLs know the math, they may struggle with the way a question is framed.

Teachers should:

- Provide opportunities for ELLs to explain their strategies for reaching solutions

WHAT SOCIAL STUDIES TEACHERS SHOULD KNOW

Principle 10: The density and complexity of social science textbooks and other texts can be particularly challenging for ELLs.

Especially for adolescents, social studies texts tend to be longer and denser than those in other content areas. Furthermore, students are often expected to read primary texts, which may include formal and/or archaic language.

Teachers should:

- Use texts that are adapted without oversimplifying the concepts they convey
- Use graphic organizers and other visual tools to help make sense of complex information

Principle 11: Some ELLs bring background knowledge that differs from what is assumed in textbooks.

As noted in Principle 4, ELLs do not lack background knowledge, but rather lack some of the specific background knowledge that is typically assumed in many courses and texts. This is especially true in social studies, which as a field concerns itself with culture and social life. In the U.S., it often focuses on the culture and social life of this country, which may not be familiar to all ELLs, and even when the focus is global studies, it is viewed through a specifically American lens.

Teachers should:

- Activate existing background knowledge and build new background knowledge to increase comprehension of social studies texts

Principle 12: Social studies courses require sophisticated and subject-specific uses of language.

Students need to learn to debate, analyze, persuade, compare, and contrast in a range of speaking and writing assignments. Each of these styles demands the use of particular types of vocabulary and syntax that are different from everyday conversation.

Teachers should:

- Scaffold social studies assignments to build ELLs' ability to make complex arguments in content appropriate ways

WHAT SCIENCE TEACHERS SHOULD KNOW

Principle 13: Science inquiry poses particular linguistic challenges for ELLs.

Like other content areas, science has content-specific meanings of words and ways of using language. When these are unfamiliar to students learning English, they can interfere with the learning of science.

Teachers should:

- Include hands-on, collaborative inquiry, which helps ELLs clarify concepts and provides practice in using language in scientific ways
- Build English language and literacy development into science lessons for ELLs

Principle 14: The norms and practices of science may or may not align with the cultural norms of ELLs.

The core of science education in the U.S. centers on inquiry—questioning, predicting,

hypothesizing, and testing. These norms may not align with the cultures of some ELLs, who, for example, are sometimes raised to respect the authority of adults and therefore may be reluctant to question the teacher or text.

Teachers should:

- Incorporate ELLs' cultural “funds of knowledge” into science instruction
- Make the norms and expectations of science inquiry clear and explicit to help ELLs bridge cultural differences

TEACHER PREPARATION AND TEACHER PROFESSIONAL DEVELOPMENT

Teachers are prepared for their careers during their preservice education at colleges and universities. The honing of their skills occurs over many years, both on-the-job as they gain experience with students, and in professional development opportunities, where they learn new strategies and reflect on the effectiveness of their practice. Both in preservice education and in their later professional development, teachers need training in how to work effectively with ELLs.

The expert Advisory Panel convened in support of this report unanimously agreed that the principles identified here should all be introduced to teachers during their preservice education. To the degree possible, some exposure to the specific instructional practices teachers can use would also be helpful at that point.

However, it is during professional development that practicing teachers can gain the most from being exposed to the instructional strategies and practices highlighted under each principle. Some of the practices can and should be conveyed during the induction period (typically the first year or two of teaching), but they are likely to be most

effective once teachers are working regularly with ELLs and have a clear understanding of the challenges their students face.

ELL SPECIALISTS AND MAINSTREAM CLASSROOM TEACHERS

The other major question raised in the legislation calling for this report asked how ELL specialists can best work with mainstream classroom teachers to support ELLs. In fact, there are multiple roles that ELL specialists can play in schools, including:

- Providing sheltered instruction in the content areas
- Supporting instruction within the mainstream classroom
- Teaching English language development in a newcomer program
- Providing English language development to students in a separate classroom (pull-out support)
- Serving as a coach to mainstream teachers
- Supervising the work of instructional aides, who provide English language development to students in a separate classroom

Currently there is no research available to support the superiority of any particular role—although we do know that pull-out support for ELLs is the least effective model of teaching English and content knowledge. Regardless of the role ELL specialists play in schools, ELLs benefit most when there is time for collaboration between the specialist and the mainstream teachers. This helps to ensure that ELLs receive coherent instruction that builds their English language proficiency at the same time that it builds their knowledge of language arts, mathematics, social studies and science. Within the report, we are able to

provide a few suggestions, based on existing research, about ways to enhance the use of ELL specialists in at least some of these roles.

BEYOND THE PRINCIPLES OF GOOD INSTRUCTION

It is important to recall that even the most highly qualified and dedicated teacher cannot, alone, ensure that ELLs get what they need to be successful. More is needed: namely, an educational system that supports ELLs and supports the teachers who are charged with educating them.

The high-quality instruction described in this report is only possible in a larger context in which:

- Schools have adequate curricular materials, sufficient staffing, and functional facilities
- Teachers have access to high-quality professional development followed up by ongoing support
- Students and their families, regardless of their national, linguistic, or cultural background, feel welcome and cared for in their schools

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INTRODUCTION

Purpose of this report

The purpose of this report is to inform Washington state legislators and other policymakers about educational research findings on effective instructional practices for English language learners (ELLs). In turn, this may influence training for teachers at both the preservice (teacher preparation) and inservice (on-the-job professional development) levels.

This report responds to a direct request made in 2007 by the Washington state legislature (SB 5481). One piece of that multifaceted legislation requested that Education Northwest conduct a literature review and consult with nationally recognized experts to address the following questions:

1. What should mainstream classroom teachers know (“foundational competencies”) in order to work effectively with ELLs?
2. How should ELL specialists and mainstream classroom teachers work together for the benefit of their ELLs?

This report is designed to address these questions by reviewing existing research, assessing the strength of its evidence, and summarizing it in language that makes sense to legislators, other policymakers, and educators.

Why is the education of ELLs an important issue?

The education of ELLs is particularly pressing at this time because of the high rates of immigration and growth of the non-English speaking population, the challenges posed by the *No Child Left Behind* (NCLB) Act of 2001,

and insufficient levels of teacher preparation to work with ELLs.

Over the past two decades, the U.S. has experienced the second largest wave of immigration in its history. This has brought large numbers of ELLs into American schools. In Washington state, this rapid influx of non-English-speaking immigrants is unprecedented. As Washington schools do not have a history of teaching ELLs, they are now faced for the first time with the challenge of providing a solid education to students who are linguistically and culturally unlike most of their teachers, as well as unlike the students most teachers were trained to teach.

Of the over one million K–12 students served in Washington schools, about eight percent were served by the state Transitional Bilingual Instructional Program (TBIP) during the 2005–2006 school year, the most recent year for which data are available (Malagon & DeLeeuw, 2008). This represents a growth of 47 percent between the 1994–1995 and 2004–2005 school years. During that same period, overall student enrollment in the state increased just one percent (NCELA, 2006).

While this growth has not occurred at the same rate across all school districts, it has affected many; 191 of 297 Washington districts now serve students eligible for TBIP services. The largest numbers of immigrants are concentrated in the I-5 corridor on the west side of the state, and in many rural areas on the east side of the Cascades, particularly in the Yakima Valley. On the east side, the predominant primary language is Spanish. On the west side, there is a much broader mix of up to 190 languages. The most common language on the west side is also Spanish; this is followed by Russian, Ukrainian,

Vietnamese, Korean, Somali, Tagalog, Cambodian, and Punjabi (Malagon & DeLeeuw, 2008).

At the same time that Washington schools are experiencing a rapid increase in their ELL populations, they also face pressures from the federal school accountability system. NCLB requires schools to ensure that 100 percent of students meet state standards in reading and mathematics by 2014. This includes any ELL who has been in the country for a year, even if that student is not yet proficient in English. Schools and districts have struggled in their efforts to bring ELLs up to these standards in so short a time. ELLs in Washington consistently achieve at lower levels than their native English-speaking peers, and have higher dropout rates (Ireland, 2008; OSPI, 2008).

What are the practices currently used in Washington to work with ELLs? There is no single answer to that question. Schools and districts use the supplemental state Transitional Bilingual Instructional Program (TBIP) and federal Title III dollars they receive for their ELLs in many different ways. The most common program models are the pull-out model, in which ELLs are “pulled” out of their mainstream classes several times a week, and sheltered instruction, in which ELLs have focused language development while taking the regular curriculum in English. Less common is instruction in ELLs’ primary language (both dual language and one-way bilingual programs); about nine percent of ELLs in Washington receive such instruction.

This report was requested to help remedy the problem of insufficient teacher preparation to meet the needs of ELLs. According to OSPI, English language instruction for ELLs is provided most often by instructional aides rather than by certified teachers (Malagon & DeLeeuw, 2008). In addition, a recent review of the state’s TBIP program found that the gap between teacher preparation and what schools

intended to deliver to their ELLs was large (Deussen & Greenberg-Motamedi, 2008). This under-preparation was true for mainstream classroom teachers as well as for some ELL specialists.

How we addressed the questions

To identify the key competencies that teachers should possess, Education Northwest staff gathered, reviewed, and summarized published research on ELL instruction. We looked in particular for research that provided solid evidence of the effectiveness of particular practices. We also convened a panel of nationally recognized scholars with expertise in ELL instruction to advise us in our literature search and the translation of research findings into this report. (These activities are described in greater detail in Appendices 1 and 2.)

Based on our review of the literature, we identified 14 key principles that teachers working with ELLs should know. Principles are “big ideas” or concepts about second language acquisition and the sorts of academic challenges ELLs face. Following each principle, we laid out the instructional implications that stem from it; that is, descriptions of what teachers should do in the classroom to support their ELLs.

For each implication, we weighed the level of the evidence available to support it. While in an ideal world, each instructional implication would have multiple rigorous research studies behind it, such evidence is not always available. Thus we distinguished among implications that were supported by “strong,” “moderate,” or “suggestive” research. We hope that this helps policymakers, professional developers, and school staff members understand the relative strength and demonstrated effectiveness of each instructional practice. For the rubric used to

sort the existing research into one of these three levels, see Appendix 2.

We should add that when evidence is described as “moderate” or “suggestive” rather than “strong,” this does *not* mean that the practice is less effective than other practices, but only that there is no research currently available fully demonstrating its effectiveness. Fortunately, there is a growing body of research underway utilizing rigorous methodologies. Results from these studies will help inform educators about the effectiveness of these practices in the coming years.

Organization of this report

This report has two major subsections.

What teachers should know about instructing ELLs

The first, and longer, portion of this report addresses the question, “What should teachers know to work with ELLs?” It begins by identifying what all teachers, regardless of their grade level or content area, should know about effective instruction for ELLs. It then addresses each of the core content areas (language arts, mathematics, science and social studies) separately, summarizing research specific to them and how content area teachers can support their students.

This subsection has the following organizational structure:

- The description of key **principles**, which are broad concepts about English language acquisition, or what might be challenging for ELLs about instruction, materials, or assessments.
- Under each principle, the **instructional implications** stemming from those principles, which describe what teachers should do in the classroom.

- For each implication, a description of the level of **evidence** supporting that implication, using the criteria described above.

How ELL specialists should work with mainstream classroom teachers

The second, and shorter, portion of the report centers on the question, “How should ELL specialists and mainstream classroom teachers work together to benefit their ELL students?” The body of research available to address this question is far smaller and thinner than that on effective instruction. To the degree that the role of the ELL specialist is examined at all, it is often in the larger context of an evaluation of program models, or perhaps a qualitative study of the work of particular ELL specialists.

Consequently, we were unable to provide principles and implications in this portion of the report. Instead, we described the different roles ELL specialists tend to take in schools; the types of situations in which that role might be most applicable; what is known, if anything, about the effectiveness of using ELL specialists’ expertise in that way; and finally, what recommendations researchers offer to maximize the value of each particular approach. The primary and overarching theme of this portion of the report is that ELL specialists and mainstream classroom teachers need time and opportunity to collaborate.

Using this report to help teachers to work with English language learners

The legislation requesting this report specifically asked which teacher competencies should be addressed in preservice education and which in professional development for inservice teachers. In consultation with our Advisory Panel, we determined that:

- In general, all of the **principles** identified in this report should be taught in **preservice**

- **Instructional implications** describe the practices that should be used, and while these can be introduced in preservice, they should be reinforced and developed during on-going **professional development**, so that inservice teachers can apply them and adapt them to the specific needs of their students

Current teacher preservice programs seldom prepare future teachers to work with ELLs. Menken & Antunez (2001) collected survey data nationally on coursework required of teachers in preservice, and they concluded that few mainstream teacher education programs nationally required even one course addressing ELL issues.

New teachers go through an induction period, designed to orient and support them as they begin their careers. While the type of training and support provided them varies considerably across districts, the induction period may be an especially important time to further develop teachers' knowledge and skills related to ELLs. This is especially important as many new and inexperienced teachers are assigned the highest number of ELLs, despite the fact that they are often not trained in their preservice programs in how to work with these students (R. Bongolan, personal communication, August 20, 2008). New teachers who work with ELLs, therefore, need to be targeted and shown what works for ELLs in their contexts.

High-quality professional development consists of training that is ongoing, job embedded and relevant to the needs of teachers and students. In the past, training in working with ELLs in Washington state has often been optional, one topic among many that teachers could choose to learn about. If it is left as an optional topic, not all teachers who work with ELLs will be exposed to the knowledge and skills they should know. Some states, such as California or Texas,

require all teachers to obtain a certain number of hours of ELL-related professional development for recertification; this is one strategy for ensuring that all teachers have some familiarity with the knowledge and skills that help them be effective with their ELLs. Such an approach requires substantial allocations of funding and time to make it possible for teachers to fulfill the requirement.

Cautions about the use and interpretation of this report

Like any review of research, our report has limitations, and things that it cannot accomplish. We want to make these limitations clear and caution both policymakers and educators to use the report with these limitations in mind.

1. No review of current research can fully answer questions about how teachers should work with ELLs to ensure the highest possible academic outcomes.

The current research base on instruction for ELLs is limited. While there are many articles and books available that propose practices designed to benefit ELLs, there are few experimental or quasi-experimental studies that test how well these practices really work. In this report, we have chosen to err on the side of caution. Rather than simply recommend practices that appear to make sense but have no empirical evidence behind them, we have tried to make it very clear which practices have strong evidence behind them, versus those where evidence is moderate or suggestive. At times this means that we provide fewer recommendations than some educators might wish for, but the caution is meant to prevent the promotion of practices that may later be shown to be ineffective.

2. Not all practices described are equally relevant for every student in the highly diverse population of ELLs.

The diversity among ELLs makes blanket recommendations difficult. The ages at which students immigrate to the United States, their levels of primary and English language proficiency, their prior academic preparation, and their socio-economic and cultural backgrounds all vary tremendously. The majority of ELLs begin school in the U.S. in the primary grades; however, a substantial proportion start school later on, in middle and high school, when students are already expected to have English literacy and to be able to digest more complex content. We trust that future research will be able to provide better guidance about which practices are most helpful for which types of students.

3. Excellent classroom instruction alone is not sufficient to ensure that ELLs have a successful educational experience.

While this report has focused, as requested, on what the research shows teachers can do to make ELL instruction more meaningful, teachers cannot by themselves fully meet the needs of ELLs. This requires effort at multiple levels, not just in the classroom but at the school, district, state, and even national levels.

Other necessary conditions for effective ELL instruction include adequate funding for staffing and the professional development of administrators, teachers,

and instructional aides; coherent systems to identify, assess and place students; thoughtfully constructed curricular materials that help build students' language proficiency while teaching them the content they need to meet standards; and of course, systems of coherent standards to which all students, including ELLs, are held, along with well-constructed assessments that fairly assess progress toward meeting standards. This report does not explore these larger systemic requirements.

4. This report is not a guide to implementation.

Because this report is intended to inform policymakers about effective educational practices, the descriptions provided are often general overviews, with only the main idea of principles and instructional approaches. By itself, this report does not provide the level of detail required to create a course for preservice teachers or a professional development program for current teachers. We have, however, provided references to ensure that faculty and professional development or technical assistance providers can locate the sources of the information contained in this report.

Despite these caveats, we hope this report will help inform policymakers and educators about what teachers should know and be able to do in order to best support the growing population of students who must develop proficiency in English while also meeting standards in all the content areas.

WHAT ALL TEACHERS SHOULD KNOW: Principles of Language Acquisition & Instructional Support for English Language Learners

Like other students, English Language Learners (ELLs) need good instruction. This includes high standards, clear goals and learning objectives, a content-rich curriculum, clear and well-paced instruction, opportunities for practice and application, appropriate feedback, frequent progress-monitoring and reteaching as needed, and opportunities for student interaction (see, for example, Goldenberg, 2008).

At the same time, simply expecting good instruction to meet the needs of ELLs is not realistic. This is because, by itself, good instruction does not provide ELLs with the English language development they require to build proficiency. Nor does it ensure access to “comprehensible input,” or information that is conveyed in a manner so that ELLs can understand most of it, even if they do not know every word (Krashen, 1981).

In addition to good instruction, ELLs need modifications and supports, which vary depending on their language proficiency, literacy background, and prior level of education. The specifics of these modifications and supports are outlined in the following section, and include principles and instructional implications that apply across the content areas, to all teachers and classrooms with ELLs.

Research Base

Rigorous research studies on effective instruction for ELLs are, unfortunately, all too rare. There remain many questions that cannot be answered as definitively as policymakers and educators might wish. Most of the research that is available focuses on language acquisition and, to some degree,

literacy. Research on what helps ELLs in science has been growing recently, but there is still little published in the fields of math, social studies and language arts for adolescent learners. Nevertheless, from the existing research base, we were able to identify a series of five key principles that all teachers of ELLs should know, and an additional nine that apply to content area teachers. The good news is that this is a growing area of interest for researchers, and many important studies are currently underway. In a few years, reviews such as this one may have a broader base from which to draw.

Principle 1: ELLs move through different stages as they acquire English proficiency and, at all stages, need comprehensible input.

Just as children move through stages as they develop their primary language, starting by babbling, beginning to use single words, then putting words together in two- and three-word phrases as they gradually move toward fluent sentences, ELLs also move through stages as they develop their English proficiency. This description of the stages, from Krashen and Terrell (1983), has been widely adopted by professionals in the field:

- **Pre-production:** Students are new to English and generally not yet able to communicate in the language. Approximate time frame: 0-6 months.
- **Early production:** Students speak in simple words or phrases and understand more than they can produce (though comprehension is still limited). Approximate time frame: 6-12 months.

- **Speech emergence:** Students begin to communicate using sentences in English, though with some grammatical and pronunciation errors. Students understand spoken English, sometimes needing visual or physical supports in addition to language. Approximate time frame: 1-3 years.
- **Intermediate fluency:** Students have excellent comprehension and make few grammatical errors. Approximate time frame: 3-5 years.
- **Advanced fluency:** Students use English to express a wide range of thoughts and feelings. Grammar is increasingly comparable to same-age native-speaking peers. Approximate time frame: 5-7 years.

These time frames are broad estimates, and they can vary depending on factors such as whether students speak one or multiple languages at home, how old they are when they start to learn English, their level of prior education, and their level of primary language literacy, as well as on individual differences. Thus no one student's trajectory will be exactly like another's. In fact, because of the many variables that affect how rapidly students learn English, experts caution against making assumptions based on the length of time students have been in the U.S.

Teachers also need to know that because of the difference between receptive (listening and reading) and productive (speaking and writing) language, ELLs may understand considerably more than what they can express in English (Lesaux, Lipka, & Siegel, 2006), and may learn a great deal before they are ready to speak and write, especially in the early stages (Krashen & Terrell, 1983, 1996).

At all the stages, ELLs need access to comprehensible input so they can learn. Comprehensible input is a concept first described by Krashen (1981); he argued that

ELLs learn English when they are presented with messages just above their current proficiency level (so if a student is at level i , then the information presented to them should be at level $i + 1$). Comprehensible input is packaged in vocabulary ELLs recognize, supported by pictures and objects, and/or connected to things they have previously learned in their own language. All of these things help ensure that students can understand the meaning of what is being taught.

Instructional Implication: Teachers should scaffold their instruction and assignments and provide multiple representations of concepts.

Scaffolding is one way to provide comprehensible input. When teachers scaffold instruction, they engage in the gradual release of responsibility from themselves to the students. A widely-known example of this is the "I do it, we do it, you do it" approach, in which the teacher first demonstrates a skill, then does it with the students, then withdraws as students do it themselves. Another example is the multi-step task or problem in which the teacher first moves through all steps with the students, then moves through the initial steps, but has the students take the last step or two unassisted, then repeats the process, each time relinquishing involvement at an earlier stage. Many teachers are already familiar with scaffolding, because it is a technique that can be helpful for all students, native English speakers or ELLs. The difference is that it may be necessary for teachers to use scaffolding more often in classrooms with many ELLs.

Walqui (2006) described a range of ways in which teachers can effectively scaffold instruction for their ELLs:

- **Modeling:** providing students with clear examples of the work that is requested of them, or demonstrating

how to think through a problem (“think alouds”)

- **Bridging:** connecting new material to prior learning
- **Schema building:** organizing information into interconnected clusters (for example, using advance organizers, “walking through” texts looking at subheadings, or graphic organizers)
- **Re-presenting text:** translating text from one genre into another. For example, short stories or historical essays can be transformed into personal narratives or dramatic sketches
- **Developing metacognition:** teaching students to monitor their own understanding and use particular strategies to help build understanding

Use of multiple representations is another way to provide comprehensible input. The idea behind multiple representations is that the cognitive process is aided when multiple forms of communication are utilized. This helps ELLs connect words with meaning by utilizing nonverbal clues and representations of ideas, thereby providing opportunities for comprehension without mastery of English. Multiple representations include these supports to language-based instruction:

- **Graphic organizers:** diagrams that help students identify main ideas and identify how those ideas are related
- **Realia:** real-life objects or photographs of real-life objects
- **Manipulatives:** physical objects (i.e., blocks, tiles, beans, or models) that can be operated by hand to aid in learning

These supports all help ELLs understand and make sense of lessons, despite linguistic challenges.

Evidence: There is moderate evidence supporting the practice of scaffolded instruction for ELLs. Certainly there is research evidence that scaffolding is beneficial to students in general (Kuhn et al, 2006; Zydney, 2005), but these investigations were not conducted specifically with ELLs. Scaffolding is a component of the Sheltered Intervention Observation Protocol (SIOP) model (described under Principle 3 of this report), which has been shown to have a positive effect on ELLs’ expository writing. However, since scaffolding is just one component of the model, it is not possible to distinguish whether it was scaffolding or another component of the model that was effective for ELLs (Echevarria, Short & Powers, 2006).²

The theoretical underpinnings of scaffolding are described in Walqui (2006). For descriptions and examples of what scaffolding looks like in the classroom, see Zwiers (2008).

There is strong evidence that multiple representations help ELLs. Research studies, some of which include descriptions of the practices used, include Behr, Lesh, Post, & Silver (1983); Echevarria, Short, & Powers (2006); Lee, Dekator, Hart, Cuevas & Enders (2005); Lee & Fradd (1998); Sowell (1989); Wenglinsky (2000).

For more discussion on the stages of language development, see Crawford & Krashen (2007); Gunderson (1991); and Peregoy & Boyle (2001).

² Several research studies examining the impact of the SIOP model are underway and will provide additional understanding of the supports that work for ELLs within the next few years (August, 2007; Short, Himmel, Echevarria & Richards, 2007).

Instructional Implication: Teachers should promote student interaction that is structured and supported.

Interactive instruction is an approach to teaching that relies heavily on discussion and sharing among participants. Students learn from interacting with other learners and from their teachers to develop social skills and abilities, organize their thoughts, and develop rational arguments. For ELLs, interactive approaches are a valuable addition to other types of instruction. Interactive strategies provide ELLs with important opportunities to verbalize their thinking strategies and learn from the thinking of others.

Interactive strategies shown to have positive effects with ELLs include:

- **Peer-assisted learning** opportunities, such as partner work in which students of different abilities are paired together to work on academic tasks. For example, a stronger reader and a weaker reader may be paired together to partner-read a story, alternating pages.
- **Cooperative learning**, which uses small groups so that students work together to maximize their own and each other's learning. Cooperative learning groups can be used across all content areas, and are especially conducive with ELLs when the groups are small and heterogeneous (students with varying levels of English language ability and content knowledge). Some research shows that this approach is particularly beneficial for ELLs in the grades two through six.
- **Instructional conversations**, in which students explore their ideas orally with the teacher and other students, addressing open-ended questions rather than those that have a single correct answer. This method has been shown to increase comprehension for

ELLs in the upper elementary grades (Saunders & Goldenberg, 1999).

- **Inquiry-based methods**, which include asking questions; planning and conducting investigations; using appropriate tools and techniques to gather data; thinking critically about relationships between evidence and explanation; and constructing and analyzing alternative explanations.

Because opportunities for interaction in the classroom are inherently less controlled than traditional teacher-based instruction, many studies note that the key to effective implementation is to ensure that interaction is somewhat "structured" to ensure that students stay on task.

Evidence: There is strong evidence that interactive strategies are valuable for ELLs, with the caveat that they are not used in isolation and are somewhat structured. For the benefits of interactive approaches for ELLs, see Adamson (1993); Cheung & Slavin (2005); Garcia & Godina (2004); Genesee, Lindholm-Leary, Saunders & Christian (2006); and Slavin & Cheung (2005).

For information on instructional conversations, see Saunders & Goldenberg (2007) and Saunders & Goldenberg (1999). Peer-assisted learning is covered in Almagauer (2005); Gersten, Baker, Shanahan, Linan-Thompson, Collins & Scarcella (2007); and Saenz, Fuchs, & Fuchs (2005). For more on the use of inquiry, see Klentschy, Hedges & Weisbaum (2007); and Lee, Deaktor, Hart, Cuevas, & Enders (2005).

Principle 2: There is a difference between conversational and academic language; fluency in everyday conversation is not sufficient to ensure access to academic texts and tasks.

Professionals in the field of second language acquisition make a distinction between conversational and academic language. The former is the first type of language acquired by second language learners, and is used in face-to-face interactions where meaning can often be inferred, in part, from contextual cues. This is the type of language children use to communicate with each other on the playground and, informally, within the classroom.

On the other hand, academic English is the language students must use to participate in content-rich discourse. It demands a more complex and specific vocabulary, as well as different syntactical forms—for example, more use of passive and conditional constructions, such as “studies were undertaken...” and “if you were to add X, you would get Y...” (Cummins, 1984; Scarcella 2003). Academic language tends to depend less on context and rely instead on very precise references. Thus instead of pointing to an object and saying “that one,” students must specify “in the five texts published prior to the onset of the Civil War...” Students need academic language in order to read abstracts, to pull out the main ideas from lectures, to write critiques and summaries, to read or create annotated bibliographies, and to speak and write using the appropriate vocabulary and constructions typical of each discipline. Acquiring this necessary academic language may take about five to seven years (Cummins, 1984), though this estimate varies a great deal depending on the context in which students live and study (Scarcella, 2003).

It is all too easy for teachers to misinterpret a student’s ability to communicate with classmates on the playground or in the lunchroom—that is, their facility with conversational English—as an ability to understand English in any setting, whether in chemistry labs or historical debates. In fact, the linguistic and cognitive demands of the different settings are quite distinct. This is true for all students, but especially pertinent to ELLs whose English language development lags behind their native English-speaking peers.

It is also important to note that there is not a firm line between conversational and academic language. Instead, the development of academic language is an ongoing process that runs along a continuum. Even when a student tests out of eligibility for Bilingual services—level 4 on the Washington Language Proficiency Test (WLPT)—that student continues to be an English language learner and may need support from mainstream teachers for the ongoing development of academic language.

Instructional Implication: Teachers should provide explicit instruction in the use of academic language.

There are certain common components of the language used in professional and academic texts that are fully teachable (Scarcella, 2003). Some of these are basic grammatical structures, such as the passive voice and how to use verb tense in conditional clauses; these things are probably best taught by language arts or ELL specialists.

But there are many other facets of language use that should be taught by all teachers, regardless of their subject area. For example, students need to learn how to structure arguments in term papers, how to use quotations, how to switch verb tenses

effectively, and how to condense arguments. Students need to know, within each academic subject, what exactly is expected in a paper, what conventions are used in order to write “objectively,” and how alternative perspectives should be acknowledged.

ELLs need to learn how to vary language appropriately with the audience and how to address different people appropriately. They need to adjust their use of language to fit a wide range of functions: signaling cause and effect, hypothesizing, generalizing, comparing, contrasting, making formal requests. These are things teachers can both explain and model.

Evidence: Evidence that providing explicit instruction in academic language benefits ELLs is suggestive. Scarcella’s (2003) work on academic language and the grammatical, sociocultural, and cognitive components of it that need development is a theoretical framework designed to help educators think about their work with ELLs. In that sense, it is not something that can be rigorously “proven” and we are unable to say that there is strong evidence supporting the teaching of exactly all the components mentioned above. There is widespread agreement in the field of second language acquisition, however, that academic language does need to be taught, and these components provide teachers with a starting place for working with their ELLs.

For more information about what students need to learn about academic language in various disciplines, see: Geertz (1988) and Scarcella (2003).

Instructional Implication: Teachers should provide multi-faceted and intensive vocabulary instruction with a focus on academically useful words.

Students learning English face a vast vocabulary challenge. Not only do they enter the classroom knowing fewer words than native English speakers, but they also know less about their meanings and the contexts in which it may be appropriate to use a word. Multi-faceted, intensive vocabulary development can help ELLs overcome this gap. This involves explicit instruction of vocabulary beyond what is provided in the regular classroom, greatly accelerating the number of words students learn. In turn, this aids comprehension; when ELLs learn more words, it reduces the cognitive load associated with making meaning. With broader, deeper vocabularies, ELLs spend less time struggling to access the meaning of a word or phrase and more time understanding, formulating ideas, and communicating.

Vocabulary instruction is, therefore, critical for ELLs and should be part of instruction across content areas, not just something that is relegated to language arts. This is especially important because the use of language differs across content areas, and ELLs need support to use language correctly in each content area.

As teachers think about building the vocabulary of ELLs, they have to make choices about which words deserve time and attention in the classroom, and how to teach them.

Which words to teach. There are several resources that can help teachers determine which words deserve instructional time. One influential and widely-used classification scheme categorizes words into three tiers, based on how they are used and how easy they are to teach (Beck, McKeown, & Kucan, 2002). Teachers often use this classification scheme to select vocabulary for all students,

and it may also be helpful for deciding which words to focus on with ELLs.

- **Tier 1** words are typically **already known by native English speakers** and are some of the first words that ELLs use, including labels for things (“table,” “house”) and common verbs (“find,” “answer,” “come”).
- **Tier 2** words are **widely used across a range of topics** and express concepts that students may already understand, even if they cannot explain them. Examples include “power,” “express,” “dependent.”
- **Tier 3** words are often **specific to particular fields** and are used much less commonly. Examples include “photosynthesis,” “peninsula,” “hyperbole.”

Generally speaking, teachers are encouraged to teach Tier 2 words to all students (Beck, McKeown & Kucan, 2002; Beck, McKeown & Omanson, 1987). ELLs, particularly at the earlier stages of language acquisition, sometimes need support with Tier 1 words and everyday idioms (“hungry as a horse”) as well.

Another classification scheme, the Five Vocabularies of School, groups words into five levels, based upon their use and function in the classroom (Hiebert, 2008, adapted from Calfee & Drum, 1981).

1. Words for school tasks (capitalization, verb, abbreviation)
2. Content-specific words (cytoplasm, tectonic plate, photosynthesis)
3. General academic words (approach, locate, maintain)
4. Literary words (rasping, rumpus, valise)
5. Core words (the, of, is, other, children)

There is a growing awareness among ELL researchers that a focus on high-frequency,

general academic words benefits students (Hiebert, 2008; Snow, 2008). While students may learn content-specific words in the context of, for example, a science lesson (photosynthesis), or literary words in the context of reading literature, there has been less emphasis on teaching general academic words that will be useful to students across content areas and are not part of conversational language. Hiebert (2008) also noted that teachers often fail to define words used for school tasks; there are relatively few of these, but they are important to students’ daily lives.

For students in high school, the Academic Word List, or AWL, may help to guide teachers in the selection of academically useful vocabulary (Coxhead, 2000). The AWL identifies words that fall outside the most frequently used 2,000 English words, but appear frequently in academic texts in the arts, commerce, law, and the sciences. Although it was developed for college, the list can be used at the high school level to set vocabulary goals for ELLs and to identify words from classroom texts that would be most useful for ELLs to learn.

How to teach vocabulary. While direct instruction in vocabulary is both possible and helpful, there are real limits to how many words students can learn in this way. For that reason, leading researchers in this field suggest multiple approaches to teaching vocabulary.

As a starting point, many of the vocabulary practices developed for monolingual English-speaking students are also effective with ELLs (see the works of Beck et al. (2002), Graves (2006), and Stahl & Fairbanks (1986), for example). These apply to elementary as well as secondary settings and include

- Actively involving students (partner work, oral language practice)
- Providing multiple exposures

- Teaching word analysis and word attack techniques
- Providing rich language experiences including
 - Wide-ranging discussions
 - Read-alouds in the primary grades
 - Conversations on academic topics
 - Wide and frequent reading for students in the upper grades
- Teaching word learning strategies (use of context, knowledge of word parts, word relationships, and dictionary use)
- Fostering word consciousness, or an awareness of, and interest in, words and their meanings

While the list above covers a range of practices that have been shown to be helpful to both native speakers and ELLs, there are some additional practices that can be especially helpful to ELLs. These include

- Teaching students about multiple meanings of the same words (i.e. polysemic terms, such as “bank,” which can mean a financial institution but can also mean rely on, as in “you can bank on it”)
- Repetition, review, and reinforcement (such as pre-teaching key words and then conducting language activities afterwards, or reinforcing vocabulary words throughout the school day in different subject areas and contexts)
- Using visuals (including “realia,” or real-life objects) and graphic organizers to help convey meaning

Depending on the linguistic background of their students, teachers can also build ELLs’ English vocabularies by working with **shared cognates**, or words across two languages that descend from the same, recognizable root. It is helpful for teachers to know that

- The frequency of overlap varies substantially by language. Due to the

strong influence of Latin on English, Spanish and English share a large number of cognate pairs (e.g., telephone/telefono, sum/suma, experiment/experimento). Russian also shares some cognates with English (sister/siestra, student/student, democracy/democratzia). However, Vietnamese has almost none.

- Many shared cognates are general purpose, high-frequency words (“Tier 2” or “general academic” words on the frameworks described above) that arise in a variety of contexts. Knowledge of these words can substantially enrich a student’s vocabulary and ability to perform at school.
- Students will not always be able to recognize shared cognates. For this reason, it helps to have teacher instruction in this area.³ Some research indicates that the ability to recognize cognates develops with age, accelerating in grades 4 through 8 (August, Carlo, Dressler, & Snow, 2005).
- Teachers and students should also beware of false cognates (for example, English “rest” and Spanish “restar”, meaning to subtract, or “assist” and “asistir,” which means to attend). However, the existence of false cognates should not prevent teachers from drawing upon knowledge of cognates; false cognates are much less common than cognates.

Evidence: Evidence behind multi-faceted and intensive vocabulary instruction for ELLs is strong. Although research does not yet fully identify exactly *which* vocabulary practices specific to ELLs are the most effective, it is clear that vocabulary should be targeted in an

³ One suggestion is to have a list of shared cognates in certain languages, which may be helpful to teachers, although there is no quantitative research to substantiate it.

ongoing manner. This is the conclusion of a major research summary, two experimental studies that were conducted specifically with ELLs, a review of experimental studies of reading programs that included ELLs and non-ELLs alike, and a large body of research with students in general.

The current evidence regarding which words to teach is growing, but does not always provide completely clear guidance. There are at present no empirical studies behind the “tiers” of words or vocabularies of school described above; we included them because they are widely used and provide a useful and available framework for making distinctions among the many words teachers could choose from. The words on the AWL correspond to words that show up frequently in academic texts, but for now at least, there are no studies of vocabulary programs using the AWL that indicate that teaching these words leads to better student outcomes. Because the AWL was created for college students, it is probably applicable to high school students but has limited utility for students at lower grades.

There is a large body of research on methods of vocabulary instruction (such as word learning strategies and building word consciousness) with native English speakers that has explored some of the techniques that might be useful for ELLs as well, and this provides some starting points.⁴

More information on vocabulary research can be found in August & Shanahan (2006); August, Carlo, Dressler, & Snow (2005); Carlo, August, McLaughlin, Snow, Dressler, Lippman, Lively, & White (2004); Cheung & Slavin (2005); Gersten, Baker, Shanahan, Linan-Thompson, Collins, & Scaracella (2007); and Short & Fitzsimmons (2007).

⁴ An intervention for middle school, Word Generation, developed by the Strategic Education Research Partnership under Catherine Snow (Harvard Graduate School of Education) is currently being evaluated for use with ELL populations.

For research on the number of words students can learn via direct instruction (note that this research was conducted with native English speakers only), see Carlo et al. (2004) and Stahl & Fairbanks (1986).

Alverman (2000) covers the use of conversations on academic topics for intermediate grade students. Beck, McKeown, & Kucan (2002), Graves (2006), and Kuhn & Stahl (1998) write about use of context, while knowledge of word parts and dictionary use is covered in Graves (2004), Graves, Juel, & Graves (2004), and Stahl & Fairbanks (1986).

See Scott & Nagy (2004) on word consciousness. For more information on shared cognates and their instructional use, see August, Carlo, Dressler, & Snow (2005). Coxhead (2000) describes the creation and content of the AWL. On the Five Vocabularies of School, see Hiebert (2008).

Principle 3: ELLs need instruction that will allow them to meet state content standards.

Instruction for ELLs, as for all students, should be based on rigorous academic standards. Each content area has academic standards, put together by national-level organizations that specify what students should be able to know and to do.⁵ These standards are well specified and represent expert consensus of what students need to know. Washington, like other states, has set its own standards built on the national standards framework. These are the Essential Academic Learning Requirements (EALRs), which apply to all content areas and describe the learning standards for K-10, and the

⁵ The International Reading Association and the National Council of Teachers of English language arts standards; the National Council of Teachers of Mathematics standards; the National Research Council science standards; and the National Council of Social Studies standards.

Grade-Level Expectations (GLEs), which provide concrete details for instruction in K-10. They are assessed annually in literacy and math, while the other content areas are forthcoming.

In an era of accountability, content standards play a central role in curriculum, instruction and assessment; this holds true for ELLs, as it does for native English-speakers.

Unfortunately, the low English proficiency level of many ELLs is frequently used as a gauge of their ability and knowledge. ELLs are often placed in less rigorous instruction (or placed in courses which do not prepare them for higher education), which isolates them from their mainstream peers. Teachers sometimes lower their expectations about what ELLs can achieve, and do not believe that ELLs can meet high standards (Callahan, 2005). Consequently, they make instruction or assignments easier for ELLs or ask them less demanding questions than they pose for native-speaking students (Verplaetse, 1998).

Watering down instruction for ELLs does not help them achieve academically or prepare them to be constructive citizens after they leave school. Teachers need to know that ELLs should be held to high standards, and that they are capable of achieving them. What ELLs need is the appropriate support that allows them to continue to build the necessary content knowledge even as they are developing their proficiency in English.

There are different ways in which districts and schools can provide this support. One way is to provide instruction in both ELLs' primary language and English, until students develop sufficient English proficiency to transfer to English-language content classes.

Alternatively, when primary language instruction is not an option, students can develop their content knowledge and English language proficiency simultaneously, through sheltered instruction. Sheltered instruction is

instruction in English that provides additional supports to ELLs in vocabulary, language development and background knowledge. Regardless of the model chosen, researchers emphasize the importance of its coherence and continuity in a way that benefits the progression of ELLs' English language acquisition and content learning (Garcia & Godina, 2004, for example).

Instructional Implication: Teachers should provide bilingual instruction when feasible.

Bilingual instruction teaches students in both their primary language and in English. Bilingual instruction can be delivered via different models and varies in the proportion of each day spent using the primary language and English, and the time and pace at which students transition into solely English-only language instruction. Common models include:

- **Two-way bilingual/dual-language programs:** ELL students and native English-speaking students are integrated in the same classroom, where they are all taught in both English and another language.
- **Transitional bilingual programs:** Students are taught to read first in their primary language, then in English. These programs can be *early-exit*, where the transition to English is made within the first three years of elementary school, or *late-exit*, where the transition to English is made by the end of elementary school.
- **Paired bilingual or alternative immersion:** Students are taught to read in their primary language and English at the same time (though in different class periods, to avoid confusion).

When it is done well, bilingual education results in outcomes for ELLs that are consistently, though modestly, better than

other instructional models.⁶ ELLs instructed in two languages have, on average, better academic achievement across content areas in *both* the primary and second languages than ELLs who are taught solely in English. These academic benefits include literacy but extend to their achievement in other content areas as well.

Evidence: The evidence that bilingual education leads to literacy and content outcomes that are moderately better than other program models is strong, and supported by the findings from several research syntheses conducted over the past two decades.

Slavin and Cheung's (2005) review of 17 experimental studies concluded that existing evidence favors bilingual approaches, particularly those that combine English and primary language instruction, but teach them at different times of the day. The National Literacy Panel review concluded that ELLs instructed in their primary language, as well as in English, perform better on English reading measures, on average, than ELLs instructed only in English. They found that this held true at both the elementary and the secondary level; however, most of the studies they reviewed were studies of Spanish-speakers (August & Shanahan, 2006). Other earlier meta-analyses came to similar conclusions, favoring bilingual approaches: Greene (1997), Rolstad, Mahoney & Glass (2005), and Willig (1985).

Because the research on bilingual education covers such a wide variety of programs that are not necessarily comparable, there is less

⁶ As in any area of teaching and learning, the quality of bilingual programs makes a difference (Cheung & Slavin, 2005; Genesee et al., 2006). To have a high-quality bilingual program, teachers who instruct in students' primary language must have mastery of academic language, in addition to conversational skills, in that language. The school also needs to have appropriate instructional and assessment materials.

agreement about exactly what bilingual instruction should look like. Some argue that the existing evidence is in favor of combining English and primary language instruction, but teach them at different times of the day (Slavin & Cheung, 2005). Others conclude that longer exposure to bilingual literacy instruction is better, and that its benefit is delayed; it is not until the later elementary grades (third and onwards) that these ELLs in bilingual education catch up with or surpass ELLs in English-only instruction (Genesee et al., 2006).

For a description of effective two-way bilingual programs, see Howard & Sugarman (2007). Genesee (1999) describes different models of providing primary language instruction to ELLs, along with the types of settings and teacher preparation needed to support the different models. For a highly readable discussion of the different meta-analyses cited, see Goldenberg (2008).

Instructional Implication: In English-language instructional settings, teachers should permit and promote primary language supports.

When schools are unable to provide a full instructional program in students' primary language, it is still possible to provide primary language support. This could include the following:

- Repetition of directions or clarification in students' primary language during or after class
- Providing a "preview" of a lesson (for example, the main story line of a play they will later read) in their primary language
- Offering translations of individual words
- Allowing students to read texts in translation

- Permitting students to use their primary language to write about or discuss concepts
- Providing dictionaries
- Encouraging collaboration with students who speak the same language
- Code-switching (for example, switching between English and Spanish when discussing a text)

While these supports are beneficial, teachers need to be attuned to potentially negative consequences of over-reliance on a simultaneous mixture of English and primary language explanations. These include potentially inaccurate translations (from peers, for example) or a tendency on the part of the student to wait for the explanation in the primary language and not attempt to understand the discussion in English. One way to avoid these pitfalls is to provide students with preview/review in their primary language, but keep the lesson itself in English. Lesson preview has the added benefit of providing background knowledge that may facilitate lesson comprehension. If a lesson is later reviewed, the teacher or assistant can use the primary language to check on student understanding of the content. Likewise, teachers need to ensure that encouraging code-switching does not allow the student with lower English proficiency to avoid English entirely.

Evidence: Research provides suggestive evidence that when done well, primary language support is beneficial to ELLs (August & Shanahan, 2006). In one intervention, teachers previewed difficult vocabulary in the students' primary language (Spanish) before a lesson and then reviewed the same material in Spanish after the English-language lesson. This provided better comprehension outcomes for students than only reading the book in English, probably because it increased the amount of comprehensible input when the story was

read in English. This approach also yielded better outcomes than reading the book in English and providing simultaneous Spanish translation.

See Goldenberg (2008) for a description of the use of preview/review in students' primary language. A full description of the experiment using primary language previewing is provided in Ulanoff & Pucci (1999).

Instructional Implication: In English-language instructional settings, teachers should use sheltered instruction strategies to combine content area learning with academic language acquisition.

In English-language instructional settings, sheltered instruction is an approach to teaching academic content to ELLs in ways that make the content understandable at the same time as developing students' academic English. The goal of sheltered instruction is to make grade-level content accessible to students even if they are not fully fluent in English.

Sheltered instruction can go by many other names. One commonly used acronym is SDAIE, or Specially Designed Academic Instruction in English. Also, there are several different models of sheltered instruction which are widely used and commonly referred to by their own acronyms, including SIOP (Sheltered Instruction Observation Protocol, Echevarria & Short, 2001; Echevarria, Vogt, & Short, 2007), Project GLAD (Guided Language Acquisition Design, Brechtel, 2008), ExC-ELL (Expediting Comprehension to English Language Learners, Caldéron, 2007) and CALLA (Cognitive Academic Language Learning Approach, Chamot & O'Malley, 1986, 1987, 1989).

These models all differ in what they emphasize (for example, SDAIE emphasizes making content accessible, while SIOP tries to

balance this with building academic language at the same time). Still, they overlap in important ways. Common threads across three or more of the approaches include:

- Explicit, direct teaching of vocabulary
- Explicit modeling by the teacher (including “think alouds” in which teachers demonstrate exactly how they think through a problem or task)
- High levels of student social interaction, with each other and with the teacher
- Explicit instruction in learning strategies (metacognition) and opportunities to practice using those strategies
- Linkages to students’ background and prior experience
- The use of a variety of assessments, both formal and informal, to measure student learning in both content and language

These and other components of sheltered instructional models are instructional features that many teachers may already know and use. They are modifications that can be used with a wide variety of curricula and programs, so districts need not abandon adopted curricula and teachers do not need to learn a completely new way of teaching. At the same time, teachers *do* need comprehensive training in how to apply these skills in a thoughtful manner consistent with ELLs’ language acquisition needs.

The different approaches to sheltered instruction all combine a series of components. For example, SIOP lists 30 different items across eight broad domains that should be included in a lesson, ranging from planning with explicit language and content objectives, to adaptation of text, to informal classroom assessment. Many of the individual components are based on research that establishes the effectiveness of the

particular component. In some cases, there is no conclusive research that the component is specifically effective with ELLs, but it is known to be an effective practice with students in general.

Evidence: At this stage, evidence supporting sheltered instruction should be considered moderate. To date, there has been little research published that documents the level of effectiveness of different sheltered instruction approaches with all their components used in combination. One quasi-experimental study of SIOP in three districts found a positive impact of the program on middle school students’ expository writing.⁷

An analysis of findings from five evaluations of the CALLA model found that it contributed to increased content knowledge, improved English language proficiency, and enhanced use of learning strategies; while these studies tended to lack appropriate comparison groups, the findings in combination are suggestive.

The creators of Project GLAD have a range of evaluation materials available, including a six-year study of GLAD in one school district (Ben, n.d.). However, in the absence of any peer-reviewed research, there is currently insufficient evidence to conclude that this is a proven effective model.

For the quasi-experimental study of SIOP, see Echevarria, Short & Powers (2006); for a teacher-oriented description of the model, see Echevarria, Vogt, & Short (2007). For the

⁷ Additional studies with more rigorous methodologies are currently underway, including several under the auspices of the Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE), which look at the impact of the SIOP model on science and language learning (August, Mazrun, Powell & Lombard, 2007; Short, Himmel, Echevarria, & Richards, 2007).

summary of the five evaluations of CALLA, see Chamot (2007).

Principle 4: ELLs have background knowledge and home cultures that sometimes differ from the U.S. mainstream.

Many ELLs come from families that have recently immigrated into the U.S. Others who have lived in the U.S. for many years live within communities that speak languages other than English and maintain their own cultural traditions. ELLs may therefore arrive at school with background knowledge and cultural experiences that differ from that of their English-speaking classmates. Depending on their time in the U.S., their exposure to mainstream popular culture, and any prior education in another country, ELLs may not know about some of the topics their peers do. Names, events or customs mentioned in curricular materials may be entirely alien to ELLs (for example, Martin Luther King, the Fourth of July, ice cream trucks, the Civil War).

Again, depending on their background, ELLs may have cultural values, patterns of social interactions, and expectations of school that differ from the U.S. mainstream. For some students, this means there may be a world of difference between their life at home and their life at school, including differences in:

- Definitions and uses of literacy
- Beliefs about teaching practices
- Beliefs about the value of education
- Roles for parents versus teachers
- Roles for adults versus children
- Ways of engaging and interacting with others
- Ideas about what constitutes “knowledge”

(August & Shanahan, 2006; Garcia & Godina, 2004; Snow, Burns & Griffin, 1998; Valdés, 1996).

These differences can lead to misunderstandings that create obstacles to student learning. For example, some ELLs may come from backgrounds in which the authority of adults is unquestioned; they therefore may be reluctant to ask questions of the teacher, to challenge the ideas put forth in texts, or to engage in inquiry-based instruction. In another example, although some ELLs’ families place an extremely high value on education, the adults may not participate in school activities (as considered desirable by school staff) because they defer decision-making about school to their children’s teachers, or because they are uncomfortable with their own English language skills. Teachers may mistakenly interpret this as a lack of parental interest in their children’s education.

It is important to note that cultural differences are relative, and do not mean that the home cultures of ELLs are lacking in education or sophistication, or that ELLs are somehow deprived and can succeed in school only if these deficiencies are corrected. ELLs hail from a rich tapestry of cultural and familial backgrounds; many have experienced things monolingual English-speaking students have not. Conversely, many ELLs may not have experienced things considered “typical” for children in the U.S. These variations of experience can bring value and richness to the classroom.

Instructional Implication: Teachers should use culturally compatible instruction to build a bridge between home and school.

“Culturally compatible instruction” is a term used to describe instruction that is aware of and incorporates the language and cultural backgrounds of students in the classroom,

seeing them as resources rather than as deficits. Culturally compatible instruction creates an environment in which ELLs are comfortable drawing upon their prior knowledge and sharing previous experiences in the classroom. In turn, this builds a bridge between home and school, creating “cultural congruence” between these two worlds and abating the types of confusion or alienation that can adversely impact student performance. Without this connection between school and their life at home, ELLs are more likely to disengage (Lee & Luykx, 2006).

How do teachers provide culturally compatible instruction? Some instructional interventions and programs explicitly include cultural compatibility as one of their guiding principles. For example, the program Science for All (SfA) (discussed under Principle 14 of this report) deliberately creates opportunities for ELLs to draw upon their home language and cultural resources in the science classroom. SfA teachers build ELLs’ abilities to work collaboratively, use their observation skills and tap into their desire to learn from those with expert knowledge (Lee, Dekator, Enders, & Lambert, 2008). Another way to make a classroom culturally compatible might include using culturally-relevant and culturally familiar texts (Jimenez, 1997). Other possibilities include using examples and analogies drawn from ELLs’ lives, and incorporation of perspectives from multiple cultures (Au & Kawakami, 1994; Gay, 2000).

Perhaps most importantly, culturally compatible instruction rests on teachers’ ability to be open to other cultures. Ideally, teachers should know something about the backgrounds of the students in their classroom. However, teachers do not have to become experts in the cultural and linguistic backgrounds of all student groups in their classroom; rather, it may be sufficient for teachers to be open, willing to recognize the resources their ELLs bring, instead of only

seeing what they are lacking (Ladson-Billings, 1994, 1995).

Evidence: The evidence behind culturally compatible instruction is moderate. A long history of research with nonmainstream students in the U.S., although not necessarily ELLs, has supported culturally compatible instruction (Au & Jordan, 1981; Au, Crowell, Jordan, Sloat, Speidel, Klein, et al., 1986; Au & Kawakami, 1994; Doherty, Hilberg, Pinal, Tharpe, 2003; Gay, 2000; Tharp & Gallimore, 1988). More specific to ELLs, cultural congruence is one of the features of SfA, which had positive effects on student achievement; however, since it was one of many features of the program, it is not possible to tease out whether it was this aspect of the program that made it successful.

Jimenez (1997) found that when ELLs were given culturally familiar texts and a supportive environment, they were better able to discuss the texts in ways similar to successful readers, including integrating prior knowledge of the topic and drawing conclusions. However, this study had a very small sample, no comparison group, and its results should be interpreted with caution.

For a discussion of theories of school failure among ELLs and “cultural differences” versus “cultural deprivation,” see Valdés (1996). For additional information on culturally compatible instruction, see Au et al. (1986); Au & Jordan (1981); Au & Kawakami (1994); Doherty, Hilberg, Pinal, Tharpe (2003); Gay (2000); Tharp & Gallimore (1988). For examples of strategies teachers can use to get to know their students’ backgrounds, see Zwiers (2008).

For more on SfA, see: Lee, Deaktor, Enders, & Lambert (2008); Lee, Deaktor, Hart, Cuevas, & Enders (2005). For research by Lee and her colleagues demonstrating that effective instruction for ELLs can be enhanced by

cultural congruence, see Lee (2002, 2005); Lee & Fradd (1998).

Instructional Implication: Teachers should activate existing background knowledge and build new background knowledge to increase comprehension.

There is a clear relationship between background knowledge—information already acquired through past experience or formal instruction—and comprehension of new material. This is relevant at all instructional levels, and becomes particularly evident in middle and high school as texts become more complex and information-rich. Having background knowledge helps reduce the amount of “figuring out” that students have to do while reading, reducing their cognitive load and freeing them to concentrate more on making overall meaning. Students who lack sufficient background knowledge or are unable to activate this knowledge may struggle to access meaning, participate in class, and progress academically.

Teachers can increase student engagement and improve comprehension by helping their ELLs construct a schema (Kamil, 2003; Meltzer & Hamann, 2004). This is a mental structure that organizes information, so that new information can be connected to what a student already knows. Teachers can do this in two ways: by activating background knowledge that exists or by building new background knowledge.

Activating existing background knowledge can be done using strategies such as:

- Helping students see links between texts and their own experiences (“text-to-self” connections)
- Asking student to draw from earlier readings or past learning in order to link to new material (“text-to-text” connections)

- Providing vocabulary that helps students see that they do know about the topic, though what they learned earlier was in another language

Sometimes students genuinely lack prior knowledge related to a given topic, and part of the teacher’s job is to build enough background knowledge so that the new lesson makes sense to ELLs. Some strategies for doing this include:

- Showing short video clips to give students a sense of time or place
- Taking students out of the classroom (field trips)
- Providing a demonstration, by the teacher or a guest

Evidence: The evidence that building background knowledge helps ELLs is moderate. Decades of linguistics research in second language acquisition has investigated and documented the contribution of background knowledge to comprehension (as summarized in Bernhardt, 2005). The National Reading Panel (2000) found strong evidence that sufficient background information to comprehend is essential to successful reading for students in general. For ELLs in particular, August & Shanahan’s (2006) meta-analysis recommends that background knowledge is “targeted intensively” in an ongoing manner.

For examples of strategies to activate or build background knowledge, see Meltzer & Hamann (2004) and Short & Fitzsimmons (2007).

Instructional Implication: Teachers should make the norms and expectations of the classroom clear and explicit.

When there are differences between ELLs’ home cultures and that of the classroom, teachers can help by making the norms and

expectations of the classroom clear and explicit. This might include describing the expectations for behavior, conveying that questions are encouraged, and explaining how and when to ask questions.

By making connections to classroom norms that align with students' home cultures, and explaining instances where they do not align, teachers help create "cultural congruence" between school and home. Without such explanations, students may become frustrated or not understand how to participate successfully, ultimately risking reduced student engagement in learning and even withdrawal.

Evidence: The evidence behind making the norms and expectations of the classroom clear and explicit is moderate. There are no rigorous studies that test this particular instructional technique. However, differences in norms and expectations do exist (see Lee and Luykx, 2006, for a synthesis of research in science education). August and Shanahan's (2006) research summary concluded that bridging home-school differences in interaction can enhance student engagement and level of participation in the classroom.

Principle 5: Assessments measure English language proficiency as well as content knowledge.

Students who have difficulty communicating in English often know more about the content area being assessed than they are able to demonstrate on conventional written tests. Previous research has demonstrated a link between English proficiency and performance on content-area assessments. In fact, the more linguistically challenging a test is, the larger the performance gap between ELLs and native English speakers (Abedi, Lord & Hofstetter, 1998; Abedi, Lord, Hofstetter & Baker, 2000; Abedi, Lord & Plummer, 1997; Pennock-Roman, 2006).

Instructional Implication: Teachers should use testing accommodations, as appropriate.

It sometimes may make sense to provide testing accommodations or alternative forms of assessment for ELLs. **Accommodations** are changes to the test administration procedures, such as the amount of time allocated for responses, the use of special equipment or materials, or the place where the test is taken. **Alternative assessments** make changes to the test format itself, such as replacing a written test with an oral one.

In many instances states, not teachers, decide what accommodations are acceptable; this is particularly true about accommodations during high-stakes state assessments. But it is also possible for teachers to permit accommodations or alternative assessments within the classroom so that students can demonstrate their content knowledge.

While there are many types of testing accommodations and multiple forms of alternative assessments, relatively little is known at this time about how helpful they are. The only accommodation that has consistently been shown to help ELLs is the use of English dictionaries or glossaries. Some other accommodations (extended time, bilingual or primary language versions of the assessment, bilingual dictionaries or glossaries) may be helpful for some students. At this time, however, there is no definitive evidence to say in what circumstances they are effective. Some researchers argue that effectiveness probably depends both on student test-taking skills as well as on the teaching and testing contexts. Future research may provide more guidance about which accommodations are most useful to which students in which settings.

Francis, Rivera, Lesaux, Kieffer, & Rivera (2006b) noted that any accommodations used in state testing should match accommodations

students have already used in the classroom, so that students are accustomed to successfully using that accommodation. Put another way: if accommodations are available to students during state tests, teachers should give students opportunities to practice using those accommodations during classroom testing.

There are also numerous types of alternative assessments, but as current research cannot demonstrate that they are effective, we are unable to recommend any specific alternatives.

Evidence: There is moderate evidence that some testing accommodations are helpful, at least to some ELLs. Francis et al. (2006b) conducted a review of testing

accommodations. In their review, they created a list of accommodations that they deemed to be “linguistically appropriate,” that is, there was reason to believe the accommodations might be effective and valid. They then conducted a meta-analysis of all the research available at the time on the actual demonstrated effectiveness and validity of the accommodations. They found research on only a few of the items on their list (those we mentioned above), and that research showed that many accommodations were effective in some cases but not in others.

For a description of the many types of accommodations different states allow for their high stakes assessments, see Rivera, Collum, Willner & Sia (2006).

WHAT CONTENT AREA TEACHERS SHOULD KNOW

The four content areas covered in this section of our report (language arts, mathematics, social studies and science) each have their own discipline-specific features, and each poses its own challenges to ELLs. For each of these four content areas, we briefly note the challenges for ELLs as well as the depth and breadth of the research base for that content area. We then present key principles and instructional implications for each content area.

Language Arts for English Language Learners

As described earlier in this report, the process of acquiring a second language can be arduous, requiring multiple years to achieve academic proficiency. Language arts is the instructional time set aside for the development of all four language domains: reading, writing, listening, and speaking. Since ELLs lag behind their native English-speaking peers in these areas, they will need ongoing, additional instruction or supports. This becomes particularly salient in middle and high school, when the focus of much language arts instruction shifts to the analysis of literature.

The Research Base

The language arts section of this report is informed primarily by two recent research reviews that compiled existing studies about literacy, oral language, and academic achievement for ELLs:

1. *Developing Literacy in Second-Language Learners: Report of the National Literacy Panel on Language-Minority Children and Youth* (August & Shanahan, eds., 2006), which examined 293 empirical studies published through 2004.

2. *Educating English Language Learners* (Genesee, Lindholm-Leary, Saunders, & Christian, 2006), which reviewed approximately 200 quantitative studies published through 2003.

Although it is still developing, the research base in language arts and literacy for ELLs is more extensive than other content areas. This section, therefore, draws upon the two reviews above as well as findings from a host of other studies. Since the two resources above summarized research conducted through 2003/2004, we focused on reviewing additional works published from that point through the present.

Principle 6: The same basic approach to learning to read and write applies to ELLs and non-ELLs, but ELLs need additional instructional supports.

In recent years, a growing body of research has established the importance of providing all students with systematic and explicit instruction in what are called “the five components” of reading (National Reading Panel, 2000). These are:

- **Phonemic awareness:** the knowledge of the sounds of a language
- **Phonics:** the knowledge of how written letters map onto the sounds of a language
- **Fluency:** the ability to read accurately, at a pace that facilitates comprehension
- **Vocabulary:** the knowledge of word meanings and word parts
- **Comprehension:** the ability to understand the explicit and implicit ideas communicated in text

While systematic instruction in these five components is also helpful for ELLs, its effect is smaller than for native English speakers. ELLs need these five components and then more (August & Shanahan, 2006).

This “more” is comprised of additional instructional supports for ELLs, such as oral language development, intensive and multi-faceted vocabulary work, and ongoing supports for adolescent ELLs. These supports, whether in the regular classroom or an intervention, are not always the same for ELLs as for struggling native English speakers; there are pronounced differences between these two groups. For example, native English-speaking students who struggle in reading usually have a basic command of oral English, know multiple meanings of words, and understand many American cultural and historical references (See examples from Short & Fitzsimmons, 2007, p. 9), while ELLs may need assistance in these areas. This contradicts the often-heard sentiments that “it’s just good teaching” or “all our students are low-language, and what works for our struggling native English speakers works for our ELLs too.”

Instructional Implication: Teachers should provide opportunities for additional work in English oral language development.

Oral language is the system by which we communicate through speaking and listening. Sounds are organized into structure and create meaning. In school, oral language facility is central to participation in classroom discourse; students need to be able to verbally respond to questions, express themselves, and communicate their ideas. Children learn oral language in their native tongue through practice with speaking and listening; as they develop, their ability to express and understand becomes more sophisticated.

While instruction in speaking comes under the umbrella of language arts, its application crosses all content areas. Even native English speakers need some instruction in oral language, particularly as students progress to more complex analyses and discussions in middle and high school. As one expert in the field noted, “It’s not just about being able to speak, it’s about being able to speak like an historian and sound like a scientist” (D. Short, personal communication, August 20, 2008).

In order to “speak like an historian and sound like a scientist,” ELLs require additional practice and instruction in oral English language development beyond what is provided in most existing reading programs, which are designed for native English speakers. Little is known about exactly how oral language practice should be structured, whether it should be a stand-alone block or integrated into language arts class. This is a widely acknowledged research gap.

Evidence: The evidence behind oral language development is strong. Most researchers agree that ELLs require additional oral English language development beyond what is provided in most reading programs, and that they need ample practice using it in the classroom. This is supported by two research summaries (August & Shanahan, 2006; Gersten & Baker, 2000), as well as two large-scale experimental studies that found ELLs made comprehension gains as a result of additional oral language instruction (Pollard-Durorola, Mathes, Vaughn, Cardenas-Hagan, & Linan-Thompson, 2006; Vaughn, Cirino, Linan-Thompson, Mathes, Carlson, Hagan, et al., 2006).

Much less is known about how oral language development should be structured. However, one recent study found support for institutionalizing a stand-alone English language development block in kindergarten, both in bilingual and English immersion settings, rather than incorporating it into

existing literacy instruction (Saunders, Foorman & Carlson, 2006). The researchers also proposed that oral language development should focus on academic language, rather than basic communication skills. This study included a comparison group and had a large sample size; however, it is only one study and its results should be interpreted with caution.

For more discussion of oral language development, see August & Shanahan (2006); Gersten & Baker (2000); Pollard-Durorola et al. (2006); Vaughn et al. (2006). The kindergarten English language development block is described in Saunders, Foorman & Carlson (2006).

Instructional Implication: Teachers should ensure that adolescent ELLs receive ongoing literacy instruction and supports.

Unlike in elementary school, in middle and high school, literacy is seldom taught as a stand-alone subject. Students are expected to already have developed basic literacy skills and apply them to reading in the content areas (as summarized by the commonly heard refrain that adolescent literacy is about “reading to learn, rather than learning to read”). In language arts classes, the focus in the upper grades shifts from developing basic literacy skills to reading and interpreting literature. This literature often includes archaic language (for example Shakespeare’s *Hamlet*, or Hawthorne’s *The Scarlet Letter*) or different genres such as poetry and literary analysis.

This shift is particularly problematic for those adolescent ELLs who are still learning to read (as well as listen, speak, and write) in English. Because of the amount of time it takes to develop the level of English language proficiency necessary to perform at grade-level (as described under Principle 1 of this report), many adolescent ELLs fall into this category. Adolescent ELLs therefore require

continued instructional time devoted specifically to developing literacy.

The amount of time and type of instruction will vary based upon students’ English language proficiency. Adolescent ELLs are a remarkably diverse group, one that spans those who were born in the U.S. and began English literacy instruction in kindergarten, to those whose families just moved here and are not literate in their primary language, let alone English. Accordingly, their needs will differ.

Adolescent ELLs who are not literate in their primary language may require explicit instruction in the five components of reading, beginning with brief instruction in phonemic awareness and then moving on to phonics, vocabulary, comprehension, and fluency. This instruction should be provided with materials that are age-appropriate (teaching early phonics with age-appropriate materials rather than those created for kindergarten students, for example).

Adolescent ELLs who already have literacy in their primary language but not English will need support developing English oral language and literacy. Instruction should use these students’ primary language literacy as a starting point for instruction (see Principle 7 of this report). Again, instruction should be provided as much as possible with materials that are age-appropriate.

Adolescent ELLs who already have basic English literacy will also need continued literacy supports to shift into the higher levels of English proficiency that will help them digest the more complex, content-rich texts encountered in middle and high school. Because of the amount of time this takes, teachers should be aware that even those adolescent ELLs with basic English literacy skills do not yet have the level of proficiency in English needed to perform academically.

Evidence: The specific approaches to supporting adolescent ELLs presented here are based upon the recommendations of experts in the field, not on experimental studies. Therefore, the evidence can be considered only suggestive at this point.

More information on strategies to support adolescent ELLs can be found in Garcia & Godina (2004); Short & Fitzsimmons (2007); Torgesen, Houston, Rissman, Decker, Roberts, Vaughn, et al. (2007).

Instructional Implication: Teachers should provide explicit instruction in writing for academic purposes.

Students need to develop polished writing skills for a number of reasons. Writing makes one's thinking and reasoning visible; this is an important skill in academic settings and many workplaces. Starting in middle school, expository writing is part of many standardized high-stakes tests in many states, including the Washington Assessment of Student Learning (WASL).

Explicit instruction in writing benefits ELLs, just as it does native English speakers (August & Shanahan, 2006). However, instruction in writing is often not explicit; instead, many teachers expect students to automatically transfer what they know from reading into writing. This is problematic for all students, as proficiency in reading does not guarantee proficiency in writing. It poses a particular challenge to ELLs, who have less experience and practice with English than their native English speaking peers.

The Sheltered Instruction Observation Protocol (SIOP) model, with its multiple supports for simultaneous academic language and content knowledge development, has been shown to have a positive affect on middle school ELLs' academic writing (see Principle 3 of this report for more information

on SIOP). Beyond this study, there is a dearth of research that specifically examines how ELLs learn to write in English. In its absence, there are two other bodies of research to draw upon: what we know about writing for second language learners (for example, for English speakers learning to write in French or Spanish), and what we know about writing for adolescent students in general.

Based on research on how students learn to write in a second language, teachers can:

- Teach genre directly to students, including identification of the specific genres they will need for academic purposes
- Include planning for writing in the instruction
- Have a clear, consistent feedback policy that includes teacher feedback on preliminary drafts and allows students time to review and to ask questions to ensure understanding
- Show students the relevant features of a variety of authentic texts, such as word choice, structure, and style
- Target error correction to focus on just a few types of errors at any given time (Education Alliance, 2005).

Additional guidance comes from a recent meta-analysis of research on adolescent writing. Though it was not specific to ELLs, *Writing Next* recommended 11 components that should be included in a strong writing program:

- **Writing strategies:** teaching students strategies for planning, revising, and editing
- **Summarization:** explicitly and systematically teaching students how to summarize texts
- **Collaborative writing:** students working together to plan, draft, revise, and edit their compositions

- **Specific product goals:** assigning students specific, reachable goals
- **Word processing:** using computers and word processors as instructional supports
- **Sentence combining:** teaching students to construct more complex, sophisticated sentences
- **Prewriting:** engaging students in activities designed to help them generate or organize ideas for their composition
- **Inquiry activities:** engaging students in analyzing immediate, concrete data to help them develop ideas and content for a writing task
- **Process writing approach:** creating a workshop environment that stresses extended writing opportunities, writing for authentic audiences, personalized instruction, and cycles of writing
- **Study of models:** providing students with opportunities to read, analyze, and emulate models of good writing
- **Writing for content learning:** using writing as a tool for learning content material

(Graham & Perin, 2007).

There are two caveats to this list of elements. First, as the report authors note, even all of the components in combination do not constitute a full writing curriculum, though each of them individually has good evidence that they improve student writing. Second, the research yielding this list was conducted with a general student population, not specifically a population of ELLs. However, as a foundation for understanding good writing instruction, this list may provide a reasonable starting point with ELLs.

Evidence: The evidence for writing instruction as outlined above for ELLs is moderate. There is evidence from a quasi-

experimental study that middle school ELLs whose teachers implemented SIOP performed better on an expository writing task than a comparison group (Echevarria, Short & Powers, 2006). Additional studies of SIOP are underway.

Although it was not specifically conducted with ELLs, *Writing Next* only drew on rigorous research and included a meta-analysis. The Education Alliance report is less methodologically rigorous, including qualitative studies and theoretical works in addition to quantitative studies.

For information on the quasi-experimental study of SIOP, see Echevarria, Short & Powers (2006). For reviews of writing instruction among English-speaking students, see Education Alliance (2005) and Graham & Perin (2007).

Principle 7: Many literacy skills transfer across languages.

ELLs may come to school with some level of literacy skills in their primary language. At the elementary level, students may know the sounds of their language (phonemes), how letters (graphemes) represent those sounds, and they may be able to decode in their primary language. Adolescents might have these basic skills or more, varying greatly depending upon their prior education. Often these skills or the principles behind them transfer across languages. Aspects of literacy that have been shown to transfer across languages include phonological awareness, alphabetic knowledge, and some vocabulary.

- **Phonological awareness** is the ability to distinguish units of speech, such as syllables and phonemes, and understand that individual sounds can be combined in different ways to make words. This holds true regardless of how similar the languages are; it

applies to English-Chinese as readily as English-Spanish, because phonological awareness does not depend on written language.

- **Alphabetic knowledge** includes letter shape recognition, letter name knowledge, letter sound knowledge, as well as the ability to name and print those letters. This applies more readily across languages that use the same alphabet, so transfer is more limited between English and languages that use different scripts (for example, Russian, Arabic, or Korean).
- Some **vocabulary knowledge** also transfers. *Shared cognates* are words that descend from the same, recognizable root, as described under Principle 2 of this report.

Instructional Implication: Teachers should use primary language literacy as a starting place for English literacy instruction.

ELLs' primary language skills can be built upon in regular classroom instruction and interventions. English literacy instruction that focuses on transferring students' existing literacy skills eliminates the extra work and wasted time of starting ELLs off with rudimentary instruction in skills they already have.

ELLs who are literate in their primary language have an advantage when learning English, compared to ELLs who are not already literate. English literacy instruction can, therefore, be more targeted for ELLs with primary language skills, "emphasizing those skills not yet obtained through the primary language while paying less attention to easily transferrable skills already mastered" (August & Shanahan, 2006, p. 357).

Teachers can provide more targeted instruction for ELLs with primary language literacy in a variety of ways. These include:

- Knowing what literacy skills ELLs have in their primary language is valuable so teachers can help them transfer those skills (Garcia & Godina, 2004; Goldenberg, 2008). This might mean using valid and reliable primary language assessments, when these are available. Other times, observations of students and/or consultations with parents may help provide this information.
- Helping ELLs transfer phonological awareness skills. This might mean helping students with specific phonemes or combinations of phonemes that exist in English but not their primary language. Teachers can also explicitly point out places where phonics knowledge does not directly transfer (for example, a Spanish speaker would need to learn that in English, double l ("ll") is pronounced as /l/, not /y/ as in Spanish).
- Working with shared cognates, or words that descend from the same, recognizable root (see Principle 2 of this report for more information about shared cognates.) Students will not always be able to recognize shared cognates, so it helps to have teacher instruction in this area.

Evidence: The evidence behind using ELLs' primary language literacy as a starting point for English language instruction is strong, particularly for Spanish speakers. It is supported by two research summaries, one of which focused solely on Spanish speakers. However, other researchers have found evidence that knowledge of sounds and word structures transfers across languages as different as English and Chinese (Wang, Cheng, & Chen, 2006; Wang, Park, & Lee, 2006).

For more discussion of cross-linguistic transfer of literacy skills, see August & Shanahan (2006); Garcia & Godina (2004); Genesee et al.

(2006); Goldenberg (2008); Wang, Cheng, & Chen (2006); Wang, Park, & Lee (2006).

Instructional Implication: Teachers should promote bilingual literacy instruction, if feasible.

Continued support of literacy and language development in ELLs' primary language enhances, rather than detracts from, their English literacy acquisition. Students taught to read in both their primary language and English do better on reading measures than those taught only in English.

Literacy instruction in students' primary language can take many forms. Programs differ greatly in the proportion and amount of time in primary versus English language instruction, whether there is subsequent or simultaneous instruction in English, and the number of years that students are taught in their primary language. The instructional implications under Principle 3 of this report provide more information about language of instruction and description of different program models.

Evidence: The evidence that literacy instruction in both students' primary language and English has a positive effect on English language acquisition and reading outcomes is strong. Several research syntheses have come to this conclusion. (See also Principle 3 of this report.)

For syntheses of studies on language of instruction, see August & Shanahan (2006); Genesee et al. (2006); Greene (1997); Rolstad, Mahoney, & Glass (2005); Slavin & Cheung (2005); Willig (1985).

See Proctor, August, Carlo, & Snow (2006) for an example of how a strong knowledge of Spanish vocabulary can boost ELLs' English comprehension. Shanahan & Beck (2006, Chapter 15 of the August & Shanahan review)

describe a number of studies of instructional practices, including a number that make use of primary language.

Mathematics for English Language Learners

Despite the belief in mathematics as a "universal language," there are, in fact, many unique language challenges for non-native English speakers learning mathematics. Math has both a specialized vocabulary and also uses more general vocabulary, but with meanings specific to mathematics; the latter may be especially confusing to ELLs. Variations in the representation of mathematical relationships may also pose a challenge. ELLs may struggle with word problems and with conveying what they do know clearly and accurately. Good instruction can help with these challenges. In fact, good instruction makes an enormous difference. Overall student performance in mathematics is influenced just as much by classroom practices and teacher characteristics as it is by the background of students (Wenglinsky, 2000). In other words, it matters what teachers do in the classroom.

Research Base

Currently, there is little rigorous research on mathematics instruction for ELLs. However, a recent review concluded that there is currently no evidence to suggest that ELLs learn math any differently than do native English speakers, with the exception of the additional language challenges (Francis, Rivera, Lesaux, Kieffer, & Rivera, 2006a). Accordingly, the findings of the National Mathematics Advisory Panel (2008) report can form a basis for delivering what we know to be effective instruction for all students. ELLs need additional modifications, although we are just learning what some of those might be.

Because of the lack of rigorous research on mathematics instruction for ELLs, this section was informed by a review of literature beyond our original inclusion criteria, to include qualitative studies and program evaluations.

Principle 8: Mathematics has its own language and representational system, and ELLs struggle to understand mathematical concepts in this language.

The distinction made earlier in this report between conversational and academic language is relevant in mathematics as well. Mathematical academic language has a variety of features that are important for students to know so they can acquire new knowledge and skills, develop deeper understanding, and communicate their understanding to others. Some of the discipline-specific uses of language include:

- **Terminology** specific to the discipline of mathematics, including
 - General academic vocabulary (“combine,” “describe”)
 - Technical academic vocabulary (“hypotenuse,” “parabola”)
 - Everyday language with specialized mathematical meanings (“table,” “times,” “set”)

(Halliday, 1978; Khisty, 1995; Slavit & Ernst-Slavit, 2007).

- **Distinct syntax** that expresses language patterns and grammatical structures specific to mathematics (Slavit & Ernst-Slavit, 2007). Many students, including ELLs, often experience difficulties when they read and write mathematical sentences because they attempt to translate literally, symbol for word, laying out symbols in the same order words

appear. A typical linear translation of an algebraic phrase can produce erroneous responses if approached in this way. For example, the algebraic phrase “the number a is five less than the number b” is often translated into “ $a=5-b$,” when it should be “ $a=b-5$ ” (Clement, 1982).

- **Mathematical symbols**, or established characters used to indicate a mathematical relation or operation. ELLs may struggle with the multiple ways to refer to an operation in English. For example, even if ELLs know the meaning of the “+” symbol, they may not know all of the English language terms that can be used with it (“plus” “added to” “and”). Another challenge for ELLs, especially new arrivals, is the cultural variations in the use of some symbols. For instance, students who have already begun learning mathematics in a number of Spanish-speaking countries have learned to put the divisor and dividend in the reverse positions when writing division problems. They generally use a period rather than a comma to show place value (ten thousand is written as 10.000) and a comma instead of a decimal point (Slavit & Ernst-Slavit, 2007).

Instructional Implication: Teachers should provide explicit instruction on how to read and use mathematical terms, syntax, and symbols.

Teachers can explicitly teach ELLs the language of mathematics and give them opportunities to practice expressing their mathematical ideas. Teachers can also help ELLs by anticipating their language needs and working with them to identify misperceptions. This might include:

- Explaining how everyday and mathematical meanings differ
- Regularly asking students to explain their solutions, orally and/or in writing, to check for understanding and to identify sources of mistakes
- Providing opportunities for ELLs to speak mathematically with others by employing structured, heterogeneous, or peer-assisted learning groups
- Teaching the symbol conventions used in the U.S.

Evidence: There is suggestive evidence that explicitly teaching mathematical language leads to better outcomes for K-8 ELLs. There has been one pilot evaluation of a curriculum designed to support academic language development in mathematics for ELLs and teach them to use mathematical vocabulary and symbols. It found positive gains for sixth-grade students whose teachers used the curriculum and for ELLs in particular. Although it had an experimental design, this pilot evaluation is only one piece of evidence; there also were limitations to the measure it used to assess ELL math gains.⁸

For more about this study, see Heller, Curtis, Rebe-Hesketh, & Verboncoeur (2007).

For more on the use of language in mathematics, see Khisty (1995). For practical descriptions of how teachers can assist their ELLs with the language of mathematics, see Slavit and Ernst-Slavit (2007).

⁸ An experimental study of this program, *Math Pathways and Pitfalls*, with a focus on its effect for ELLs, is currently underway.

Instructional Implication: Teachers should use concrete materials, which help develop mathematical understanding when linked to the concepts they represent.

When ELLs are exposed to multiple representations of a mathematical concept, they have more opportunities to create connections and develop understanding (see the instructional implications under Principle 1 of this report). In mathematics, this includes the use of concrete materials, or “manipulatives” (physical objects such as blocks, tiles, or beans that can be manipulated to aid in learning).

Employing manipulatives in the mathematics classroom allows communication that goes beyond spoken and written communication. In turn, this may facilitate student access to information in mathematics without full knowledge of the English language.

Manipulatives can be viewed as a bridge that connects objects with mathematical concepts. The use of manipulatives alone is not sufficient; instead, teachers must facilitate the development of meaning. The value of manipulatives is, therefore, in how the teacher incorporates them into the lesson and how meaningful they are to the concept at hand. Some strategies for teachers include:

- Pre-planning to anticipate obstacles and minimize distractions
- Linking materials to the vocabulary for a particular lesson
- Allowing students opportunities for discussing their experiences and understanding

Evidence: There is moderate evidence that the use of concrete materials is effective with all students; however, to date there is no research evidence specifically with ELLs. A meta-analysis found that the long-term use of manipulatives led to higher student achievement in mathematics (Wenglingsky,

2000). A few additional researchers have found that the use of concrete materials aids the development of student understanding of operations and fractions; and, ultimately, that hands-on learning activities lead to higher academic achievement in mathematics (Behr, Lesh, Post, & Silver, 1983; Sowell, 1989).

Principle 9: Mathematic word problems are particularly challenging for ELLs.

Word problems require students to read and comprehend English sentences that often do not follow the patterns typical of everyday language. The linguistic demands of algebra are particularly intense because solving problems requires translating language into algebraic expressions (Driscoll, 1999, cited in Lager, 2006). The linguistic complexity of word problems has been shown to be related to low academic achievement for ELLs (Martiniello, 2008).

While the individual words used in a problem might seem simple, they are part of complex phrases that are particularly challenging to those still learning English (Francis et al., 2006a). For example, long multi-clausal sentences, uncommon proper nouns, modal verbs and an embedded adjectival phrase combined to make the question: "To win a game, Tamika must spin an even number on a spinner identical to the one shown below. Are Tamika's chances of spinning an even number certain, likely, unlikely, or impossible?" A single misunderstanding can lead students to create a logical but incorrect solution.

The following features of word problems pose difficulties for ELLs (Slavit & Ernst-Slavit, 2007):

- **Logical connectors** that signal similarity, contradiction, cause/effect, reason/result, chronological sequence, or logical sequence ("if... then," "if and

only if," "because," "that is," "for example," "such that," "but," "consequently," "either... or").

- **Comparative structures** ("greater than," "less than," "n times as much as")
- **Prepositions** ("divided by," "three through nine," "two into four")
- **Passive voice** ("what might be," "how much could")
- **References of variables** distinguish between the number of things, not the things themselves, for example: *There are five times as many apples as oranges* (the correct equation is $5o = a$, not $5a = o$); *Three times a number is two more than two times the number* ("number" refers to the same number both times); *If the first number is two times the other, find the number* (what do first number, the other, and the number refer to?)

Some word problems include low-frequency words (words that are used seldom and thus are less recognizable to ELLs), and this affects their overall comprehension. Research has demonstrated that in order for text comprehension to occur, about 90 to 95 percent of the words in a given passage must be known to the reader (Carver, 1994; Nagy & Scott, 2000). ELLs may spend more time decoding the low-frequency words in a word problem than comprehending and strategizing a solution (Lager, 2006).

Instructional Implication: Teachers should provide opportunities for ELLs to explain their strategies for reaching solutions.

It is evident that ELLs require support in solving word problems (Francis et al., 2006a). However, there is very little research that examines what exactly this support might look like. One practice that has been shown to help students with word problem solving skills is Cognitively Guided Instruction (CGI),

an approach to mathematics for K-6 (Carpenter, Fennema, Peterson, Chiang, & Loef, 1989; Fennema, Franke, Carpenter, & Carey, 1993). This approach is based on the premise that students bring an intuitive knowledge of mathematics to school, that mathematics instruction should emphasize problem-solving skills, and that students should explain their strategies for finding solutions. Although not specifically designed for ELLs, CGI has been used by teachers of ELLs to instruct them in complex word problems.

Evidence: The evidence that ELLs benefit from explaining their solutions to problems, such as in CGI, is moderate. Two quasi-experimental studies have found that students whose teachers were trained in CGI performed better on word problems than those whose teachers were not. However, these studies were not conducted specifically with ELLs. A recent qualitative study looked at the use of CGI with eight Hispanic students, and concluded that access to primary language and culture was essential to helping students make sense of word problems. Due to the very small sample size and research design, however, these results are not definitive about the efficacy of CGI with ELLs.

For more about language in mathematics that affects the learning of algebra, see Lager (2006). For descriptions about how word problems are difficult for ELLs in particular, see Francis et al. (2006a). For more on text comprehension, see Carver (1994); Nagy & Scott (2000).

For more on CGI, see Carpenter, Fennema, Peterson, Chiang, & Loef (1989); Marshall, Musanti, & Celedon-Pattichis (2007); Villaesenor & Kepner (1993).

Social Studies for English Language Learners

Two aspects of social studies can pose particular challenges to students learning English:

- Linguistic demands
- Assumptions of background knowledge that ELLs may not have

While all texts pose linguistic demands, history and civics books may be especially challenging, with dense texts and/or primary source materials that may be written in archaic styles. Furthermore, because part of the task in social studies is often to question the author (who is writing this, and what point of view is represented), students have to grapple not only with general meaning, but with understanding why authors used particular words or phrases—something that demands a high level of sophistication. Despite these demands, teachers seldom teach students about how language is used in social studies. Even ELL specialists working in sheltered instruction classes tend to devote far more attention to content than to language (Short, 2000).

The other challenge inherent in social studies classes is the vast amount of background knowledge students are expected to bring with them to class. Generally, the concepts taught and background expected in history and other social sciences expand as students mature. In the primary grades, texts and units tend to focus on topics closely connected to students' immediate world (families, neighborhoods, holidays, work). By the intermediate grades, texts and units become substantially more complex, and the concepts are less closely related to students' own lives (colonial history, pioneers, space exploration). In high school, students draw on what they learned about in previous years to explain complex topics such as the rise and fall of

imperial powers and the development of democracy. Students who arrive in the U.S. as adolescents are at a particular disadvantage, as they lack the background knowledge they are presumed to have acquired in the fourth through eighth grades.

The Research Base

At present, the research base on effective social studies instruction for ELLs is extremely small. While there are descriptions of practices that, logically, seem to offer reasonable supports to students learning English, these have not been put to the kind of rigorous testing needed to be sure that the practices are effective. For that reason, this section either draws off what we have learned in other content areas that would apply to the kinds of challenges that show up in this content area, or it describes practices that are promising but have not been completely tested, and therefore, the evidence behind them is described as merely “suggestive.” Studies of instructional interventions in social studies for ELLs are underway and may yield more definitive information in the future.⁹

Principle 10: The density and complexity of social science textbooks and other texts can be particularly challenging for ELLs.

Textbooks in the social sciences have features that can make them challenging for all students, but particularly so for students who are learning English. First and foremost is the density of many of these books. Often, courses demand that students cover centuries of history. In order to ensure complete

⁹ For example, an intervention for middle school social studies, developed by researchers at the University of Texas at Austin under the auspices of Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE), is currently being studied (Vaughn, Martinez, Linan-Thomas, Reutebuch, Francis & Carlson, 2008).

coverage, textbooks are both long and full of detailed pieces of information. Sometimes this information appears only once and is never touched upon again, a practice termed “mentioning” by critics of social studies textbooks (Apple & Christian-Smith, 1991).

Furthermore, these same textbooks often use complex syntax, such as long sentences with multiple dependent clauses, that is very different from conversational English (Brown, 2007). The frequent use of passive voice can confuse students about who took what actions (“the laws were passed unanimously...”). In addition, some of the very textbook features that are supposed to help students may simply confuse those who do not know how to interpret headings, sidebars, and graphs (Short & Fitzsimmons, 2007).

Older students are also likely to encounter historical or primary source documents. Some of these use archaic language, and the use of multiple verb tenses is common (Dong, 2005). While reading such texts is often difficult for all students, it may present an even greater challenge to ELLs.

Instructional Implication: Teachers should use texts that are adapted without oversimplifying the concepts they convey.

Teachers can adapt text to make it more comprehensible to ELLs. Adapting text reduces what is called the cognitive load (the demand on working memory during reading or instruction). When students do not have to work as hard to understand each word, they are better able to focus on the overall meaning of the content.

Reducing cognitive load is not the same thing as simplifying material. Instead, it may involve the removal of extraneous material so students can focus on what is truly important. For example, rather than assigning 10 pages out of a social studies chapter, a teacher may

assign only a page or two, and go over those pages in greater depth. Alternatively, a teacher or team of teachers may rewrite text, focusing on the primary ideas, perhaps with simplified vocabulary.

Other strategies for adapting text to make it more accessible to ELLs are presented in the SIOP model of sheltered instruction. These include audio taping of the text and allowing students to listen as they follow along in their books, or providing students with textbooks that already have the main ideas and key vocabulary highlighted by the teacher or another knowledgeable person ahead of time.

Evidence: The research evidence supporting the use of simplified text is suggestive. There are many publications describing various uses of simplified text, and they make strong arguments that cutting extraneous material helps students comprehend the main content, but at present there are no rigorous scientific studies that test the impact on students. We also do not know about the relative effectiveness of the different strategies for adapting text.

The SIOP model, one of the approaches to sheltered instruction described earlier in this report, does incorporate the use of adapted text into its delivery of instruction. That model showed promising writing outcomes in a quasi-experimental study involving middle school students at six schools.

On SIOP outcomes, see Echevarria, Short & Powers (2006). There are other rigorous studies in progress which may yield additional evidence.¹⁰ For a description of the use of adapted text and other related strategies in SIOP, see Echevarria, Vogt & Short (2007). For other descriptions of the use

¹⁰ Additional research into the use of graphic organizers, as well as other supportive features of sheltered instruction in seventh-grade social studies classrooms is currently underway, but results are not yet available (Vaughn et al, 2008).

of adapted text, texts from lower grades and other strategies to reduce cognitive load in social studies, see Brown (2007), and Szpara and Ahmad (2006).

Instructional Implication: Teachers should use graphic organizers and other visual tools to help make sense of complex information.

Because social studies texts are often dense, students can easily get lost, mistaking details for main ideas and vice versa. Teachers can help by providing ELLs with tools to depict the interrelationship between events or ideas.

Graphic organizers are diagrams that help students identify main ideas and identify how those ideas are related (see also the discussion of multiple representations under Principle 1 of this report). Concept maps, one type of graphic organizer, can be helpful for students who struggle with the difference between main ideas and supporting details. Venn diagrams can help students see what two or more documents or ideas have in common. Timelines are another form of graphic organizers that help to clarify chronologies. For students who need more support with challenging text, teachers can provide explicit outlines ahead of time, and as students read, they can compare the text to the outline to check their progress and link what they read to the main ideas in the outline (Brown, 2007).

While all students can benefit from the additional clarity provided by a timeline or a concept map, these tools can be especially valuable to ELLs because they edit out complex language in order to focus specifically on one aspect of the lesson.

Evidence: The evidence for the effectiveness of graphic organizers with ELLs is suggestive. While they are widely recommended in the literature on ELL instruction, and many texts describe their use, there is no scientific

evidence to show how much impact they have. Like adapted text, the use of graphic organizers and visual supplements are components of the SIOP model, but the many variations described here were not tested.

For a description of concept mapping and the use of text outlines, see Brown (2007). Echevarria, Vogt, & Short (2007) also provide multiple examples of the use of graphic organizers to make content more accessible. See Szpara and Ahmad (2006) for a description of other graphic organizers.

Principle 11: Some ELLs bring background knowledge that differs from what is assumed in textbooks.

History classes require students to identify key participants and events and to explain the relationship among them. Civics classes ask students to read and write about the workings of government institutions. These tasks are particularly hard when students lack knowledge of the context in which events occurred or have not grown up hearing about Congress, the courts, and the President. While not all ELLs lack this type of background knowledge, some do, especially many older immigrant students. This lack matters because research has shown that background knowledge affects reading comprehension (Bernhardt, 2005). The instructional implication under Principle 4 of this report is therefore particularly important for teachers of social studies.

ELLs do not arrive at school without any background knowledge; instead, they simply bring knowledge different from that presumed by the authors of U.S. textbooks (Brown, 2007). A ninth-grade student, for example, is presumed to have been exposed to all the information embedded in state content standards for grade K-8, but the new immigrant student may never have heard of

many of the people or topics (colonial times, George Washington, construction of the railroad, Oregon Trail, Abraham Lincoln, Reconstruction, and World War I, to name just a few).

Instructional Implication: Teachers should activate existing background knowledge and build new background knowledge to increase comprehension.

There are many ways teachers can activate the existing background knowledge of their ELLs and use this to help them understand new material. In fact, social studies may be the most applicable place for ELLs' prior experiences to be brought into lessons. For example, students can be asked to talk or write about government institutions in their home country, which can then serve as a basis for comparison to the U.S. institutions. Students' own experiences of immigration can serve as a bridge to understanding the reasons behind immigration at the turn of the twentieth century.

Providing connections between students' own background experiences and what is happening in class is important because of the "affective filter," an impediment to learning caused by negative emotional responses (Krashen, 2003); when students are confused, frustrated, or feel left out, the affective filter can prevent them from learning the material.

When students lack specific pieces of background knowledge, such as images of pioneers in covered wagons or the bombing of Pearl Harbor, teachers can build this prior to new lesson units in a number of ways. Films (or clips from films) help to construct some of the images that already exist in the minds of many students who have grown up in the U.S.; sometimes photographs can do the same. Demonstrations and field experiences are other ways to build background knowledge.

Evidence: The evidence that developing background knowledge increases comprehension for ELLs is strong. As noted earlier in this report, several decades of research have provided evidence for the contribution of background knowledge to comprehension for all students. For ELLs in particular, August & Shanahan's (2006) meta-analysis recommends that background knowledge is "targeted intensively" in an ongoing manner; two other recent reports that draw on expert opinion both recommend building and cultivating background knowledge.

For a summary of the research on the importance of background knowledge for comprehension generally, see Bernhardt (2005) and the National Reading Panel report (2000). For the reports summarizing expert opinion, see Short & Fitzsimmons' (2007) report on adolescent ELLs and Meltzer & Hamann's (2004) study of adolescent literacy.

Principle 12: Social studies requires sophisticated and subject-specific uses of language.

To be successful in social science, students need to do more than read challenging texts. They also have to produce language (speak and write) in ways that often differ substantially from conversational use. Assignments in social studies often ask students, for example, to use language to defend a point of view, discuss issues, listen, debate, synthesize, and extrapolate. For this, ELLs need more than a list of relevant vocabulary words. They also need to be confident in the use of connecting words, dependent clauses, and various forms of past tense (such as simple past, past perfect, or past perfect progressive). They need to know how to choose among words with similar meanings and how to construct appropriate phrases

around those words ("even though he left early..." "despite his early departure...").

Instructional Implication: Teachers should scaffold social studies assignments to build ELLs' ability to make complex arguments in content appropriate ways.

To build students' ability to write essays and make complex arguments, teachers can scaffold writing assignments for their ELLs (see Principle 1 of this report for more discussion of scaffolding). Specifically, teachers can provide their ELLs with the appropriate kinds of connecting language for the type of essay they are supposed to write. For example, when learning to compare and contrast events or perspectives, teachers can provide comparative language structures ("on the one hand... while on the other hand..." "although the first does x, the second does not..."). For descriptive writing about a historic event, other types of connectors may become more important (first, next, two years later...). Teachers may also need to teach appropriate use of verb tense for different types of writing (Dong, 2006).

For social studies teachers who have learned to focus closely on content, it can be difficult to learn to teach about language as well. However, one study of a project that taught preservice teachers to teach language and content at the same time found that with adequate support, even at the preservice level, teachers can learn to weave language components into their content-focused lessons.

Evidence: Research evidence for the use of scaffolded writing assignments is suggestive. Certainly there is research evidence that scaffolding is beneficial to students in general, but there are no investigations specifically with ELLs. Discussions of scaffolding with ELLs tend to be descriptive, rather than studies of effectiveness. While scaffolded

instruction is a component of the SIOP model, the scaffolding of writing assignments as described here was not part of the SIOP intervention tested.

For a general description of scaffolding, see Bruner (1983); Walqui (2006) describes specific examples of scaffolding for ELLs. On the use of scaffolding in SIOP, see Echevarria, Vogt, & Short (2007), and for the effectiveness study, see Echevarria, Short, & Powers (2006). On training preservice teachers to create and implement language goals into their planning of social studies lessons, see Bigelow & Ranney (2001).

Science for English Language Learners

The study of science involves inquiry into the natural world and the detection of patterns across events. As with the other content areas, science has its own language as well as unique ways of using that language. This can be particularly challenging for non-native English speakers who may struggle to apply science-specific vocabulary, as well as learn the language of scientific functions such as describing, identifying, classifying, and predicting. In addition, the varied cultural and linguistic backgrounds of ELLs may be sometimes different from the norms and practices of science.

The Research Base

The body of research about the instruction of ELLs in science is small but growing. There are studies from two projects that provide the most rigorous evidence currently available in this field. Both of these programs combined comprehensive science curriculum and ongoing teacher professional development to provide science instruction that met national science education standards:

1. *Science for All (SfA) and the current Promoting Science among English Language Learners (P-SELL)*¹¹ combined scientific inquiry, English language and literacy development, and home language and culture. Results from longitudinal research revealed statistically significant gains in student achievement on all measures of science and literacy in grades 3, 4 and 5 (Lee, Deaktor, Enders, & Lambert, 2008; Lee, Deaktor, Hart, Cuevas, & Enders, 2005; Lee, Maerten-Rivera, Penfield, LeRoy, & Secada, 2008; Lee, Mahotiere, Salinas, Penfield, & Maerten-Rivera, in press).
2. *Scaffolded Guided Inquiry (SGI)* investigated the impact of training teachers to deliver scaffolded instruction in scientific inquiry to fifth-grade students, many of whom were Spanish-speaking ELLs. A series of randomized experiments showed that SGI in combination with Full Option Science System (FOSS) kits yielded significantly better achievement outcomes in science than traditional textbooks or FOSS kits alone (Vanosdall, Klentschy, Hedges, & Weisbaum, 2007).

Like most studies, these were not without limitations. Both projects incorporated many materials and strategies simultaneously, and so the specific impact of each material or strategy cannot be determined. Additionally, both studies come from elementary settings, and while similar results might be obtained in middle and high schools, the SfA/P-SELL and SGI approaches have not been tested at those levels.

These two research programs form much of the basis for the principles and instructional

¹¹ P-SELL, developed by Okhee Lee (University of Miami) and funded by the National Science Foundation, is a comprehensive program that builds upon SfA.

implications highlighted in this section. In addition, Lee (2005) conducted an extensive review of literature on science education with ELLs, and her findings also contributed to this summary.¹²

Principle 13: Science inquiry poses particular linguistic challenges to ELLs.

People have an inherent common-sense understanding of how the world works, recognizing and distinguishing, for example, different sounds, light levels, textures, or weather variations. Science goes beyond this common-sense understanding of natural phenomena and uses a variety of tools to document patterns and test explanations of those patterns. For students to really learn about science, they first need to learn to conduct the inquiries that yield information about the patterns and their relationships. They also need to learn to effectively and accurately communicate findings from their inquiry, using the language and structure conventions accepted in the field.

While learning how to conduct inquiry and how to communicate findings can pose a challenge to any student, it can be especially difficult for ELLs, who have to meet these demands while simultaneously learning the language of instruction. That is, they have to learn to read and write scientific English at the same time as they learn to read and write everyday English.

¹² Quality English and Science Teaching (QuEST), developed by Diane August under the auspices of CREATE, is an intervention for teaching science to ELLs that is currently being evaluated (August, Mazrum, Powell, & Lombard, 2007).

Instructional Implication: Teachers should include hands-on, collaborative inquiry, which helps ELLs clarify concepts and provides practice in using language in scientific ways.

There is wide consensus in the field of science education that it is not sufficient to teach students the “facts” of science; they also need to learn how to collect evidence in order to construct and test hypotheses. Promoting this learning through hands-on, collaborative participation in scientific inquiry is beneficial for all students, but particularly for ELLs because it provides opportunities to develop understanding that transcend linguistic challenges.

- **Hands-on** work provides concrete meaning to otherwise abstract concepts. Especially for students who do not have prior background knowledge in a specific topic, this concrete meaning is valuable. Also, hands-on activities make it easier to participate in class even without a high level of proficiency in English.
- **Collaborative** inquiry encourages ELLs to communicate their content understanding with their peers in a variety of ways, including gestures, conversation, pictures, graphs, and text. This means that students learning English are less dependent on formal mastery of English and, thus, the linguistic burden on ELLs is lessened. It also provides an authentic context in which science language acquisition can be fostered. Furthermore, it allows ELLs to engage in professional scientific practice, which is characterized by a high degree of collaborative research.
- Finally, the task of **inquiry** itself pushes ELLs to use science process skills (observing, measuring, inferring, predicting) and at the same time use language in academically sophisticated

ways (describing, classifying, sequencing, interpreting).

What hands-on collaborative inquiry looks like in the classroom varies tremendously, depending on grade level and topic. It includes primary grade students conducting basic observations, as well as older students working together on chemistry experiments.

In order for hands-on, collaborative inquiry to help students work together on scientific investigations, it must be carefully orchestrated (Rosebery, Warren, & Conant, 1992); it is not enough to assign a general project and let students go on their own. Typically, teacher guidance may be extensive and explicit early on, while the teacher can then gradually scale-back the assistance. The level of assistance and rate of scaling back will depend largely on students' backgrounds and needs.

Evidence: There is moderate research evidence supporting the use of hands-on, collaborative science inquiry with ELLs. Both the SfA/P-SELL and SGI projects strongly emphasized this approach to teaching science. Their study results found that inquiry-based science instruction increased ELLs' ability to design and carry out their science investigations and heightened their science and literacy achievement. However, because the SfA/P-SELL and SGI projects incorporated many other strategies simultaneously, specific impact of hands-on collaborative activities cannot be determined.

For studies of projects that incorporate hands-on collaborative inquiry, see Amaral, Garrison, & Klentschy (2002); Lee, (2002); Lee et al., (2005); Vanosdall et al., (2007). For case studies and descriptions of hands-on collaborative inquiry used in K-8 classrooms, see: Douglas, Klentschy & Worth (2006).

Instructional Implication: Teachers should build English language and literacy development into science lessons for ELLs.

Language supports during science instruction for ELLs can go beyond simply providing students with a list of technical terms connected to the current unit. In addition, teachers can call attention to words that allow students to make precise descriptions, such as positional words (above, below, inside, outside), comparative terms (high, higher, highest), and affixes ("in" for increase or inflate and "de" for decrease or deflate). Lessons can start with introductions to key vocabulary and include opportunities for students to practice the vocabulary in a variety of contexts.

Other types of support for language development within science classes include having students write paragraphs describing scientific processes they have engaged in, reading trade books relevant to the science topics being studied, and participating in shared reading or writing about science. In the SGI project that used scaffolded guided inquiry with FOSS kits, students conducted an "inventory" of each kit before using it, giving them the chance to learn the names and functions of all the materials they would be using in subsequent work.

Evidence: There is moderate evidence supporting the inclusion of English language development within science lessons, since over time such interventions did demonstrate student achievement gains in both science and literacy (Amaral et al., 2002; Lee et al., 2005).

The professional development provided to teachers and its impact on teachers in the first year is described in Hart & Lee (2003).

Principle 14: The norms and practices of science may or may not align with the cultural norms of ELLs.

Placing inquiry at the center of science education means that students are expected to ask questions, challenge ideas, and test hypotheses in the classroom. They are supposed to work together to build knowledge that comes from repeated observations and analyses. At times these expectations may mesh easily with the cultures of some ELLs. For example, some ELLs bring well-developed observation skills and an understanding of systems and connectedness. Others may bring a strong desire to learn new things from those with more “expert” knowledge. These cultural experiences can be leveraged to foster science learning, especially when teachers are attuned to this possibility.

At the same time, other cultural experiences of ELLs are sometimes in conflict with the norms and practices of science. For example, if students come from a culture that is extremely social and group-oriented, they may shy away from competitive or individual demonstrations of knowledge which are often required in science class. If they come from a culture in which respecting authority is highly valued, it may be difficult for them to challenge ideas and propose alternative hypotheses. For these reasons, the implications under Principle 4 of this report are particularly salient for science teachers.

Instructional Implication: Teachers should incorporate ELLs’ cultural “funds of knowledge” into science instruction.

Teachers can help ELLs make use of their cultural background where it aligns to science norms and understand and learn the aspects of science that are different from their culture. This approach helps create what is called

“cultural congruence,” an alignment of classroom and student culture. Research across multiple content areas has suggested that cultural congruence leads to better student learning (for example, Au & Kawkami, 1994; Gay, 2000; Tharp & Gallimore, 1988). At the same time, those working to design programs that attempt to balance the teaching of science inquiry with respect for students’ home culture acknowledge that this is challenging: “The aim is to encourage students to inquire and question without devaluing the norms of their homes and communities, so that students gradually learn to cross cultural borders” (Lee & Luykx, 2006, p. 77).

There are multiple ways that teachers can incorporate students’ home culture into the classroom in order to increase cultural congruence. Some examples include:

- Incorporating brainstorming activities, narrative vignettes, and trade books helps widen the range of ideas and perspectives brought into classroom discussion
- Bringing in students’ knowledge from another setting into the science classroom helps to validate their knowledge and invites comparisons
- Using both metric and customary (English) units of measurement incorporates a system some students may know from living in other countries and helps all students understand the relationship between the two measurement systems

Evidence: The evidence supporting the inclusion of ELL’s linguistic and cultural experiences into science lessons is moderate. The SfA/P-SELL project explicitly created opportunities for ELLs to draw upon their home language and cultural resources. In a quasi-experimental study of this project, participating students demonstrated statistically significant achievement gains in

science and literacy. However, since this project included multiple components, it is not possible to tease out the specific contribution of this aspect of the project.

For research on project impact, see Ku, Bravo, & Garcia, 2004; Lee et al., 2005; Lee, Deaktor, et al., 2008; Lee, Maerten-Rivera, et al., 2008.

On making use of cultural norms that promote the learning of science, see Warren, Ballenger, Ogonowski, Rosebery, & Hudicourt-Barnes (2001).

Instructional Implication: Teachers should make the norms and expectations of science inquiry clear and explicit to help ELLs bridge cultural differences.

In instances when the norms of science classrooms and those of students' home culture are not already aligned, it can be helpful for teachers to provide students with explicit explanations of science norms. Such explicit instruction is essential in order for students to acquire the "rules" of science which, ultimately, they are held accountable for, whether they have been taught these rules or not (Lee, 2002). Without such explanations, students may become frustrated or not understand how to participate successfully, ultimately risking reduced engagement in learning and even withdrawal.

For example, science teachers must formally articulate the norms and practices of inquiry which may seem "natural" to them as teachers because they have been socialized into the Western scientific tradition which places great value on inquiry and questioning. If a student comes from a culture in which adult authority is respected and unquestioned, they may be hesitant to engage in inquiry-based science where questioning adult knowledge is encouraged (see the literature review in Lee, 2002).

Some students' home cultures include ways of interacting that encourage them to accept pronouncements from authority figures, such as teachers or textbooks. One way that teachers can encourage a shared sense of scientific authority in the classroom is to ask questions such as "What do you think?" or "How do you know?" rather than by giving students the answers or referring to a page in the text. The SfA/P-SELL project worked from the presumption that when students justified their own reasoning, they developed deeper scientific understanding (Luykx & Lee, 2007).

Evidence: There is moderate evidence supporting the explicit instruction in norms and practices in science. In studies of the SfA/P-SELL and SGI programs, students who received explicit instruction in the norms and practices of science learned these norms and were able to engage in the practice of science, made significant gains in science achievement, and outperformed the control or comparison groups. However, these studies could not isolate the effects of teaching science norms and practices from the rest of the program components.

For more on the research into effectiveness see Lee et al. (2005); Lee, Deaktor, et al. (2008); Lee & Fradd (1998); Lee, Maerten-Rivera, et al. (2008); Rosebery et al. (1992); Vanosdall et al. (2007).

On student hesitation to engage in inquiry-based science lessons where questioning adult knowledge is encouraged, see the literature review in Lee (2002).

For an example of a science lesson and analysis of how it made use of students' prior cultural and linguistic knowledge, see Luykx & Lee (2007).

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APPENDIX 1: ADVISORY PANEL

Please note that Northwest Regional Educational Laboratory (NWREL) became Education Northwest in 2009. These affiliations and titles reflect positions held at the time this report was first published.

Rain Bongolan, Program Director, ELL and Adolescent Literacy Instruction
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Penny Collins, Assistant Professor of Education
University of California at Irvine

Russell Gersten, Executive Director
IRG Research Group

Claude Goldenberg, Professor of Education
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APPENDIX 2: METHODOLOGY

Scope of work

In 2007, the Washington state legislature charged Education Northwest with conducting a literature review and consulting with nationally recognized experts to address the following questions:

1. What should regular classroom teachers know (“foundational competencies”) in order to work effectively with English language learners (ELLs)?
2. How should English as a second language (ESL) teachers and mainstream classroom teachers work together for the benefit of their ELLs?

To carry out this work, Education Northwest conducted a review of published research in ELL instruction, and convened an advisory panel of experts in ELL instruction. Each of these is described in more detail below.

Advisory Panel

In December 2007, Education Northwest invited a group of nationally recognized scholars and researchers of English language learner instruction to participate in an Advisory Panel to guide Education Northwest in accomplishing the work of this report. Members were invited based upon their expertise in ELL issues broadly, as well as their specific areas of research and knowledge, with the goal of balancing the panel across content areas.

Two meetings with the Advisory Panel and Education Northwest staff members were held. The first meeting on April 22, 2008 acquainted members to the project scope and intended use of the report, solicited input on the direction of the literature search, and asked panelists for feedback on an early draft. The second meeting on August 20, 2008 focused on panelist feedback on a second draft of the report, with particular attention to the principles and instructional implications derived from the research base.

In addition, Advisory Panel members provided essential guidance, resources, and feedback to Education Northwest staff members between and after these meetings via e-mail and telephone. A list of Advisory Panel members, along with other meeting participants, is provided in Appendix 1.

Research Summary

The first stage of the research summary was to conduct a literature search gathering published research on ELL instruction. This began with the establishment of inclusion criteria, or guidelines used to first screen and then either retain or exclude resources. To ensure that the research summary included only solid research, parameters for inclusion were set as follows:

1. **Source:** The research was published in a peer-reviewed journal or an edited book. This included syntheses and meta-analyses of previously published research.
2. **Methods:** The research methodology was experimental, quasi-experimental, or correlational with statistical controls. There was some connection to student outcomes. Meta-analyses and summaries of these types of research were also included.

3. **Locale:** The research was conducted with students learning English in the United States.
4. **Sample:** The students in the study were in grades K-12, and the sample size was large enough that the study could be generalizable to the larger population (i.e. no single case studies were included; a sample size of three would also be considered too small).

Searches were conducted by Education Northwest library staff members of several key databases (such as the ERIC/EBSCO interface, Education Full Text/Wilson, PsychInfo/OvidSP, and Multisearch: Education) utilizing key terms, combining those specifying the group of interest (such as “English language learners” or “English as a second language”) with content terms (such as “science” or “literacy”). After Education Northwest library staff members identified materials, the report authors then screened them to determine if they met the inclusion criteria outlined above.

However, due to the limited amount of research on ELLs in some content areas, it was sometimes necessary to expand the inclusion criteria to include additional works, such as qualitative studies or program evaluations. In addition, Education Northwest included materials that were recommended by members of the Advisory Panel. When materials that did not meet the inclusion criteria are included, it is clearly explicated in the report so the reader can distinguish between the highest quality research, and other, less rigorous research.

Strength of Research

Throughout this report, the research supporting each instructional implication is referred to as “strong,” “moderate,” or “suggestive.” We hope that this helps policymakers, professional developers, and school staff members understand the relative strength and demonstrated effectiveness of each instructional practice, from those that have solid evidence as working with ELLs, to those that have some evidence but are less proven.

We used the following rubric to sort the existing research into one of these three levels:

Strong

- One or more meta-analysis, research summary or synthesis
- Multiple rigorous studies with similar results

Moderate

- One rigorous study
- One or more rigorous studies that test multiple components, where the impact of individual components cannot be isolated
- Multiple studies that include student outcomes but may lack appropriate comparison groups or have other limitations
- Strong evidence with general student populations, but not yet tested specifically with ELLs

Suggestive

- Strong descriptive studies
- One or two studies that include student outcomes but may lack comparison groups or have other limitations
- Expert consensus

APPENDIX 3: SUMMARY OF OTHER WORK FOR SENATE BILL 5841

This review of the research on effective instructional practices serves as the interim report to the Washington state legislature, as requested by SB 5841 in 2007.

That same bill requested two additional pieces of work:

- A field study documenting the instructional programs and practices currently being used to instruct ELLs by districts in the consortium in and around the Yakima Valley (south-central Washington)
- Evaluation of the projects undertaken by the five multi-language districts which received demonstration grants under the same legislation

This appendix reports briefly on these pieces of work, which are currently on-going. The findings from both pieces will be presented in the final report, due December 1, 2009.

Field study of instructional programs and practices in south-central Washington

Superintendents from 14 districts in south-central Washington have come together in recent years to discuss, among other topics, the academic needs and challenges of the many ELLs they serve. These districts are Bickleton, Grandview, Granger, Mabton, Mt. Adams, Prosser, Royal, Sunnyside, Toppenish, Wahluke, Wapato, Yakama Nation, Yakima and Zillah.

Superintendents from the consortium requested that the Washington state legislature include a provision in SB 5841 for a field study to document the programs and practices currently being used to work with ELLs in those districts. This information can be used as a baseline from which to make decisions about program changes or teacher professional development in order to enhance the education of ELLs.

The Education Northwest is currently conducting this field study. The research addresses nine questions, within and across districts:

1. How are districts structuring the education of their ELLs?
2. How are districts assessing their ELLs?
3. How do districts staff their approach to working with ELLs?
4. How are districts using their ELL specialists?
5. What professional development related to ELLs have district teachers participated in over the past five years?
6. What practices to support their ELLs are classroom teachers using on a regular basis?
7. What other initiatives (interventions, summer school programs, family outreach efforts) targeting ELL students are going on at the district?
8. Overall, and by district, what trends are visible in student achievement, as measured by the WASL and WLPT, over the past five years?

9. How does student achievement in each of the districts compare to statewide achievement levels predicted by poverty levels?

A variety of data collection procedures are being used to address the nine questions. These include:

- Short phone interviews with district superintendents
- Surveys of principals
- Surveys of ELL specialists
- Surveys of regular classroom teachers
- Observations in randomly selected classrooms (at least 18 per school)
- WASL and WLPT data
- Document review

The classroom observation component is the most labor-intensive component of this work. They began in March 2008 with the two-day training of nine site visitors. They were trained in use of the Sheltered Instructional Observation Protocol (SIOP) to observe classrooms and rate teachers' use of 30 different practices. In April and May 2008, the site visitors conducted observations in five districts (Grandview, Mabton, Prosser, Sunnyside, and Zillah; these were the five districts that expressed interest in beginning the data collection last spring). In each participating district, site visitors observed classes at two schools. Two visitors spent two entire days at each school and generally observed 18 classes over those two days. For two classes, the two visitors observed together and rated separately. This allowed us to examine inter-rater reliability on the SIOP ratings.

Site visits are continuing in fall 2008. A second training for site visitors was conducted in September 2008, with eight of the original site visitors as well as five new ones. Meanwhile, instrument development and other data collection efforts continue. The complete evaluation plan is available upon request from the principal investigator, Dr. Theresa Deussen:

Theresa.Deussen@educationnorthwest.org.

Evaluation of demonstration project grantees

The legislation provided funding for districts that serve ELL populations from multiple language backgrounds to implement demonstration grants. Ten districts applied, and the five with the highest-rated proposals were funded: Camas, Federal Way, Fife, Spokane and Tukwila.

The evaluation questions include the same nine questions used for the field study in south-central Washington (listed above). In addition, the evaluation raises the question:

10. When districts or schools are not able to implement research-based practices, what obstacles contribute to this?

Districts first received their funding in winter 2008 and began implementing their projects in the winter and spring. Data collection for the evaluation of both the implementation and impact of those projects was postponed until the 2008/2009 school year, so that schools would have time to get the projects fully in place. Interviews with the grant coordinators began in October 2008. Site visits, with classroom observations using the same SIOP protocol, will take place in the winter of 2009. Those observations will be conducted by some of the same site visitors trained in September 2008. Other data collection will occur during the winter and spring of 2009.