MEMORANDUM   November 15, 2010

TO: Board Members

FROM: Terry B. Grier, Ed.D.
             Superintendent of Schools

SUBJECT: **2010 SIOP PROFESSIONAL DEVELOPMENT INITIATIVE PROGRAM
             EVALUATION REPORT**

CONTACT: Carla Stevens, 713-556-6700

Sheltered Instruction Observation Protocol (SIOP) training promotes and enhances the use of instructional strategies and modifications that allow English language learners (ELLs) to access an English language curriculum more effectively.   During the 2009–2010 school year, the Multilingual Department, in conjunction with Houston Independent School District (HISD) Regional Offices, implemented a district-wide SIOP Professional Development initiative, focusing on teachers of secondary level ELLs.

The report summarizes data from the SIOP training for teachers which occurred in 2009–2010. Included are demographic data for program participants, information on teacher reactions to the SIOP training and on their implementation of SIOP strategies, as well as data on the impact of SIOP training on the academic performance of students of those teachers.

A total of 146 secondary-level teachers received SIOP training. Teachers were from the East, West, and South administrative regions and taught English, mathematics, or science. Results showed that teachers were satisfied overall with the quality of the SIOP training, and that more than 80 percent of them implemented SIOP strategies in the classroom either "always" or usually".   They did express some concern over the amount of ongoing support they had received. ELL students of SIOP trained teachers showed gains in performance on both the Stanford 10 and on the TAKS test, although this was limited to students in the South administrative region. English language proficiency (as measured by the TELPAS) was also greater for ELL students from the South region. Both these effects may reflect the benefits of training entire academic departments, which was followed by the South but not by the other participating regions.

_____TBG

cc: Superintendent's Direct Reports   Chief School Officers
      Matilda Orozco   School Improvement Officers
      Irma Rohatgi

RESEARCH
Educational Program Report

SIOP Professional Development
Initiative Evaluation Report
2009-2010

2010 Board of Education

Houston Independent School District
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Executive Summary

SIOP Professional Development Initiative Evaluation Report
2009–2010

Program Description

Sheltered Instruction Observation Protocol (SIOP) training promotes and enhances the use of instructional strategies and modifications that allow English language learners (ELLs) to access an English language curriculum more effectively. During the 2009–2010 school year, the Multilingual Department, in conjunction with the Houston Independent School District (HISD) Regional Offices, implemented a district-wide SIOP Professional Development initiative, focusing on teachers of secondary level ELLs. This effort is relevant to two of the core initiatives of the district's strategic direction: putting an effective teacher in every classroom, and adoption of rigorous instructional standards and supports.

Interest in expanding the use of SIOP for secondary ELLs came about due to concern over their performance on certain indicators in the state Performance Based Monitoring Analysis System (PBMAS). Specifically, the dropout rates for secondary ELLs have consistently been higher than the district average. It was determined that some type of instructional support for secondary ELLs might alleviate this problem, and Sheltered Instruction was chosen as the intervention. Title III covered most of the cost of training, which was provided by representatives of Pearson, Inc., which owns the copyrights to the SIOP name and methodology. Each administrative region in the district was allowed to decide whether they wanted to participate in the initiative, and on which content areas they wanted to focus.

Under this initiative, SIOP training was provided to various HISD staff in three tier levels. Tier 1 consisted of regional and campus-based administrators, including campus principals, assistant principals, executive principals, and content area coordinators. Tier 2 consisted of 23 ESL content specialists who were assigned to work within specific feeder patterns in the district. These individuals were to work with administrators and teachers on an ongoing basis to assist in the implementation of SIOP strategies. Tier 3 consisted of selected secondary content teachers in reading, mathematics, and science.

The rationale behind this three-tiered system was that it was not sufficient that content teachers of ELL students learn how to use SIOP methodology. To ensure that these methods were implemented with fidelity, administrators (principals, assistant principals, and regional executive principals) would also be given training. All five administrative regions took part in SIOP training for administrators, and the East, West, and South regions opted to have SIOP training for teachers.

The South region chose to have a smaller number of campuses trained (Madison High School and Thomas Middle School), but required their entire English and math departments to participate. In contrast, the East and West regions had more campuses take part, but only a few teachers at each campus were involved.

Key Findings

1. What was the demographic profile of teachers, administrators, and ESL coaches who received SIOP training?

- A total of 146 teachers received SIOP training, from the East, West, and South administrative regions.

- Thirty SIOP-trained teachers were English teachers, 71 were math teachers, and 54 were science teachers.

- Participating teachers were predominantly female (63%), had a mean age of 37.4 years,

and had an average of 5.2 years of previous teaching experience in the district.

- 116 other district staff also received SIOP training, including principals, assistant principals, executive principals, and ESL or curriculum specialists.

2. What was the level of satisfaction of staff members with the SIOP training they received?

- 47 district staff responded to an online survey assessing attitudes toward the SIOP training they had received.

- Overall, responses were positive, indicating a high degree of satisfaction with the training.

3. How effectively was sheltered instruction implemented by the teachers who attended training?

- 34 teachers responded to an online survey regarding implementation issues with SIOP.

- Teachers felt that implementation of SIOP strategies in the classroom was slightly problematic, particularly in terms of the amount of ongoing support teachers felt was available to them.

- Most of the individual SIOP strategies were used by more than 80% of teachers either "usually" or "always".

4. What was the impact of SIOP training on the academic performance of students in classes taught by the selected teachers?

- Only students of teachers from the South region showed larger than expected gains in performance.

- Specifically, ESL students whose English teachers received SIOP training (all from the South region) showed larger increases in mean NCE in 2010 than did all ESL students

districtwide. This was true for the social science subtest of the Stanford 10.

- ESL students of math teachers from the South region were the only other cohort to show evidence for gains larger than those shown by ESL students overall (in reading and social science).

- TAKS data revealed a similar pattern; with students of English teachers, and math teachers from the South region, showing gains in TAKS percent passing which were greater than those shown by ESL students districtwide. This was true for both the reading and math subtests of the TAKS.

5. What was the impact of SIOP training on English proficiency of students in classes taught by the selected teachers?

- 46 percent of ESL students whose English teachers received SIOP training scored Advanced High on the TELPAS, compared to 40% for all ESL students as a group.

- Students from every other cohort of SIOP teachers had lower percentages scoring Advanced High than ESL students overall (range 25-39%).

- 60 percent of students in the English teacher cohort gained one or more levels of English proficiency between 2009 and 2010, compared to 57% for ESL students overall.

Recommendations

1. SIOP should be expanded, and the implementation strategy followed by the South administrative region should be used. This was the only region which showed evidence for significant performance gains for ELL students. The East and West regions also had teachers trained, but did not show any significant performance gains. A likely reason for these performance differences was that the South region trained entire departments

of content teachers, whereas the other regions selected a handful of teachers from a larger number of campuses. Future implementation of SIOP training in the district should be department-wide at targeted campus.

2. A key rationale for including administrators in SIOP training was that this would help ensure fidelity of implementation at the classroom level. Yet, teacher survey responses indicated that ongoing support from administrators was lacking. Efforts should be made to provide more ongoing support for teachers in the implementation of SIOP strategies.

SIOP PROFESSIONAL DEVELOPMENT INITIATIVE EVALUATION REPORT
2009–2010

Introduction

Program Description

Sheltered Instruction Observation Protocol (SIOP) training promotes and enhances the use of instructional strategies and modifications that allow English language learners (ELLs) to access an English language curriculum more effectively. During the 2009–2010 school year, the multilingual department, in conjunction with Houston Independent School District (HISD) Regional Offices, implemented a district-wide SIOP Professional Development initiative, focusing on teachers of secondary level ELLs. This effort is relevant to two of the core initiatives of the district's strategic direction: putting an effective teacher in every classroom, and adoption of rigorous instructional standards and supports.

Interest in expanding the use of SIOP for secondary ELLs came about due to concern over their performance on certain indicators in the state Performance Based Monitoring Analysis System (PBMAS). Specifically, the dropout rate for secondary ELLs has consistently been higher than the district average. It was determined that some type of instructional support for secondary ELLs might alleviate this problem, and sheltered instruction was chosen as the intervention. Title III covered most of the cost of training, which was provided by representatives of Pearson, Inc., which owns the copyrights to the SIOP name and methodology. Each administrative region in the district was allowed to decide whether they wanted to participate in the initiative, and on which content areas they wanted to focus.

Under this initiative, SIOP training was provided to various HISD staff in three tier levels. Tier 1 consisted of regional and campus-based administrators from each from the district's six regions. Tier 2 consisted of 23 ESL content specialists who were assigned to work within specific feeder patterns in the district (a separate report on their activities is available). These individuals were to work with administrators and teachers on an ongoing basis to assist in the implementation of SIOP strategies. Tier 3 consisted of selected secondary content teachers in reading, mathematics, and science.

The rationale behind this three-tiered system was that it was not sufficient that content teachers of ELL students learn how to use SIOP methodology. To ensure that these methods were implemented with fidelity, administrators (principals, assistant principals, and regional executive principals) would also be given training. All five administrative regions took part in SIOP training for administrators, and the East, West, and South regions opted to have SIOP training for teachers.

The South region chose to have a smaller number of campuses trained (Madison High School and Thomas Middle School), but required their entire English and math departments to participate. In contrast, the East and West regions had more campuses take part, but only a few teachers at each campus were involved.

Program Goals

The goal of this initiative was to increase the use of SIOP strategies in the district's secondary schools, and thus to enhance the comprehensibility of English language instruction for ELL students. This should result in improved academic outcomes for secondary ELL students, as indicated by their performance on standardized assessments (i.e., TAKS, Stanford 10, TELPAS), and, eventually, by reduced dropout and increased graduation rates.

Purpose of the Evaluation Report

The purpose of this evaluation report was to examine the impact of the SIOP Professional Development Initiative. Specifically, to assess whether teachers who went through SIOP train-

ing were applying SIOP principles, to document reaction to the training that the various groups of individual received, and to assess whether there was any measurable impact on the academic performance of ESL students who were taught by these SIOP-trained teachers.

Research Questions
1. What was the demographic profile of teachers, administrators, and ESL coaches who received SIOP training?
2. What was the level of satisfaction of staff members with the SIOP training they received?
3. How effectively was sheltered instruction implemented by the teachers who attended training?
4. What was the impact of SIOP training on the academic performance of students in classes taught by the selected teachers?
5. What was the impact of SIOP training on English proficiency of students in classes taught by the selected teachers?

Literature Review

Sheltered instruction is a style of teaching which makes grade-level academic content in core areas (e.g., math, science, social studies) more accessible for English Language Learners (ELLs), while at the same time promoting development of English language proficiency. It highlights key language features and incorporates strategies to make content more comprehensible to students. Sheltered instruction is sometimes referred to as SDAIE (specially designed academic instruction in English). While use of sheltered instruction techniques has come to be widespread in U.S. schools, this growth has often been characterized by inconsistent practices from district to district, and even from class to class within the same school (August & Hakuta, 1997; Berman et al, 1994; Kaufman, et al., 1994; Sheppard, 1995; Short, 1998)

Arguably, the most popular version currently in use is the sheltered instruction observational protocol, or SIOP (Echevarria & Graves, 1998; Echevarria, Vogt, & Short, 2000). The SIOP

model was developed in a seven-year national research project (1996-2003) sponsored by the Center for Research on Education, Diversity, and Excellence (CREDE). Researchers identified features of instruction present in high-quality sheltered lessons, and developed an observational tool consisting of 30 items grouped into three sections: *preparation*, *instruction*, and *review/evaluation*. The instruction component is further broken down into clusters of items dealing with *building background*, *comprehensible input*, *strategies*, *interaction*, *practice/ application*, and *lesson delivery*.

All features of the SIOP model are aligned with current research on instruction for ELLs. SIOP was originally designed to be used as an observation and rating tool for researchers, but it was soon recognized that the instrument could be used by teachers for lesson planning and reflection. Some of the techniques and strategies which SIOP encourages include the following:

- use of supplemental materials,
- adapt content to level of student proficiency,
- link concepts to student background and experiences,
- link past learning and new concepts,
- use scaffolding techniques,
- allow for frequent interactions between student-teacher and among students,
- use hands-on materials or manipulatives, and
- provide activities that integrate all language skills (reading, writing, listening, speaking).

Research has shown that the SIOP model is effective for learners at all grade levels across many subject areas, and can have an impact on student achievement (Echevarria, Vogt, & Short, 2004).

Methods

Data Collection
The first data collected consisted of a list of teachers and other staff attending SIOP training. This list was provided by the Multilingual Department. Next, employee ID codes for these teachers were retrieved from the district's Chan-

cery database in order to be able to provide a full list of classes taught by those teachers.

Next, teacher demographics information was extracted from Chancery, included years of teaching experience. In addition, a list was created of all students in classes taught by those teachers. This list was then used to retrieve student performance data on various standardized tests (see below).

Two surveys were used to collect data from teachers, as well as other staff who received SIOP training. The first of these was a satisfaction survey, which sought feedback from the three tiers of SIOP attendees on their reactions to the training, what their experiences had been, what had worked, and what had not. A copy of this survey is shown as **Appendix A**.

There was also a survey administered to all teachers concerning SIOP implementation. It contained questions concerning the ease of implementing SIOP methods in the classroom (**Appendix B**), as well as questions concerning their use of specific SIOP strategies (**Appendix C**). For this report, teachers completed both surveys online at the end of the school year, and were instructed to base their answers on their overall use of sheltered instruction methods during the school year.

Student performance data were collected from the Stanford Achievement Test (Stanford 10), the Texas Assessment of Knowledge and Skills (TAKS), and the Texas English Language Proficiency Assessment System (TELPAS). Data were calculated for all ESL students who were in classes taught by teachers who had received SIOP training. Data for all other ESL students in the district served as a comparison.

Student and teacher demographic data, as well as other information (e.g., campus, program, etc.) were obtained from the district's Chancery database.

Assessment Instruments

The Stanford 10 is a norm-referenced, standardized achievement test in English used to assess students' level of content mastery. The reading, mathematics, language, science, and social science results for the Stanford 10 are included.

Reported are mean Normal Curve Equivalent (NCE) scores for each subject. The NCE is a normalized standard score most often used when interpolating or averaging scores. Like the National Percentile Rank (NPR), the NCE is a norm-referenced score, but in contrast to the NPR, the NCE provides an equal-interval scale that allows computations such as averaging or subtraction, which are useful when studying academic progress over time, especially when comparing different subject areas or student groups.

The TAKS is a state-mandated, criterion-referenced test administered for the first time in the spring 2003 as a means to monitor student performance. The English language version measures academic achievement in reading at grades 3–9; English language arts at 10 and 11; writing at grades 4 and 7; social studies at grades 8, 10, and 11; and science at grades 5, 8, 10, and 11. Students in the 11th grade are required to take and pass an exit-level TAKS in order to graduate. For the purposes of this report, only English language assessments were of interest. Thus, no data from the Spanish language version of TAKS are included. Data reported are the percent of students who passed (met standard) for the reading and math subtests.

The final student assessment used was the TELPAS. Under TELPAS, ELL students in kindergarten through twelfth grade are assessed in four language domains: listening, speaking, reading, and writing. Proficiency scores in each domain fall into one of four proficiency levels: Beginning, Intermediate, Advanced, and Advanced High. Included in this report are two measures, the percentage of ELL students scoring at the Advanced High level of English proficiency, and the percentage of who made progress in proficiency between 2009 and 2010.

Qualitative Data Collection

Informal interviews with key stakeholders were conducted to gather information on program goals, objectives, and activities. Included were staff from the Multilingual Department, a sample of the ESL coaches, and school staff including teachers.

Results

What was the demographic profile of teachers, administrators, and ESL coaches who received SIOP training?

A total of 146 teachers received SIOP training in 2009–2010. By administrative region, 53 were from campuses in the East region, 52 from the South, and 41 from the West. By subject area, 30 taught English or English Language Arts, 71 taught math, and 54 taught science (this totals to more than 146 because some teachers taught multiple subjects). Counts of teachers by subject and region are shown in **Table 1**. Note

Table 1. Number of Teachers Receiving SIOP Training by Administrative Region and Subject Area

Subject	Region			Total
	East	**South**	**West**	
English	0	30	0	**30**
Math	25	22	24	**71**
Science	30	0	24	**54**

Source: Training Logs, Chancery

that English teachers received SIOP training only in the South region. Math teachers received training in all three regions, and science teachers only in the East and West regions. **Table 2** provides further details, including a breakdown of number of teachers trained by campus.

Table 2. Number of Content Area Teachers Trained in SIOP 2009–2010, by Region and Individual Campus

| Region	Campus	English	Math	Science	Total
South	Madison HS	21	13	0	**34**
South	Thomas MS	9	9	0	**18**
East	Austin HS	0	3	2	**5**
East	Chavez HS	0	4	3	**7**
East	Deady MS	0	2	3	**5**
East	Edison MS	0	3	4	**7**
East	Holland MS	0	1	5	**6**
East	Jackson MS	0	2	2	**4**
East	Lewis ES	0	0	2	**2**
East	Milby HS	0	4	5	**9**
East	Ortiz MS	0	3	4	**7**
East	Stevenson MS	0	3	2	**5**
West	Bellaire HS	0	1	1	**2**
West	Challenge	0	0	1	**1**
West	Dowling MS	0	1	0	**1**
West	Fondren MS	0	3	4	**7**
West	Grady MS	0	1	1	**2**
West	Johnston MS	0	2	1	**3**
West	Kaleidoscope	0	0	1	**1**
West	Las Americas MS	0	2	2	**4**
West	Lee HS	0	2	1	**3**
West	Long MS	0	2	3	**5**
West	Pershing MS	0	1	1	**2**
West	Pilgrim Academy	0	1	1	**2**
West	Pin Oak MS	0	1	1	**2**
West	Revere MS	0	1	1	**2**
West	Sharpstown HS	0	4	3	**7**
West	Sharpstown MS	0	2	1	**3**
West	Welch MS	0	0	1	**1**
West	West Briar MS	0	1	1	**2**
West	Westbury HS	0	1	1	**2**

Source: Training Logs, Chancery
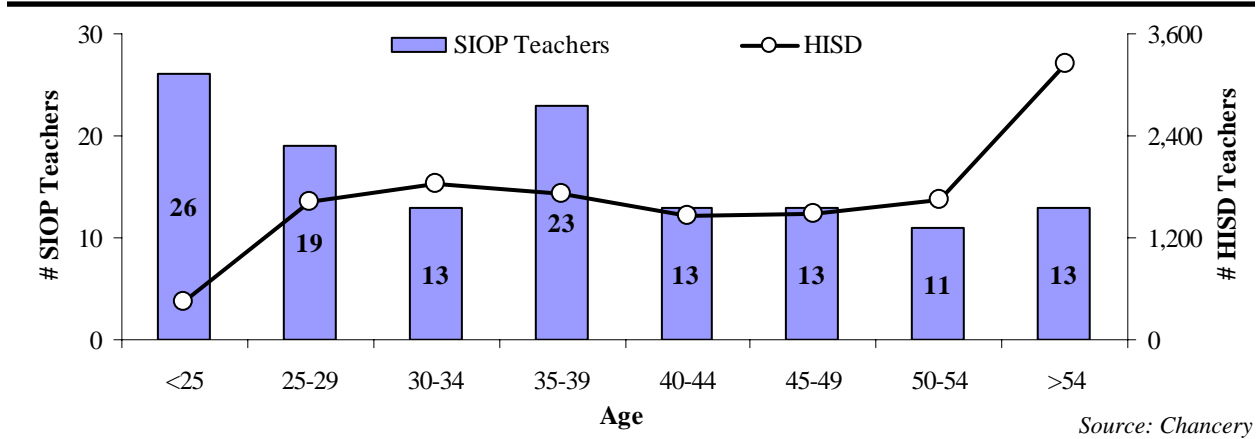
Figure 1. Distribution of SIOP-trained teachers by age.

One thing to note from Table 2 is the differences between how these three regions implemented SIOP training. In the South region, only two campuses were involved, but administrators chose to have entire departments trained. In contrast, training in the East and West involved more campuses, but was less inclusive, involving fewer teachers at each campus.

Sixty-three percent of teachers receiving SIOP training were female and 37 percent male. The mean age of teachers receiving training was 37.4 years (median = 36 years). **Figure 1** shows the distribution of ages for teachers who received SIOP training (shaded bars). Also included for comparison is the relative distribution of ages for teachers in the district (open circles). Note that despite the average teacher being in their mid-30s, the largest subgroup of SIOP teachers was composed of teachers who were 25 years old or less. This is especially significant because teach-

ers in this age range make up the smallest group of HISD teachers overall.

The average amount of prior HISD teaching experience for SIOP teachers was 5.2 years (median = 3 years). **Figure 2** shows the distribution of prior experience. As with the previous figure, data for all district teachers are included for comparison (open circles). Note the relatively large number of SIOP teachers with one or fewer prior years of teaching experience, particularly in comparison with all teachers districtwide.

Table 3 (see p. 10) provides an account of all other district staff attending SIOP training during 2009–2010. Principals and assistant principals accounted for 29 of attendees. There were also four Executive Principals. In terms of program support staff, there were two main groups. The first was composed of 20 Secondary ESL Specialists. These individuals were hired during the 2009–2010 school year from funds available
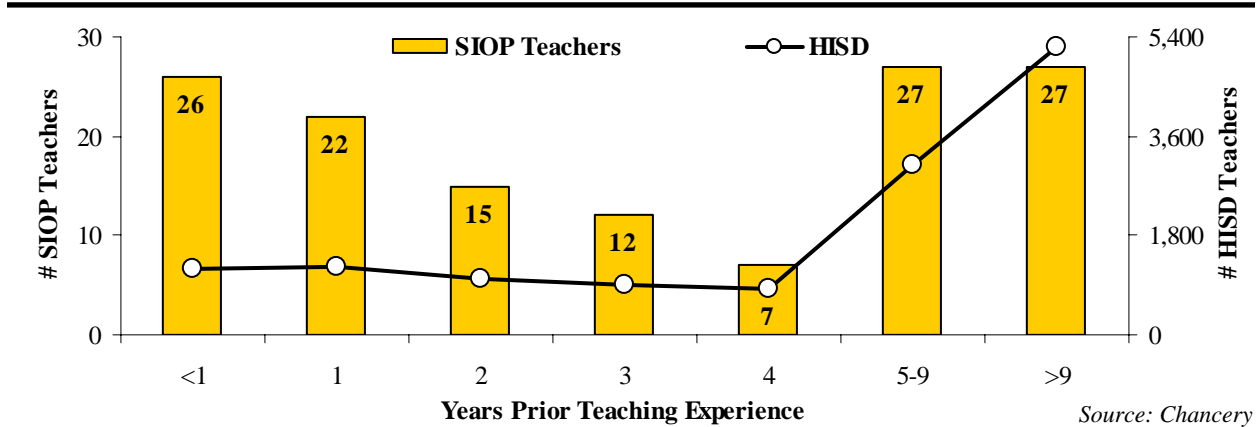

Figure 2. Distribution of SIOP-trained teachers by years of previous experience teaching in HISD.

Table 3. Non-Teaching District Staff Who Attended SIOP Training in 2009–2010

Title	#	Notes
Principal	23	
Assistant Principal	6	includes 2 intern APs
Executive Principals	4	
Secondary ESL Specialists	20	hired through Title III funds; separate evaluation report
Curriculum Specialists	18	employed by Curriculum Department or individual campuses
Multilingual Department staff	9	miscellaneous staff from central office
Dean of Instruction	2	
Dean of Students	1	
Instructional Specialist	5	
Teacher	12	miscellaneous teachers, mostly ESL
Special Populations Prgrm Specialist	4	
Dual Language Specialist	1	assigned to one of the administrative regions
Manager, Instructional Programs	1	
Math Teacher Coordinator	2	
Information not provided	8	no background information provided or available
Total	**116**	

Source: Training Logs

for Title III programs. Their main job duties involved providing coaching and training to teachers of secondary ELLs. A separate evaluation report covering their activities and their impact on student achievement is pending. The second main group of support staff attending the SIOP training was composed of 18 Curriculum Specialists, employed either by the Curriculum Department or by individual campuses. Together, these four groups accounted for 70 percent of those attending the SIOP training (not including the content area teachers already described).

Appendix D provides a complete list of dates on which SIOP trainings were held. Each session of SIOP training was spread over multiple days, either two or three. The first sessions were held in October of 2009, with the last training session ending in June of 2010. Training sessions were tailored to specific target groups who would be attending, e.g., content area teachers coaches and specialists, or administrators.

What was the level of satisfaction of staff members with the SIOP training they received?

Forty-seven individuals who had attended SIOP training responded to an online survey assessing reaction to the training sessions. Most of these were secondary teachers (94%) with the remainder administrative staff (6%). Of the teachers, 25 taught math, 16 taught science, and 8 taught reading or English language arts. One taught all three subjects and the remainder only one subject each.

Opinions about the trainers were highly positive, with more than 90 percent either agreeing or strongly agreeing with the following statements: "actively encouraged collaborative discussion" (96%), "adequately set the tone and background for information presented" (96%), "allowed me to reflect and share my ideas/views about the topics presented" (94%), and "helped me to make connections with the information so that I could use it in my teaching" (94%).

There were also twelve questions querying attendee's reactions to the sessions themselves (a full summary of responses to the entire survey can be found in **Appendix A**). Statements which received the highest degree of support were the following: "the learning outcomes for the sessions were clearly communicated" (98%), "the meeting space allowed for ease of communication and movement" (98%), "the topics were well organized and paced" (97%), "the information was relevant and useful" (95%), and "the information was conveyed in a way that was easy to comprehend and follow" (95%).

Certain questions received lower degrees of support. In particular, the two questions with the smallest percentage of respondents agreeing concerned teachers understanding of sheltered instruction techniques, and their ability to utilize the information they had acquired. "I have enough information to move forward with sheltered instruction" was supported by 85% of respondents, while "my awareness of sheltered instruction practices was enhanced" received only 89% support. Overall, however, responses to this survey were highly positive and indicated a high degree of satisfaction with the training.

How effectively was sheltered instruction implemented by the teachers who attended training?

The effectiveness of SIOP implementation was assessed via a 38-item online survey completed by teachers who had attended the SIOP training sessions (34 teachers responded). The first eight items in the survey concerned degree of difficulty faced when trying to implement SIOP methods in their classrooms (See **Appendix B**). In comparison with the previous survey concerning the reactions to the original training they received, attitudes towards implementation of SIOP were decidedly less positive.

The most positive responses were to the item "I observed positive benefits for students after using SIOP strategies" (88%). Students also appeared to like the inclusion of SIOP strategies in class (79%). Only 72 percent of teachers felt that things learned from SIOP were easily implemented. Positive reaction fell off quickly after this, particularly to those survey items that concerned support or assistance they had received; "ongoing support was available when I had questions or concerns" (48% agreement), "other district staff facilitated my use of SIOP" (42%), and "principals and other administrators facilitated my use of SIOP" (36%). A majority of teachers (54%) felt that including SIOP strategies in their teaching increased their workload. Finally, 39 percent felt that SIOP implementation was interfered with by unexpected duties or tasks which came up during the year.

The final 30 items in the survey were the same items used in the SIOP observational tool (see p. 6). Summary data are shown in **Appendix C**, and items are organized into the following sections: *preparation*, *building background*, *comprehensible input*, *strategies*, *interaction*, *practice/application*, *lesson delivery*, and *review/assessment*.

Overall, SIOP methods appeared to have been implemented fairly broadly. With only two exceptions, every one of the 30 individual SIOP methods mentioned in the survey was implemented by more than 80 percent of teachers either "usually" or "always". The remaining two items were implemented usually or always by more than 70 percent of teachers surveyed.

Areas that showed the most frequent implementation were "providing comprehensible input" (e.g., using speech appropriate for student proficiency level, explaining academic tasks clearly, and using a variety of techniques to make concepts clear), as well as "building background" (e.g., linking concepts to student backgrounds/experiences, linking past learning and new concepts, and emphasizing key vocabulary).

Methods less frequently used were those concerning "practice/application" (e.g., providing activities or hands-on materials for students), and "interaction" (e.g., using group configurations that supported the language and content objectives, and giving students opportunities to clarify key concepts in their primary language).

To summarize, whereas reactions to the SIOP trainings were highly positive, implementation of SIOP strategies in the classroom sometimes proved to be problematic. Most individual components of SIOP were implemented fairly frequently by teachers. However, certain aspects of SIOP were used less often, and teachers expressed concern about the amount of continuing support available to them.

What was the impact of SIOP training on the academic performance of students in classes taught by the selected teachers?

Academic performance was assessed by student results on the Stanford 10 and English
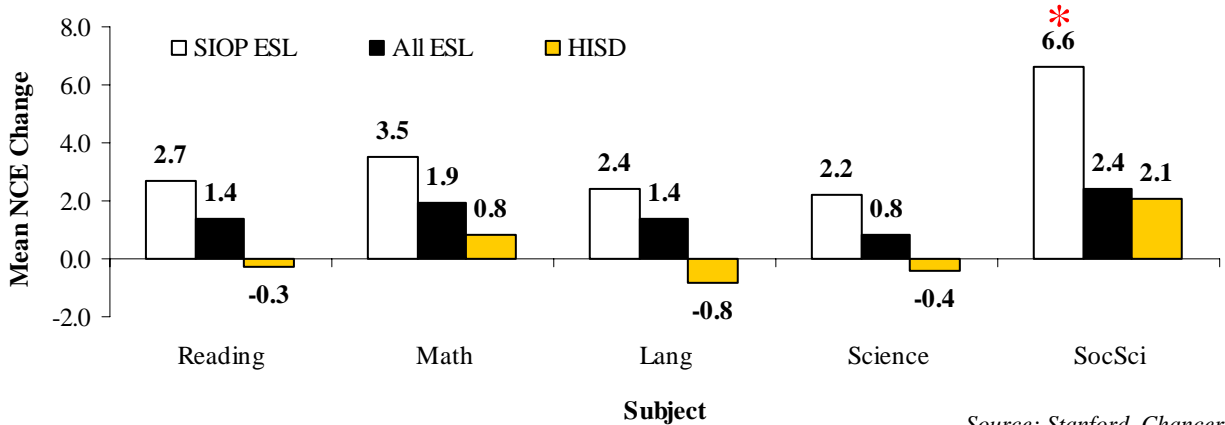
Figure 3. Stanford 10 summary data for students of English SIOP teachers from the South region (white bars). Data are mean NCE change from 2009 to 2010, by subject.

TAKS. Results are shown separately for students from each of the three groups of teachers who received SIOP training; English, mathematics, and science. Data are also broken down by administrative region, where appropriate.
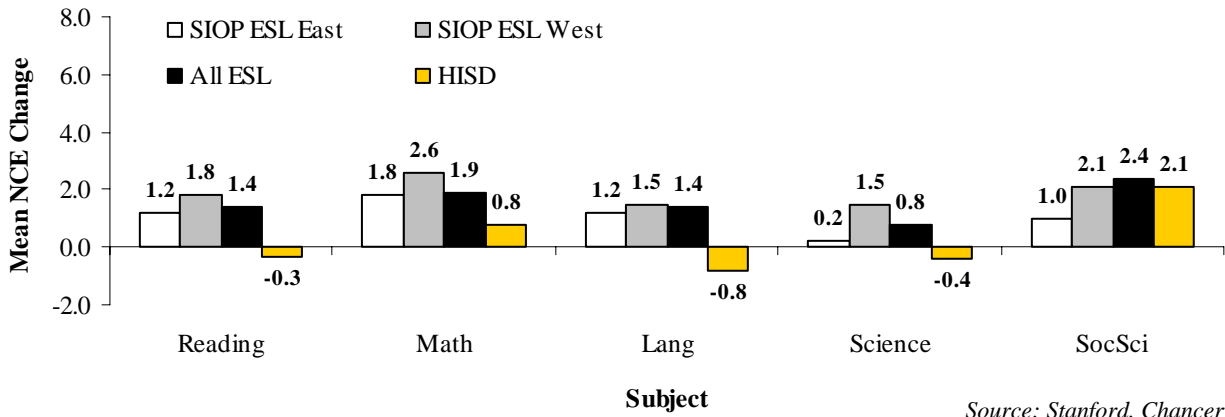
Stanford 10

Figure 3 shows results for ESL students whose English teachers received SIOP training. Also included for comparison purposes are results for all ESL students in the district, and districtwide performance. Results are limited to students in grades 6 through 11, since SIOP teachers were all at the secondary level. Results for the reading, math, language, science, and social science tests are included. The data in Figure 3 are the mean change in NCE from 2009 to 2010. For example, students of SIOP teachers showed an average gain of 6.6 NCE points on the social science subtest of the Stanford 10. In comparison, all ESL students in the district (i.e., grades 6–11 only) gained only 2.4 NCE points, while the district overall improved by 2.1 NCE points. Statistical comparison of the SIOP students to ESL students overall showed that this difference was significant, $F(1, 8245) = 12.83$, $p<.01$). Although SIOP students appeared to show larger improvements than ESL students in each of the other subjects, none of these effects were significant. Note that for this and all subsequent analyses, results are only included for students with valid test scores from both 2009 and 2010. Students without data from both years are not included in analyses.
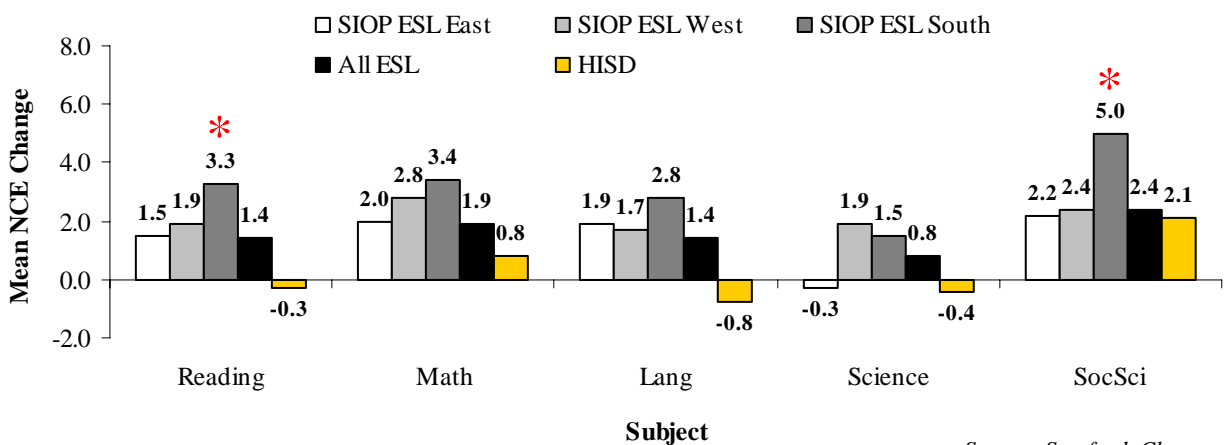
Figure 4. Stanford 10 summary data for students of mathematics SIOP teachers (white and gray bars). Data are mean NCE change from 2009 to 2010, by subject.
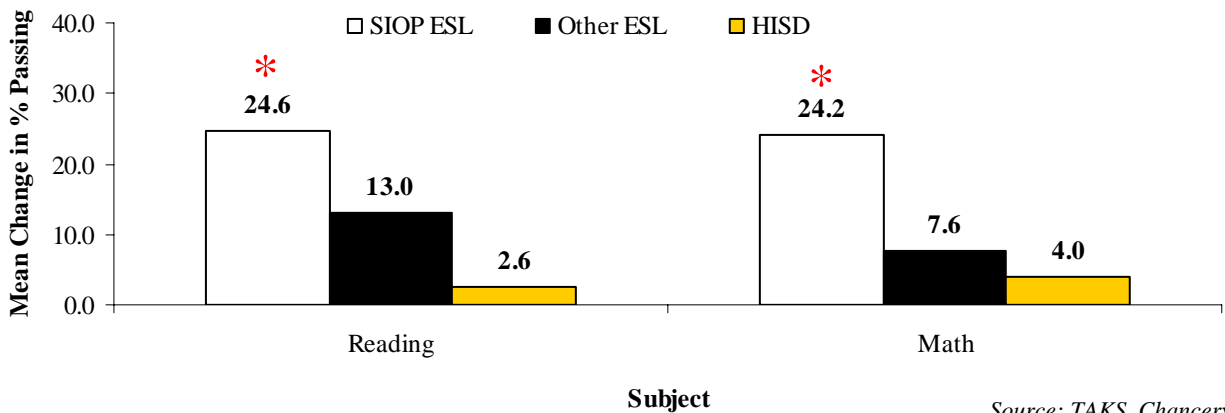
Figure 5. Stanford 10 summary data for students of science SIOP teachers (white and gray bars). Data are mean NCE change from 2009 to 2010, by subject.

Figure 4 (see p. 12) shows comparable data for students whose mathematics teachers received SIOP training. Results for the SIOP students are broken down according to administrative region of their school. The comparison data for all ESL students and the district overall are the same as those shown in Figure 3. For the East and West regions, there appears to be little advantage for students of SIOP teachers, relative to NCE gains shown by ESL students in the district. Students from the South region, however, do show somewhat larger NCE gains on the reading, math, language, and social science subtests. Statistical analysis confirmed that students from the South region had larger gains than ESL students overall on the reading (F(1, 8,319 =

4.69, p<.04) and social science (F(1, 8,278) = 5.84, p<.02) subtests of the TAKS.

Finally, **Figure 5** shows results for students whose science teachers received SIOP training (only science teachers from the East and West regions participated in SIOP training). Students from neither region show any apparent advantage relative to ESL students overall, and statistical analysis confirmed this.

Thus, only students of SIOP teachers from the *South region* showed gains in performance larger than those shown by ESL students districtwide. Students from the East and West regions showed no such result. Since the South region was the only one where SIOP training was carried out at the departmental level, these findings

Figure 6. TAKS summary data for students of English SIOP teachers from the South region (white bars). Data are mean gain in percent passing from 2009 to 2010, by subject.
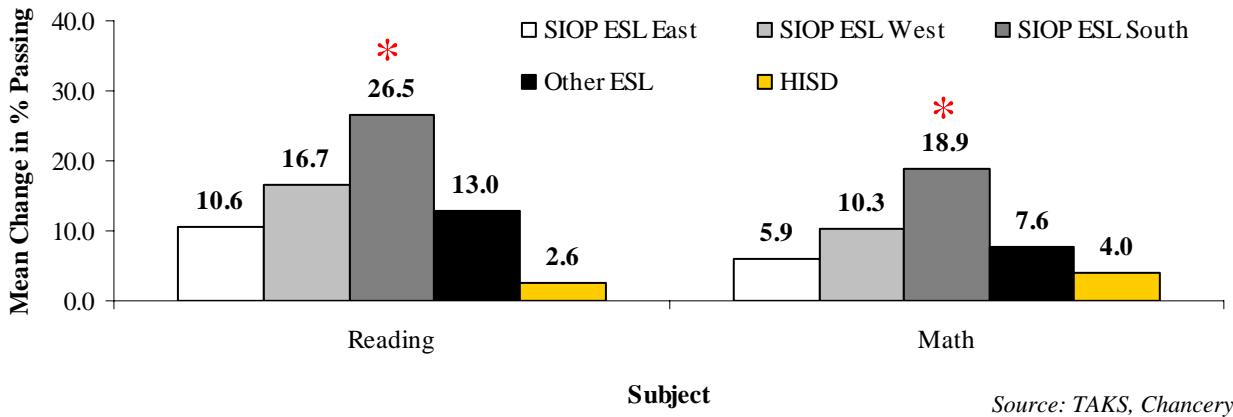
Figure 7. TAKS summary data for students of mathematics SIOP teachers (white and gray bars). Data are mean gain in percent passing from 2009 to 2010, by subject.

suggest that one potential factor limiting the effectiveness of SIOP training is how broadly it is applied at the campus level.

English TAKS

Figure 6 (see p. 13) shows TAKS results for ESL students whose English teachers received SIOP training. Data reflect the mean change in percentage of students passing the TAKS from 2009 to 2010. As with the Stanford results, TAKS data are only shown for students with valid TAKS results from both 2009 and 2010. Only reading/ELA and math TAKS data are included. This is because the writing, science, and social studies TAKS tests are not given at all grade levels, unlike the case for reading/ELA and math. Since analyses are limited to students

having valid test results from two consecutive years, this would have resulted in insufficient data being available for those subtests.

For this group of students, results show that the ESL students of SIOP teachers showed larger gains in TAKS passing rates than either all ESL students in the district, or the district overall. The mean gain in passing rate percentage was 24.6 points for the SIOP students on reading/ELA and 24.2 points for math. Statistical analysis confirmed that both of these effects were significant; for reading, $F(1, 6,003) = 5.15$, $p<.03$, and for math, $F(1, 6,113) = 8.48$, $p<.005$).

Figure 7 shows TAKS results for ESL students whose mathematics teachers received SIOP training. Students from the East and West regions showed little if any advantage relative to
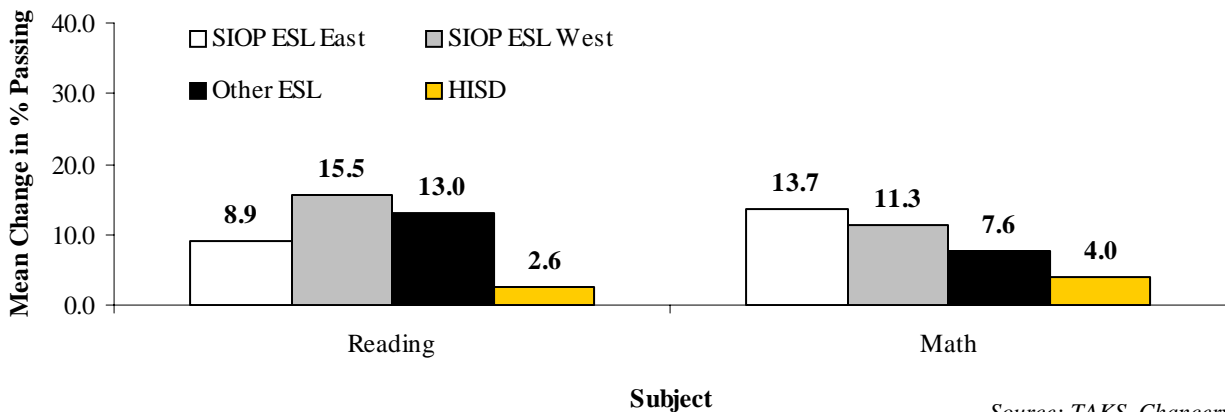
Figure 8. TAKS summary data for students of science SIOP teachers (white and gray bars). Data are mean gain in percent passing from 2009 to 2010, by subject.

Table 4. TELPAS Composite Ratings: Number and Percent of ELLs at Each Proficiency Level, 2010, Data for All SIOP Cohorts and All ELLs in Grade 6–12

Cohort	Region	Number Tested	Beginning		Intermediate		Advanced		Advanced High		Composite Score
		N	N	%	N	%	N	%	N	%	Rating
SIOP ESL	English-South	206	15	7	41	20	56	27	94	46	3.2
"	Math-East	666	58	9	121	18	236	35	251	38	3.0
"	Math-South	259	24	9	59	23	74	29	102	39	3.0
"	Math-West	760	185	24	167	22	218	29	190	25	2.6
"	Science-East	910	80	9	159	17	319	35	352	39	3.1
"	Science-West	697	133	19	149	21	203	29	212	30	2.7
All ESL	n/a	10,082	799	8	1,760	17	3,461	34	4,062	40	3.1

Source: TELPAS, Chancery

other ESL students in the district. However, those from the South region did show larger gains, 26.5 percentage points for reading/ELA and 18.9 percentage points for math. Statistical analysis confirmed that the only two significant effects were for SIOP students from the South region, in reading ($F(1, 6,023) = 4.02$, $p<.05$) and in math ($F(1, 6,139) = 6.93$, $p<.01$).

Finally, **Figure 8** (see p. 14) shows TAKS data for ESL students whose science teachers received SIOP training. SIOP students from neither region appear to have a clear advantage over ESL students as a whole, in terms of gains in TAKS passing rate. Statistical analysis confirmed that SIOP students did not exceed gains shown by ESL students in any condition.

TAKS science results are not shown because there were insufficient data to analyze. To assess changes in performance, we have limited analyses to those students with valid TAKS scores from both 2009 and 2010. However, the TAKS science test is given only in grades 5, 8, 10 and 11. This greatly reduces the number of potential students who can be included (n = 1 for the West region, and n = 16 for the East).

In conclusion, the general pattern of results with TAKS was similar to that seen with the Stanford 10. Namely, the only SIOP students who showed gains in performance that were significantly larger than those of ESL students overall were those from the South region. This could be due to the department-wide training which occurred at participating campuses in the South region, which was not done in the East or West.

What was the impact of SIOP training on English proficiency of students in classes taught by the selected teachers?

English proficiency for ELL students was assessed using the TELPAS. **Table 4** summarizes data from all cohorts of SIOP students. Also included are results from all ESL students in grades 6 through 12. The critical data are in the column labeled "Advanced High", which reflects the percentage of ESL students who received the highest TELPAS rating of Advanced High in 2010. The shaded row at the bottom shows results for all ESL students districtwide in grades 6–12. Forty percent of secondary level ESL students had a rating of Advanced High in 2010. Only one cohort of SIOP students had a higher percentage of individuals with this rating. This was composed of ESL students whose English teachers had received SIOP training (46%). All other cohorts had lower percentages scoring Advanced High than did the overall ESL population. Thus, there is some evidence that providing SIOP training to English teachers benefits the ESL students in those teachers classrooms.

TELPAS also allows for the calculation of yearly progress scores, which tells us whether ELL students have improved their overall proficiency level between 2009 and 2010. These data are shown in **Table 5** (see p. 16). Overall, 57 percent of secondary ESL students in the district gained at least one level of English proficiency between 2009 and 2010. In comparison, 60 percent of ESL students whose English teacher received SIOP training made similar gains. Other

Table 5. TELPAS Yearly Progress, 2009 to 2010: Number and Percent of ELLs Gaining One or More Proficiency Levels, Data for All SIOP Cohorts and All ELLs in Grade 6–12

Cohort	Region	Cohort Size	Gained 1 Proficiency Level		Gained 2 Proficiency Levels		Gained 3 Proficiency Levels		Gained at Least 1 Proficiency Level	
		N	N	%	N	%	N	%	N	%
SIOP ESL	English-East	177	101	57	5	3	0	0	106	60
"	Math-East	548	287	52	15	3	0	0	302	55
"	Math-South	207	118	57	5	2	0	0	123	59
"	Math-West	447	236	53	25	6	2	0	263	59
"	Science-East	776	407	52	22	3	0	0	429	55
"	Science-West	455	258	57	15	3	0	0	273	60
All ESL	n/a	8,375	4,536	54	260	3	15	<1	4,811	57

Source: TELPAS, Chancery

cohorts also exceeded the performance of ESL students overall, including the other South cohort (math teachers), as well as both of the West region cohorts. However, all three of these groups of students had lower overall proficiency than ESL students overall (see Table 4).

Conclusions

The goal of the SIOP Professional Development Initiative was to provide Sheltered Instruction Observation Protocol (SIOP) training to secondary-level content teachers in the district. SIOP training was provided to selected secondary content teachers in reading, mathematics, and science, as well as to administrators, content specialists, and various other staff. This report summarizes the impact of that training. Surveys were used to assess teachers' reactions to the training sessions, as well as their feelings regarding implementation of SIOP. In addition, student performance data were collected in the form of Stanford 10, TAKS, and TELPAS results.

One-hundred forty-six teachers received SIOP training, spread across three administrative regions (East, West, and South). By subject area, 30 taught Reading or English Language Arts, 71 taught math, and 54 taught science (a few teachers taught multiple courses). The mean age of these teachers was 37.4 years, and the average amount of prior HISD teaching experience was 5.2 years.

Reactions to the SIOP training sessions were highly positive overall, indicating a high degree of satisfaction with the training. However, teachers expressed some difficulty with the actual implementation of SIOP strategies in their classrooms, and expressed concern about the amount of ongoing support they received from either district staff or their own principals and administrators. While most individual components of SIOP were implemented fairly frequently, some strategies were used less often (e.g., providing hands-on materials or activities, allowing students to clarify key concepts in L1, and using alternative grouping configurations for students).

Results from both the Stanford 10 and TAKS seemed to converge on a common set of findings. First, students from only two of the teacher cohorts seemed to show large gains in performance between 2009 and 2010, relative to gains shown by the typical ELL student. These two cohorts were composed of ESL students of English teachers (who were all from the South region), and those math teachers from the South region. No other group of teachers who went through SIOP training had students show gains in performance that exceeded those shown by ESL students as a group.

The Stanford and TAKS results both suggest that implementing SIOP training for content-area teachers works best when a whole department is trained, rather than a sampling of teachers from that content area. This was the approach taken by the South administrative region, where only two campuses received SIOP training, but all English and math teachers at those campuses were involved.

Finally, and not surprisingly, ESL students whose English teachers went through SIOP training showed higher overall English language proficiency than did ESL students overall, both in terms of absolute level of proficiency, and in the amount of yearly progress in proficiency between 2009 and 2010. It is not particularly surprising that students from this cohort of teachers showed the highest overall English language proficiency, since math and science content teachers might be expected to have a less direct impact on the overall English skills of their students.

Recommendations

1. SIOP should be expanded, and the implementation strategy followed by the South administrative region should be used. This was the only region which showed evidence for significant performance gains for ELL students. The East and West regions also had teachers trained, but did not show any significant performance gains. A likely reason for these performance differences was that the South region trained entire departments of content teachers, whereas the other regions selected a handful of teachers from a larger number of campuses. Future implementation of SIOP training in the district should be department-wide at targeted campus.

2. A key rationale for including administrators in SIOP training was that this would help ensure fidelity of implementation at the classroom level. Yet, teacher survey responses indicated that ongoing support from administrators was lacking. Efforts should be made to provide more ongoing support for teachers in the implementation of SIOP strategies.

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Appendix A

Questions and responses from online survey administered to SIOP training participants.

Items concerning the trainers/facilitators:					
Survey Item	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Stringly Disagree**
Adequately set the tone and background for information presented in the session(s)	64% *(28)*	32% *(14)*	5% *(2)*	0% *(0)*	0% *(0)*
Allowed me to reflect and share my ideas/views about the topics presented	67% *(30)*	27% *(12)*	7% *(3)*	0% *(0)*	0% *(0)*
Helped me to make connections with the information so that I could use it in my teaching	67% *(30)*	27% *(12)*	4% *(2)*	2% *(1)*	0% *(0)*
Actively encouraged collaborative discussion	75% *(33)*	21% *(9)*	5% *(2)*	0% *(0)*	0% *(0)*

Items concerning the sessions themselves:					
Survey Item	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Stringly Disagree**
The topics were well organized and well paced	61% *(27)*	36% *(16)*	2% *(1)*	0% *(0)*	0% *(0)*
The learning outcomes for the sessions were clearly communicated	64% *(28)*	34% *(15)*	2% *(1)*	0% *(0)*	0% *(0)*
The meeting space allowed for ease of communication and movement	57% *(25)*	41% *(18)*	2% *(1)*	0% *(0)*	0% *(0)*
The information was relevant and useful to my daily teaching/work	64% *(29)*	31% *(14)*	2% *(1)*	2% *(1)*	0% *(0)*
The information was conveyed in a way that was easy to comprehend and follow	64% *(29)*	31% *(14)*	2% *(1)*	2% *(1)*	0% *(0)*
Opportunities to network with colleaguesand reflect were provided over the course of the day	56% *(25)*	38% *(17)*	7% *(3)*	0% *(0)*	0% *(0)*
I feel comfortable enough with the information I learned that I could share it with my colleagues	49% *(22)*	44% *(20)*	4% *(2)*	2% *(1)*	0% *(0)*
Overall, the session was relevant to my teaching/work within the school	64% *(29)*	29% *(13)*	4% *(2)*	2% *(1)*	0% *(0)*
I have a clearer understanding of how sheltered instruction can be used in my teaching	58% *(26)*	33% *(15)*	4% *(2)*	4% *(2)*	0% *(0)*
Handouts were useful and adequately supported the information presented	64% *(29)*	24% *(11)*	7% *(3)*	4% *(2)*	0% *(0)*
My awareness of sheltered instruction practices was enhanced	62% *(28)*	27% *(12)*	11% *(5)*	0% *(0)*	0% *(0)*
I have enough information to move forward with sheltered instruction	54% *(26)*	31% *(15)*	13% *(6)*	2% *(1)*	0% *(0)*

Appendix B

Questions and responses from online survey administered for SIOP teachers concerning the overall ease of implementing SIOP strategies in their classroom.

How easy was it to use SIOP methods in the classroom?					
Survey Item	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Stringly Disagree**
I observed positive benefits for students after using SIOP strategies in the classroom	33% *(11)*	55% *(18)*	9% *(3)*	3% *(1)*	0% *(0)*
Students appeared to like the inclusion of SIOP strategies in my classroom	27% *(9)*	52% *(17)*	21% *(7)*	0% *(0)*	0% *(0)*
Things I learned during SIOP training were easily implemented in the classroom	30% *(10)*	42% *(14)*	15% *(5)*	12% *(4)*	0% *(0)*
Including SIOP strategies in my teaching increased my workload	21% *(7)*	33% *(11)*	24% *(8)*	21% *(7)*	0% *(0)*
Ongoing support was available when I had questions or concerns	21% *(7)*	27% *(9)*	42% *(14)*	9% *(3)*	0% *(0)*
Other district staff (teachres, curriculum specialists, etc.) facilitated my use of SIOP	15% *(5)*	27% *(9)*	36% *(12)*	21% *(7)*	0% *(0)*
Unexpected duties or tasks which came up during the year interfered with my ability to implement sheltered instruction	3% *(1)*	36% *(12)*	18% *(6)*	24% *(8)*	8% *(6)*
Principals and other administrators facilitated my use of SIOP	3% *(1)*	33% *(11)*	24% *(8)*	24% *(8)*	15% *(5)*

Appendix C

Questions and responses from online survey administered to SIOP teachers concerning implementation of specific SIOP strategies.

Survey Item	Always	Usually	Sometimes	Seldom	Never
Preparation:					
Identify supplemental materials to use (graphs, models, visuals)	59% (20)	41% (14)	0% (0)	0% (0)	0% (0)
Write content objectives clearly for all students	53% (18)	41% (14)	3% (1)	3% (1)	0% (0)
Choose content concepts appropriate for age and educational background level	59% (20)	35% (12)	3% (1)	3% (1)	0% (0)
Adapt content (e.g., text, assignment) to all levels of student proficiency	49% (16)	39% (13)	9% (3)	3% (1)	0% (0)
Write language objective clearly for students	41% (14)	44% (15)	12% (4)	3% (1)	0% (0)
Plan meaningful activities and integrate lessons concepts with language practice opportunities for the four skills	50% (17)	35% (12)	15% (5)	0% (0)	0% (0)
Building Background:					
Explicitly link concepts to students' backgrounds and experiences	27% (9)	71% (24)	0% (0)	3% (1)	0% (0)
Explicitly link past learning and new concepts	62% (21)	35% (12)	3% (1)	0% (0)	0% (0)
Emphasize key vocabulary for students (e.g., introduce, write, repeat, and highlight)	62% (21)	29% (10)	9% (3)	0% (0)	0% (0)
Comprehensible Input:					
Use speech appropriate for students' proficiency level	56% (19)	44% (15)	0% (0)	0% (0)	0% (0)
Explain academic tasks clearly	65% (22)	32% (11)	3% (1)	0% (0)	0% (0)
Use a variety of techniques to make concepts clear (e.g., models, visuals, hands on activities, demonstrations, gestures)	71% (24)	27% (9)	3% (1)	0% (0)	0% (0)
Strategies:					
Use scaffolding techniques consistently throughout the lesson	39% (13)	55% (18)	4% (1)	3% (1)	0% (0)
Provide ample opportunities for students to use strategies (e.g., problem solving, predicting, organizing, summarizing)	48% (15)	42% (13)	10% (3)	0% (0)	0% (0)
Use a variety of question types including those that promote higher-order thinking skills throughout the lesson	49% (16)	39% (13)	12% (4)	0% (0)	0% (0)

Appendix C (contd.)

Survey Item	Always	Usually	Sometimes	Seldom	Never
Interaction:					
Provide sufficient wait time for student responses consistently	58% (19)	36% (12)	6% (2)	0% (0)	0% (0)
Provide frequent opportunities for interactions and discussions between teacher/student and among students, and encourage elaborated responses	35% (12)	56% (19)	6% (2)	3% (1)	0% (0)
Use group configurations that support language and content objectives of the lesson	56% (19)	29% (10)	15% (5)	0% (0)	0% (0)
Give ample opportunities for students to clarify key concepts in L1 as needed with aide, peer, or L1 text	35% (12)	38% (13)	21% (7)	3% (1)	0% (0)
Practice/Application:					
Provide activities for students to apply content and language knowledge in the classroom	50% (17)	35% (2)	15% (5)	0% (01)	0% (0)
Provide hands-on materials and/or manipulatives for students to practice using new content knowledge	47% (16)	35% (12)	18% (6)	0% (0)	0% (0)
Provide activities that integrate all language skills (reading, writing, listening, speaking)	44% (15)	35% (12)	18% (6)	3% (1)	0% (0)
Lesson Delivery:					
Pace the lesson appropriately to the students' ability level	53% (18)	47% (16)	0% (0)	0% (0)	0% (0)
Support content objectives clearly	62% (21)	35% (12)	3% (1)	0% (0)	0% (0)
Support language objectives clearly	53% (18)	41% (14)	6% (2)	0% (0)	0% (0)
Engage students approximately 90-100% of the time (most student staking part/on task)	44% (15)	44% (15)	9% (3)	3% (1)	0% (0)
Review/Assessment:					
Provide feedback to students regularly on their output (language, content, work)	46% (15)	49% (16)	6% (2)	0% (0)	0% (0)
Conduct assessments of student comprehension and learning throughout lesson on all objectives	58% (19)	36% (12)	6% (2)	0% (0)	0% (0)
Give a comprehensive review of key content concepts	61% (20)	30% (10)	9% (3)	0% (0)	0% (0)
Give a comprehensive review of key vocabulary	46% (15)	36% (12)	18% (6)	0% (0)	0% (0)

Appendix D   List of SIOP Training Sessions Held During 2009–2010

Dates	Region	Target Audience	Material Covered
Nov 5, 6, 7, 2009	East	Content area teachers	Component, enrichment
Dec 15, 16, 17, 2009	All	Miscellaneous personnel	SIOP I (coaching)
Oct 26, 2009	North	Administrators	
Oct 30, 2009	Central	Administrators	
Nov 10, 2009	Alternative	Administrators	
Oct 9, 2009	West	Administrators	
Oct 23, 2009	East	Administrators	
Nov 8, 2009	South	Administrators	
Oct 28, 29, 30, 2009	All	Miscellaneous personnel	
Jan 11, Feb 5, 22, 2009	South	Content area teachers	Component, enrichment
Jan 12, Feb 4, 23, 2009	South	Content area teachers	Component, enrichment
Nov 10, 17, 2009; Jan 12, 2010	West	Content area teachers	Component, enrichment
June 7, 8, 2010	All	Miscellaneous personnel	Coaching & implementation
June 17, 18, 2010	All	Miscellaneous personnel	Coaching & implementation