

Revised Response Template for Professional Development Offering

Complete and include a separate Attachment D for each Professional Development Offering to be included in your proposal. For each different Professional Development Offering, first enter the name and description and then answer Question 1 below. Based on your response to Question #1 below, insert -I, -II, -III, or -IV in the header above after “Attachment D.” If you have the same delivery method for more than one professional development offering to be included in your proposal, add a number after the Roman numeral indicating the category. For example, if your proposal includes three different professional development offerings that will be delivered face-to-face (in-person), two different professional development offerings that will be delivered via an online interactive format, and one professional development offering that will be delivered via a combination; you will have attachments D-I-1, D-I-2, D-I-3, D-II-1, D-II-2, and D-IV.

Within Tab 6 of your proposal, include separate tabs so that each offering is in a separate tab with the name indicated in the header. For the example above, within Tab 6 include Tabs D-I-1, D-I-2, D-I-3, D-II-1, D-II-2, and D-IV.

Name of Professional Development Offering

Sheltered Instruction Observation Protocol (SIOP®) Coaching & Modeling

Brief (15 to 20 Word) Description

Educators gain an in-depth understanding of the components of the SIOP Model and strategies to implement it in their PreK/Kindergarten classrooms.

1. What method will you use to deliver the professional development? Indicate one and only one delivery method set out below as (I, II, III, or IV) per separate Attachment D. (Also see Attachment E, Pricing Schedule.) Indicate the delivery method I – IV to the right of “Attachment D” in the header above.

Select one and only one:

- I. In-person (face-to-face)
- II. Online interactive (e.g., via Webinar)
- III. Online NOT interactive (e.g. listen or read only)
- IV. Combination of live and virtual/online

Briefly describe the approach and why it is appropriate for meeting the learning objectives.

As a supplement to the SIOP Training for Pre-K/Kindergarten Teachers workshop, we often pair this training with at least five days of SIOP classroom coaching and modeling to help teachers solidify concepts and implement the approach with fidelity. SIOP Coaching and Modeling typically consists of one Pearson SIOP coach serving a cohort of up to 20 teachers over at least a five-day period. This approach is “job-embedded,” and therefore, requires no time away from teachers’ regular instructional duties. The coaching and modeling days do not have to be consecutive; we will work with the district to select the best schedule.

You may also select “Other.” (Also see Attachment E, Pricing Schedule.) Professional development offerings using “other” delivery methods may or may not be included in any resulting contract. Briefly describe the approach, why it is appropriate for meeting the learning objectives, the time commitment, and the justification for the time commitment needed to meet the objectives of the professional development opportunity.

V. Other

Not applicable.

Table A. Check all that apply to this stand-alone product:

	Professional Development Category
	a. Quality of teacher-child interactions
	b. Providing developmentally appropriate preschool learning environments
✓	c. Early literacy skills
	d. Early mathematics skills
	e. Early scientific development skills
	f. Promoting preschool children’s critical thinking, problem solving, and other executive functions
	g. Promoting preschool children’s social and emotional development
	h. Instructional services and support for students with disabilities
✓	i. Instructional services and support for English language learners
	j. Behavior management techniques for diverse preschool children
	k. Preschool classroom management techniques

	Professional Development Category
	l. Elementary school leadership development to support and strengthen early learning programs
	m. Communicating with diverse parents of preschool children
	n. Aligning early childhood education programs from birth through third grade or preschool to third grade
	o. Family engagement and support services, including comprehensive preschool services, and effective family engagement strategies designed to sustain improved early learning outcomes through third grade

2. Which of the Essential Domains of School Readiness does this stand-alone professional development offering focus on (Check one or more)

- Language and literacy development;
- Cognition and general knowledge (including early mathematics and early scientific development);
- Approaches toward learning (including the utilization of the arts);
- Physical well-being and motor development (including adaptive skills); and
- Social and emotional development.

3. Who is your target audience? (Check all that apply.)

- Teachers
- Coaches
- Administrators
- Teacher Assistants
- Other service providers (specify here: _____)
- Parents and families

4. What is the length of delivery in hours (time required excluding self-study or other assignments)?

30 Total Hours for Delivery

EXAMPLES

Face-to-Face Professional Development

The example "X" below provides the time for professional development delivery for a series of 4 workshops that are 4 hours each and require completion of a 10 hour assignment "on your own."

4 Days

4 Hours per day

16 Total (4 x 4)

Online Professional Development

The example "Y" below provides the time for professional development delivery for a series of 2 online interactive workshops that are 8 hours per day.

2 Days

8 Hours per day

16 Total (2 x 8)

The example "Z" below provides the delivery time for online professional development that is in a "listen and learn" format scheduled for completion in 10 hours but may take some individuals longer. .

10 Total Hours

5. What are the goals and learning objectives of the professional development offering?

This five-day service is a job-embedded, collaborative approach to professional development and dialogue about effective lessons. A group of teacher teams and a SIOP education specialist meet to co-develop a lesson that is tied to the overall goal of improving student achievement. Then the education specialist and a teacher co-teach the lesson while the rest of the team observes. After the lesson, the team meets to discuss the lesson and any changes that could be made in planning and delivering the lesson using the SIOP Model. Participants receive the book *99 Ideas and Activities for Teaching English Learners with the SIOP Model*, an indispensable resource that supports implementation of the SIOP Model.

By the end of the program, the participants will be able to do the following:

- Identify the features of effective SIOP lessons
- Develop a lesson that incorporates the SIOP Model
- Learn how to use the SIOP protocol to observe and analyze a lesson

Each session accommodates up to 20 participants.

6. Describe the measurement process you will use to determine whether participants met the learning goals and objectives.

Effective schools and districts measure the impact of professional development on instructional practice and student achievement. To this end, Pearson provides districts with a participant pre- and post-intervention survey that measures change in teacher knowledge, teacher practice (instructional skills), student achievement, and perception of the SIOP training. The pre-training survey takes approximately 10 minutes to complete and will remain available for two weeks. The survey collects participant reflections of the following:

- Educational background (three questions)
- Teaching background (three questions)
- Instructional practices (two questions)
- Content knowledge of instructional techniques for ELLs (13 questions)

Following the formal SIOP training process, participants complete a post-survey that collects data across the following five areas:

- Recent SIOP training (four questions)
- Participant readiness to implement SIOP (six questions)
- Instructional practices (three questions)
- Content knowledge of instructional techniques for ELLs (13 questions)
- Need for follow up training and support (three questions)

Pre- and post- survey data will be collected and analyzed by Pearson's professional evaluation team, with an aggregated report provided to each district. The report includes data to target areas of SIOP that district educators are excelling in and areas that could use improvement. In this way, the surveys assist with differentiation of professional development and associated services for the instructional staff.

7. Describe how this offering is consistent with the definition of high-quality professional development as defined in Section III of the Request for Proposals.

Pearson developed this offering based on evidence-based preschool language and literacy instructional strategies known to impact early student learning positively. The concepts and skills introduced in the training can be sustained in the real classroom setting with the support of school-based professional learning communities and colleague collaboration. The core second language and academic language instructional practices support preschool and kindergarten classrooms in developing early literacy and second literacy proficiency. The content merges well with Virginia's Foundation Blocks and early milestones and successfully influences teachers' ability to move early learners toward higher levels of performance. SIOP classroom coaching solidifies long-term sustainability and fidelity to the model.

8. Describe qualifications of the individuals/staff who developed this offering.

Since 1995, educators have turned to SIOP authors Dr. Jana Echevarría, Dr. MaryEllen Vogt, and Dr. Deborah Short for an empirically validated model of sheltered instruction.

Jana Echevarría, PhD, is a Professor Emerita at California State University, Long Beach. She has taught in elementary, middle, and high schools in general education, special education, ESL, and bilingual programs. She has lived in Taiwan, Spain, and Mexico. An internationally known expert on second language learners, Dr. Echevarría is a Fulbright Specialist. Her research and publications focus on effective instruction for English learners, including those with learning disabilities. Currently, she is Co-Principal Investigator with the Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE) funded by the US Department of Education, Institute of Education Sciences (IES). In 2005, Dr. Echevarría was selected as Outstanding Professor at California State University, Long Beach.

MaryEllen Vogt, EdD, is Distinguished Professor Emerita of Education at California State University, Long Beach. Dr. Vogt has been a classroom teacher, reading and special education specialist, district reading resource teacher, and university teacher educator. She received her doctorate from the University of California, Berkeley. A co-author of 14 books, including the SIOP Series and *Reading Specialists and Literacy Coaches in the Real World* (2007), Dr. Vogt has provided professional development in all 50 states and in eight other countries. She served as President of the International Reading Association in 2004–2005.

Deborah J. Short, PhD, is a professional development consultant and a senior research associate at the Center for Applied Linguistics in Washington, DC. She co-developed the SIOP Model for sheltered instruction and has directed national research studies on English language learners funded by the Carnegie Corporation, the Rockefeller Foundation, and the US Department of Education. She recently chaired an expert panel on adolescent English language learner literacy. As the director of Academic Language Research & Training, Dr. Short provides professional development on sheltered instruction and academic literacy around the US and abroad. She has numerous publications, including the SIOP book series and five ESL textbook series for National Geographic/Hampton-Brown. She has taught English as a second/foreign language in New York, California, Virginia, and the Democratic Republic of Congo.

9. Describe the qualifications of the individuals/staff who deliver the professional development program and their previous experience providing professional development aimed at strengthening early learning environments for children from economically disadvantaged families.

In the Appendix of this proposal, Pearson has provided resumes for the following individuals who deliver the professional development programs:

- Heather Cummings
- Mary Ellen Gallegos
- Karen Robinson-Yorke

Their resumes describe previous experience providing professional development aimed at strengthening early learning environments, including those in which children come from economically disadvantaged settings.

10. Describe the alignment to Virginia’s *Foundation Blocks for Early Learning*, *Kindergarten Standards of Learning*, and *Milestones for Child Development*, as applicable. For example, professional development related to behavior management techniques for preschool children would need to align with the Foundation Blocks for Personal and Social Development.

Pearson’s SIOP Coaching and Modeling service addresses instructional and assessment skills necessary for appropriate literacy, language, and academic content development for non-English speakers and/or struggling students. This means that the training addresses critical early learning milestones from the three documents: Virginia’s *Foundation Blocks for Early Learning*, *Kindergarten Standards of Learning*, and *Milestones for Child Development*.

Core concepts/content addressed include the following:

- Literacy skills, including emerging early literacy milestones
- Development of oral language and engagement with books and other texts
- Problem-Solving Skills
- Scaffolded instructional practices

11. Describe any pre-requisites for participation, resources needed (if any), and space requirements (if any) for participation.

Pearson’s SIOP Training for Pre-K/Kindergarten Teachers workshop is a pre-requisite course for the SIOP Lesson Coaching and Modeling services.

12. Has the proposed professional development offering been subject to rigorous evaluation as defined in Section III of this Request for Proposals?
 No
 Yes.

If yes, in the space below, summarize the evaluation methods, the population in which the program has been subject to rigorous evaluation (as defined in this proposal), and provide documentation verifying the results have been subject to an external peer review process by including a copy of the study just after this attachment. (For example, if the Attachment name is D-I-1, within Tab 6 of your proposal, include it after attachment D-I-1).

SIOP is a research-based observation instrument that has been shown to be a valid and reliable measure of sheltered instruction (Guarino et al., 2001). SIOP is also used as a model for lesson planning and implementation of high-quality sheltered instruction. All features of the SIOP Model are aligned with current research on instruction for ELLs.

In a study examining the effects of the SIOP Model on student achievement, students whose teachers implemented the SIOP Model to a high degree in middle school classes outperformed those students in sheltered classes whose teachers were unfamiliar with the model. For more information on this study, please refer to this paper:
<http://siop.pearson.com/downloads/04-JAAL-54-6-Echevarria.pdf>.
This document is also included as an attachment to D-I-6.

A research brief from the National Comprehensive Center for Teacher Quality released in July 2010 focused on evaluations of special education and English language teachers. The authors refer to SIOP as a framework to evaluate English language teachers. For more details on this brief, please refer to this paper:
http://assets.pearsonschool.com/asset_mgr/current/201148/SIOP%20Framework%20PP5.pdf

The SIOP Coaching and Modeling solution is based on educational best practices and has been subject to rigorous evaluation as defined in Section III of this Request for proposals.

If no, is the proposed professional development offering currently undergoing rigorous evaluation, as defined in Section III of this Request for Proposals?

No

Yes.

If yes, in the space below, summarize the evaluation methods and the population in which the program is undergoing rigorous evaluation (as defined in this proposal), when the evaluation will be completed, and if it will be subject to an external peer review process.

Not applicable.

12. How much time will your participants need to commit? (Provide total number of days, hours per day, and the total time frame in months in which participants will be expected to participate, and a justification for the time commitment needed to meet the objectives of the professional development opportunity.) If you are also proposing another delivery method for this professional development offering, describe both delivery methods in your narrative, including any differences in the time commitment required.

Face-to-Face Professional Development

 5 Days

 6 Hours per day

 <1 Months to complete

Online Professional Development (whether interactive or not)

 Total Hours

 Minimum time for each segment/lesson

Combination

 Days of Face-to-Face Professional Development

 Hours per day of Face-to-Face Professional Development

 Total Hours Online Professional Development

 Minimum time for each segment/lesson of Online Professional Development

Please describe, including the time participants will need to commit, here.

The SIOP coaching and modeling (a five-day offering for up to 20 participants) is optional but recommended to help educators develop the SIOP model in their classrooms. During the SIOP coaching period, Pearson coaches help teachers design SIOP lessons and offer feedback. When our coaches work with the educators in the classroom setting, there are opportunities to grow beyond the formal training and deepen understanding of the concepts. The coaching is fully job-embedded, so substitute teachers are not required.

Did They Get It? The Role of Fidelity in Teaching English Learners

**Improving content literacy
among language learners
can depend on the extent to
which teachers adhere to
proven instructional models.**

Jana Echevarria | Catherine Richards-Tutor | Vivan P. Chinn | Paige Ann Ratleff

Literacy instruction for English learners (ELs) is a topic of critical importance because these students are not only the fastest growing segment of the population in U.S. schools (National Center for Education Statistics, 2009), they are also overrepresented in the group of students who struggle academically (McCardle, Mele-McCarthy, Cutting, Leos, & D’Emilio, 2005; Snow & Biancarosa, 2003). The “literacy crisis” for adolescent ELs is significant because of their alarmingly poor performance on indicators of literacy such as the National Assessment for Educational Progress (NAEP; Short & Fitzsimmons, 2007). Only 3% of eighth-grade ELs scored at the proficient or advanced levels on the reading portion of the 2009 NAEP compared with 34% of non-ELs (National Center for Education Statistics, 2009). Further, while they are still learning English, these students are required to take district and state high-stakes assessments that may have considerable consequences, especially at the secondary level. At least half of U.S. states use a high school exit exam as a criterion for a high school diploma (Short & Fitzsimmons, 2007).

A contributing factor to the poor performance of ELs is the role of academic language in literacy and learning. Academic language is used by all students in school settings—those whose home language is English and ELs alike. However, this type of language use is particularly challenging for ELs, who are still acquiring English at the same time that school tasks require a high level of English usage.

Participation in informal conversation demands less from an individual than joining in an academic discussion (Cummins, 2000). Many ELs have the ability to converse in English without needing a strong repertoire of academic language skills. They may appear to speak English well, for example, in hallways and in small talk before class begins but struggle to use English well in classroom lessons when a higher language level is required for academic processes, such as in summarizing information, reading and understanding expository prose, evaluating perspectives, and drawing conclusions.

So, how do we assist ELs through the process of learning standards-based concepts, skills, and information in a new language? How do we effectively

Ipsam qui odipsa cus
vent ipsa iurempores
aute explisitemo
torro et as excea
sinis plique quas
estis as di necaerum
velique latis sitate
doluptae comnis re

accelerate their acquisition of academic English?

Findings from the National Reading Panel (National Institute of Child Health and Human Development, 2000) and the National Literacy Panel on English Language Learners (August & Shanahan, 2006) as well as subsequent studies have provided the field with research-based strategies and approaches proven effective with ELs (California Department of Education, 2010; Cloud,

Genesee, & Hamayan, 2009; Echevarria, Vogt, & Short, 2010; Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Goldenberg, 2008; Haager, Klingner, & Vaughn, 2007; Richards & Leafstedt, 2009; Shatz & Wilkinson, 2010).

However, research-based practices are only as good as their implementation in terms of effect on student achievement. One element that is often missing in the discussion of research-based literacy practices is the relation between teacher implementation and student achievement. Even when research shows that a practice leads to achievement gains, how well are teachers using it in the classroom? On balance, there is much more discussion about which specific practices are research based and perhaps not enough about the fidelity with which the practices were implemented.

This article demonstrates the importance of implementing research-based literacy practices with fidelity to have a positive effect on student achievement. We present results of a study that show the direct relation between teacher implementation of research-based practices and student achievement.

The Importance of Fidelity

In education research, *fidelity* is defined as the degree to which an intervention or model of instruction is implemented as it was originally designed to be implemented (Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). Many research studies do not assess or report fidelity (Cordray & Jacobs, 2007; Dane & Schneider, 1998; Gresham et al., 2000), and therefore we are often left uncertain as to the actual effect the

intervention had on student achievement. In studies that do assess and report fidelity, the importance of implementing with close correspondence to the original validated model (i.e., with fidelity) is underscored.

In one such study, results indicated that when teachers adhered to the instructional program with fidelity, student achievement—including that of ELs—improved. When student achievement waned, the researchers found through a review of project data and videotaped lessons that students were receiving a weak version of the original program (Allen, 2007). The same held true for a model of school change that had been successful in a school with large numbers of ELs for a number of years (Goldenberg, 2004). The goal of this school reform model was “helping students who tend not to do very well in our schools read and write at higher levels” (p. 4). Although they did achieve their goal, as time went on there was less attention paid to the process that led to change. Competing district initiatives, among other factors, reduced the level of fidelity to the original model, and fewer teachers participated. One teacher’s poignant comment emphasizes the need for maintaining high levels of implementation:

You know, when I get students from the teachers that have been involved with it I can see the difference in them versus the ones from new teachers that haven’t had the exposure. And believe me, there is a distinct difference. (Goldenberg, 2004, p. 165)

Fidelity and High-Quality Professional Development

The connection between fidelity and high-quality professional development is depicted in Figure 1. Ongoing teacher support increases adherence to the practices being learned and implemented, which is critical because fidelity has been linked to improved outcomes (Allen, 2007; Echevarria, Short, & Vogt, 2008; Emshoff et al., 1987; Goldenberg, 2004; Holbach & Rich, 2004; Moran, 2007; Tomlinson, Brimjoin, & Narvaez, 2008).

Optimal professional development in schools is the goal, but it may not always be feasible for a variety of reasons including limited resources, lack of leadership, low expectations for improved outcomes, externally imposed initiatives that consume time, and the like. Whatever the realities in schools, it is clear

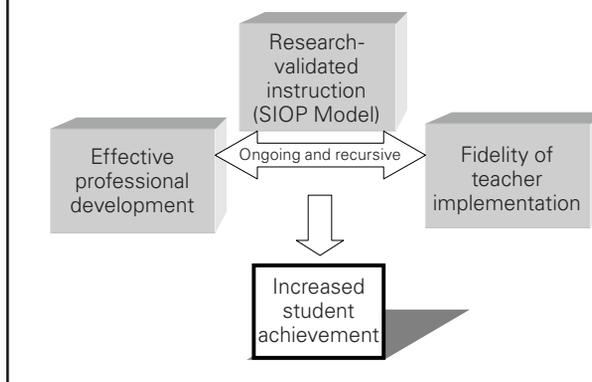
that improvement of teacher literacy practice is enhanced with sustained, ongoing professional development. The new paradigm encourages continuous, collaborative professional development as opposed to the previous model of professional development in isolation—such as one-day workshops (Gallimore, Ermeling, Saunders, & Goldenberg, 2009; Smith, Wilson, & Corbett, 2009; Wei, Darling-Hammond, Andree, Richardson, & Orphanos, 2009).

Darling-Hammond and Richardson (2009) summarized two decades of research supporting the kind of professional development that has the following features: (1) deepens teachers' knowledge of content and how to teach it to students, (2) helps teachers understand how students learn specific content, (3) provides opportunities for active, hands-on learning, (4) enables teachers to acquire new knowledge, apply it, and reflect on the results with colleagues, (5) links curriculum, assessment and standards to professional learning, (6) is collaborative and collegial, and (7) is intensive and sustained over time.

These findings were borne out in our own case study research, in which we investigated the professional development efforts of 17 different sites across the United States that implemented the Sheltered Instruction Observation Protocol (SIOP) Model to a high degree in settings with ELs (Echevarria, Vogt, & Short, 2008, 2010). The data from interviews and observations highlight the following factors for success in ensuring fidelity of implementation:

- Multiple opportunities for teachers and administrators to learn about and see demonstrations of each component in the model (e.g., analysis of videotaped lessons and discussion of readings)
- Lesson plans incorporating the target component and teacher practice of each new feature of the component with a peer coach
- Some form of professional learning community for teachers to co-plan lessons, observe lessons, discuss student data, and support one another in meeting students' learning needs (learning communities flourished in situations where time to meet was made a priority)
- A single focus for a sustained period of time (i.e., the whole district committed to SIOP training

Figure 1 The Relation Between Implementation and Student Achievement



and implementation for two years) rather than having competing initiatives

- A supportive culture in which teachers and school leadership value continuous professional learning and shared leadership (Saunders, Goldenberg, & Gallimore, 2009; Smith et al., 2009)

In sum, research shows that student achievement improves when teachers are “engaged in sustained, collaborative professional development that specifically focused on deepening teachers’ content knowledge and instructional practices” (Wei et al., 2009, p. 5).

CREATE Research Study

The present study, funded through the Center for Research on the Educational Achievement and Teaching of English Language Learners (CREATE), extends previous work by examining the specific effect teacher implementation levels (i.e., fidelity) have on student performance. The context of the study was to test the effects of a model of instruction for ELs, the SIOP Model, on their content area literacy and language development in science. Because NCLB testing includes science, ELs’ ability to read, write, and discuss scientific concepts is more critical than ever.

Methods and Procedures

We investigated the effects of specialized instruction on students’ growth in content area literacy in seventh-grade science classes. Eight middle schools in

one large urban school district with high numbers of ELs were randomly assigned to treatment or control conditions. There were 8 teachers and 649 students in the treatment group and 4 teachers and 372 students in the control group with a total of 12 teachers and 1,021 students participating in the study.

Teachers in the intervention schools received professional development in using the SIOP Model of instruction (Echevarria, Short, & Vogt, 2008). The SIOP Model consists of eight components (see Table 1) with

30 features that, when put into practice, have been shown to improve ELs' performance on measures of language and literacy (Dooley, 2009; Echevarria, Short, & Powers, 2006; Short, Echevarria, & Richards-Tutor, in press; Short, Fidelman, & Louguit, 2010).

The SIOP Model emphasizes the importance of language development across the curriculum, as well as providing ample opportunity for students to practice reading, writing, speaking, and listening skills. Because of the strong relation between oral language proficiency

Table 1 Eight Components of the SIOP Model of Instruction

Component	Description
1. Lesson preparation	The features under lesson preparation examine the lesson planning process, including the incorporation of language and content objectives linked to curriculum standards. In this way, students gain important experience with key grade-level content and skills as they progress toward fluency in the second language. Other features include the use of supplementary materials and meaningful activities.
2. Building background	Building background focuses on making connections with students' background experiences and prior learning, and developing their academic vocabulary. The SIOP Model underscores the importance of building a broad vocabulary base for students to be effective readers, writers, speakers, and listeners. In the SIOP Model, teachers directly teach key vocabulary and word structures, word families, and word relations.
3. Comprehensible input	Comprehensible input considers adjusting teacher speech, modeling academic tasks, and using multimodal techniques to enhance comprehension (e.g., gestures, pictures, graphic organizers, restating, repeating, reducing the speed of the teacher's presentation, previewing important information, and hands-on activities). The academic tasks must be explained clearly, both orally and in writing, with models and examples of good work so students know the steps they should take and can envision the desired result.
4. Strategies	The strategies component emphasizes explicit teaching of learning strategies to students so that they know how to access and retain information. Good reading comprehension strategies, for example, need to be modeled and practiced, one at a time with authentic text. SIOP teachers must scaffold instruction so students can be successful, beginning at the students' performance level and providing support to move them to a higher level of understanding and accomplishment. Teachers have to ask critical thinking questions as well so that students apply their language skills while developing a deeper understanding of the subject.
5. Interaction	Interaction features encourage elaborated speech and grouping students appropriately for language and content development. They need oral language practice to help develop content knowledge and second-language literacy; thus, student-student interaction is important and needs to occur regularly in each lesson. ELs need to practice important language functions, such as confirming information, elaborating on one's own or another's idea, and evaluating opinions.
6. Practice/application	Practice/application calls for activities that extend language and content learning by encouraging students to practice and apply the content they are learning, as well as their language skills. It is important to build and reinforce reading, writing, listening, and speaking skills within content learning.
7. Lesson delivery	Lesson delivery ensures that teachers present a lesson that meets the planned objectives. Successful delivery of a SIOP lesson means that the content and language objectives were met, the pacing was appropriate, and the students had a high level of engagement.
8. Review/assessment	English learners need to revisit key vocabulary and concepts, and teachers need to use frequent comprehension checks throughout lessons as well as other informal assessments to measure how well students understand and retain the information. Each SIOP lesson should wrap up with some time for review and assessment and time to determine whether the lesson's objectives were met.

Figure 2 Sample Protocol Component

LESSON PREPARATION				
4	3	2	1	0
1. Content objectives clearly defined, displayed, and reviewed with students		Content objectives for students implied		No clearly defined content objectives for students
<i>Comments:</i>				
4	3	2	1	0
2. Language objectives clearly defined, displayed, and reviewed with students		Language objectives for students implied		No clearly defined language objectives for students
<i>Comments:</i>				
4	3	2	1	0
3. Content concepts appropriate for age and educational background level of students		Content concepts somewhat appropriate for age and educational background level of students		Content concepts inappropriate for age and educational background level of students
<i>Comments:</i>				

Note. From Echevarria, J., Vogt, M.E., & Short, D.J. (2010). *Making content comprehensible for secondary English learners: The SIOP Model*. Boston: Allyn & Bacon.

and literacy (August & Shanahan, 2006), SIOP lessons focus on high levels of interaction between teacher and students and among students and include a variety of grouping configurations (i.e., pairs and teams). Other features of the model ensure that teachers use techniques that make instruction comprehensible for ELs so that they can participate in grade-level content lessons while expanding their English proficiency.

Measuring Fidelity of SIOP. Fidelity of teacher implementation was assessed using the SIOP, an observation instrument on which the SIOP Model is based. The SIOP is a valid and reliable measure of high-quality sheltered instruction (Guarino et al., 2001). A sample of one component of the protocol is seen in Figure 2.

SIOP Professional Development. Treatment teachers were provided an intensive two-and-a-half-day training to introduce them to the SIOP Model and its components. The training began with an overview of second-language acquisition to provide the teachers

with an understanding of optimal learning conditions for ELs and their importance to this study. The participants then learned each of the eight components through the same process:

- The component and its research background were introduced via PowerPoint presentation.
- Participants watched a video that illustrated effective classroom implementation of the component and its features.
- Participants were asked to rate the lesson using the protocol and justify their rating.

This process led to a thorough discussion of each feature. Participants also participated in practice and application activities to show their understanding of the eight components. Finally, because the lessons the teachers taught for the research study were part of four curricular units (cell structure and function, photosynthesis and respiration, cell division, and genetics),

each participant was presented with a binder of materials. Each binder contained SIOP lesson plans for the four units of study as well as descriptions of lesson activities and handouts. Also included were the assessments for every instructional unit. Teachers were given time to review the binders and ask clarifying questions. Each teacher was prepared to implement the SIOP lessons at the conclusion of the training.

Classroom Instruction. Treatment teachers delivered SIOP lessons created by the research team while control teachers taught the same units using the same textbook but used their own lesson plans and teaching methods. Each of the SIOP lesson plans included the following elements: state standard, lesson topic, content and language objectives, key vocabulary, motivation (background building), presentation, practice and application, and review and assessment.

A key feature of the SIOP Model lesson plans used in the study was the inclusion of both content and language objectives that were aligned to state and national standards in science (content objective) and language arts and English language development (language objective). Teachers were instructed to post and state the objectives at the beginning and end of every lesson. This practice is based on the concept that integration of English language development across the curriculum is critical for improving ELs' English proficiency (Lee, 2005).

Coaching. To help support teachers in their delivery of SIOP lesson plans, coaching was provided to each treatment teacher by researchers who were experienced in implementing the model. The process for coaching was as follows:

1. The teacher and researcher (coach) reviewed the lesson plan together prior to the observation.
2. The coach observed and rated the lesson using the SIOP.
3. A debriefing session followed the observation using the completed SIOP.

To further assist teachers in following the SIOP Model, they were provided a "fidelity checklist" to help guide their implementation of the lesson plans. The elements of the checklist were to write and state both the content and language objectives, introduce

and post vocabulary words, highlight vocabulary throughout the lesson, review the words at end of the lesson, and review each content and language objective at the end of the lesson and ask if it was met. Although all 30 features of the SIOP Model were present in the lesson plans, the checklist was intended to remind teachers of the importance of focusing on objectives and vocabulary development.

Observations were conducted approximately every other week with each teacher receiving a total of five observations. Interrater reliability among the observers was established prior to the beginning of observations using videotaped lessons to calibrate scores. Across the observations and raters, interrater reliability was calculated at 87%.

Pacing Guides. Both treatment and control teachers were provided with pacing guides to ensure that they were teaching the same content at approximately the same time and giving pre- and posttest assessments with each unit at approximately the same time.

Assessing Student Achievement

The assessments were curriculum based and examined science content knowledge as well as science academic language. The assessments required students to use the science language taught during the units to respond to content questions such as, "The continuous process of cell growth and division is called _____." There were a total of four assessments that measured four units of instruction: cell structure and function, photosynthesis and respiration, cell division, and genetics.

Students read a passage about a topic they had studied and answered a series of multiple-choice and fill-in questions. Prior to beginning each unit, students were given a pretest to establish baseline knowledge. A posttest given at the end of each unit measured growth in science content knowledge and science academic language.

The number of items on the four assessments ranged from 8 to 16. Reliability estimates were calculated for the assessments and varied based on number of items. Assessments with a higher number of items had higher reliability estimates, ranging from 0.462 to 0.786, which are in moderate range. When combining the items from all four assessments, a total of

42 items, we achieved strong reliabilities, 0.85 on the pretest and 0.88 on the posttest.

Fidelity to the SIOP Model

The professional development aspect of the study was intended not only to help teachers learn and implement the features of the SIOP Model but also to understand why the techniques are effective. Tapping into teachers' prior knowledge (in this case of second-language acquisition and the instructional needs of ELs) and further developing their understanding is an essential aspect of professional development. Understanding the underlying principles of instruction helps teachers make informed decisions when implementing the features in a way that keeps practice close to the original model (Seymour & Osana, 2003). Some variation in the way teachers used the techniques was expected, because we did not interpret fidelity as strict adherence to a step-by-step process or a scripted curriculum but rather as a level of quality that was manifested across observations.

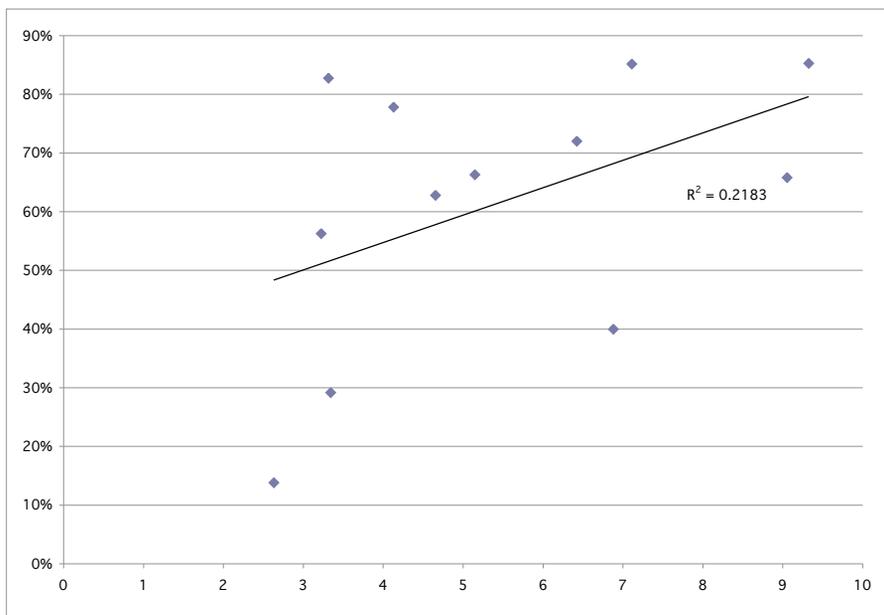
As mentioned, teachers received scores on individual SIOP features, and the total score was calculated as a percent. We established three levels of teacher implementation based on protocol scores: high (75%

or greater), moderate (50%–74%), and low (0%–49%). A total of 75% indicated that the teacher averaged a score of 3 on the features.

Teachers in both the treatment and control groups scored across these ranges. Some teachers in the control group were attuned to the instructional needs of ELs and implemented the features of the SIOP Model to a high degree even though they had not received SIOP training. Because we were interested in examining how fidelity to the model influenced student achievement, and not the efficacy of the professional development, we included teachers in both the treatment and control group in the subsequent analysis.

To examine fidelity, both the observation protocols and field notes written by coaches were used. Using the SIOP scores, we calculated each teacher's average scores across the observations and then plotted the teacher scores with the average growth of the students across the four assessments on a scatter plot, seen in Figure 3. Student average scores across the four assessments were determined using a simple average calculation, summing the growth from pre- to posttest across the four assessments and then dividing by 4. Overall the teachers who implemented the model with the greatest degree of fidelity (i.e., had the

Figure 3 The Relation Between Teacher Implementation and Student Gains



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highest scores) also had students who made the greatest gains.

To more carefully examine teacher fidelity to the model, we analyzed protocol items and field notes. These data showed that on each component of the SIOP (shown in Table 1), teachers who were high implementers had common teacher behaviors. We also noted that the difference between high implementers and lower implementers was not a matter of whether they implemented a specific

feature but rather the frequency and degree to which they implemented that feature. That is, the more consistently the features were observed and were used in an effective way, the higher the score for the lesson.

For example, in the lesson preparation component, all teachers read the objectives to the students at the beginning of each lesson and posted them for students to see. However, teachers who implemented the model with greater fidelity did the following: asked students to read the objectives and explain them in their own words, explained vocabulary used in the objectives (i.e., observe, summarize), and redirected students' attention to the objectives throughout the lesson.

Within the component of comprehensible input, generally all teachers used some techniques to clarify concepts. However, high-performing teachers used a wider variety of techniques and consistently modeled what they wanted students to do. They repeated instructions multiple times and explained activities and concepts in multiple ways.

For the interaction component, nearly all teachers provided some opportunities for students to work in pairs or groups, as directed in the lesson plans. However, high-implementing teachers used a variety of grouping configurations and provided frequent opportunities for students to interact. They gave students ample time to discuss questions or material in pairs, groups, or teams. They also did quick interaction activities such as think-pair-share when they wanted students to make predictions or check for understanding. The interaction activities provided abundant opportunities for students to practice language skills.

We observed that in the SIOP treatment condition, the low implementers taught many lessons that did not "look like" SIOP teaching but instead reflected the characteristics of typical teacher-dominated instruction. Also, some teachers did not sufficiently prepare for lessons; they read directly from the lesson plan we provided as they gave directions or asked questions of the students.

Although the lesson plans included a number of opportunities for students to interact with one another or work in small groups, sometimes the teachers omitted that part and used whole-class instruction instead. Overall, low implementers did a disproportionate amount of talking, which deprived students of important opportunities to practice using academic English in meaningful ways, which is a hallmark of the SIOP Model.

Discussion

In our study, the professional development was designed to include many of the elements that research supports to facilitate teachers in implementing the model with fidelity. However, like many professional development efforts, we experienced less than optimal conditions that are recommended in the research literature.

Some issues that prohibited more sustained support for the teachers included finding time for pre- and post-observation conferences, lesson preparation time, union contract restrictions, and the constraints of the study timeline. These kinds of limitations are not unlike those that occur in many school settings. Even within this context, there was variation in the extent to which teachers "got it." When we studied the variation, we found that the extent to which teachers implemented the SIOP Model with fidelity influenced student effects.

The reasons for teachers' differential responses to professional development are beyond the scope of this article. However we can offer some possibilities as they relate to our study.

One reasonable explanation may be that some teachers require more support than others to learn and implement new practices well. Some of the instructional techniques used by the high implementers differed from low implementers more in degree than

in kind. In other words, all students benefit from having tasks clearly explained, but for ELs it is critical to make the explanation understood, for example, by describing the task in plain words, showing a completed model, and repeating the explanation more than once. Perhaps if the low implementers had received support through a learning community or had had more intensive coaching, they would have used effective practices to a greater degree.

Another possible explanation is that some teachers require more time learning and practicing new strategies and techniques than do others. Because of district scheduling, our study took place over the course of one semester, which afforded teachers a relatively brief exposure to the SIOP Model. Changing teacher practice requires significant time and ongoing support (Saunders et al., 2009); therefore, we hypothesize that with more intensive and sustained support over time, more of the teachers in this study would have implemented the SIOP Model to a high degree. However, a confound that must be considered is the possibility that the highest implementers were simply the best teachers.

The data from our observations and field notes have several implications for schools and districts. First, the SIOP allows fidelity to be rated on a continuum. This is different from fidelity measures that only rate instructional practices as present or absent. In our study, all teachers would have been rated as implementing the practices with fidelity, because there was evidence of the features. However, it was the degree and frequency that distinguished high implementers from low implementers. As schools and districts choose observation instruments to examine fidelity (and teacher effectiveness), it is important to consider protocols that provide a continuum of indicators. Finally, not all measures of fidelity are reliable and valid instruments, as is the SIOP. This is another important consideration in choosing an observation instrument (Cordray & Jacobs, 2007).

Focus on Fidelity

Best practice in literacy development of ELs involves consistent application of research-based practices in the classroom. As our study shows, there is a direct relationship between level of implementation and

student achievement. While many schools have constraints such as lack of time and resources devoted to ongoing professional development, a focus on fidelity must be a priority in order for teachers to implement research-based literacy practices well, which in turn helps ELs meet high academic standards.

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