Integrating Academic Language and Content Learning with the SIOP Model

Deborah J. Short, Ph.D.
### The SIOP (Sheltered Instruction Observation Protocol) Model
Echevarria, Vogt & Short, 2000, 2013

#### Lesson Preparation
1. **Content objectives** clearly defined, displayed and reviewed with students
2. **Language objectives** clearly defined, displayed and reviewed with students
3. **Content concepts** appropriate for age and educational background level of students
4. **Supplementary materials** used to a high degree, making the lesson clear and meaningful (e.g., computer programs, graphs, models, visuals)
5. **Adaptation of content** (e.g., text, assignment) to all levels of student proficiency
6. **Meaningful activities** that integrate lesson concepts (e.g., interviews, letter writing, simulations, models) with language practice opportunities for reading, writing, listening, and/or speaking

#### Building Background
7. **Concepts explicitly linked to students' background** experiences
8. Links explicitly made between **past learning and new concepts**
9. **Key vocabulary emphasized** (e.g., introduced, written, repeated, and highlighted for students to see)

#### Comprehensible Input
10. **Speech appropriate** for students' proficiency levels (e.g., slower rate, enunciation, and simple sentence structure for beginners)
11. **Clear explanation** of academic tasks
12. **A variety of techniques** used to make content concepts clear (e.g., modeling, visuals, hands-on activities, demonstrations, gestures, body language)

#### Strategies
13. Ample opportunities provided for students to use **learning strategies**
14. **Scaffolding techniques** consistently used, assisting and supporting student understanding
15. **A variety of questions or tasks that promote higher-order thinking skills** (e.g., literal, analytical, and interpretive questions)

#### Interaction
16. Frequent opportunities for **interaction** and discussion between teacher / student and among students, which encourage **elaborated responses** about lesson concepts
17. **Grouping configurations** support language and content objectives of the lesson
18. **Sufficient wait time for student responses** consistently provided
19. Ample opportunities for students to **clarify key concepts in L1** as needed with aide, peer, or L1 text

#### Practice & Application
20. **Hands-on materials and / or manipulatives** provided for students to practice using new content knowledge
21. Activities provided for students to **apply content and language knowledge** in the classroom
22. Activities integrate **all language skills** (i.e., reading, writing, listening, and speaking)

#### Lesson Delivery
23. **Content objectives** clearly supported by lesson delivery
24. **Language objectives** clearly supported by lesson delivery
25. **Students engaged** approximately 90% to 100% of the period
26. **Pacing** of the lesson appropriate to students' ability levels

#### Review & Assessment
27. Comprehensive review of **key vocabulary**
28. Comprehensive review of **key content concepts**
29. Regular **feedback** provided to students on their output (e.g., language, content, work)
30. **Assessment of student comprehension and learning** of all lesson objectives (e.g., spot checking, group response) throughout the lesson

D. Short, 2016
Selected SIOP References

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Academic Language Research & Training

Objectives

- **Content Objective**: To explore research on effective practices, such as the SIOP Model, for English language learners in language and content classrooms
- **Language Objective**: To describe some techniques that strengthen academic language development

English language learners have *Double the Work* to develop academic literacy when they study challenging subject areas through a new language, such as English.

But what is academic language & literacy?
**Academic Language in Middle School**

TEACHER: What is the chemical formula for water?

SARAI: H I J K L M N O!!

TEACHER: What are you talking about?

SARAI: Yesterday you said it's H to O!

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**Academic literacy enables students to**

- read expository prose and find evidence for claims in texts and articles
- write persuasively about an environmental issue
- argue a point of view on the concept of belonging to the European Union
- take notes from teacher lectures
Keep in Mind

- Most ELLs need 4-7 years to learn English before they reach average academic performance levels.
- But they are tested before they are proficient in English.
- As ELLs, they are by definition not proficient.

Q: So How Do We Develop the Academic Language Skills that English Language Learners Need?

A: Content-based ESL and Sheltered Instruction, like the SIOP Model
In the 1990s

- Language teachers realize exited ESL students are not successful in mainstream (regular English-medium, subject area) classrooms.
- State and national tests show ESL students are far below the average scores of native English speakers.
- There was no systematic model of content-based ESL or sheltered instruction and research did not focus on effectiveness of instructional practices.

So, in 1996

- We decided to try to create and test a replicable and effective model of sheltered instruction, the SIOP.
- We examined both teacher implementation and student achievement.
- We have continued that research for 20 years.

The SIOP Model is a lesson planning and instructional framework for teaching content comprehensible and academic language concurrently.

8 Components
- Lesson Preparation
- Building Background
- Comprehensible Input
- Strategies
- Interaction
- Practice & Application
- Lesson Delivery
- Review & Assessment
A Note About SIOP

- **SIOP** = Sheltered Instruction Observation Protocol
- **SIOP Model** – lesson planning and delivery
- **SIOP protocol** – lesson observation instrument with rating scale

The SIOP Model Integrates Language and Content in English Class and Content Classes

- **Content-based ESL** – language teacher
- **Sheltered content instruction** – content teacher
- Both types of classes have language and content objectives in each lesson.
- Used in ESL and bilingual programs – any time second language learners study in a new language

Content-Based ESL Lessons

- Target key subject area vocabulary and academic tasks needed in the content classroom (e.g., creating a timeline, taking notes from reference materials).
  - Could include objectives from math, economics, language arts, and other subjects.
Sheltered Instruction Lessons

- ESL techniques to make grade-level academic content (e.g., science, history, math) more accessible for second language learners
- At the same time promote the learners’ second language development as it is used in the content area.

Is the SIOP Model Effective?

Let’s See What Research Has Shown Us

The Effects of Sheltered Instruction on the Achievement of LEP Students

- After several years of field-testing the SIOP, a validity and reliability study of the instrument was conducted. Findings showed the SIOP is a highly reliable and valid measure of sheltered instruction (Guarino, et al., 2001).
- 1998-99: Using a prompt for expository writing, ELLs in classes with SIOP-trained teachers outperformed and made greater overall gains than ELLs in classes with non-SIOP-trained sheltered teachers on a version of the IMAGE writing test.

(IMAGE exam: Illinois Measure of Annual Growth in English)
The Sheltered Instruction Observation Protocol (SIOP®)

LESSON PREPARATION

1. Content objectives clearly defined, displayed and reviewed with students.

   Comments:

   4 3 2 1 0

2. Language objectives clearly defined, displayed and reviewed with students.

   Comments:

   4 3 2 1 0

3. Content concepts appropriate for age and educational background level of students.

   Comments:

   4 3 2 1 0

4. Supplementary materials used to a high degree, making the lesson clear and meaningful (e.g., computer programs, graphs, models, models).

   Comments:

   4 3 2 1 0

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1999-99 Pre/Post Writing Skills
Student Scores on the IMAGE Test

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Score</th>
<th>Posttest Score</th>
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</thead>
<tbody>
<tr>
<td>1.0</td>
<td>2.70</td>
<td>3.40</td>
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<tr>
<td>2.0</td>
<td>2.90</td>
<td>3.10</td>
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</table>

Comparison Group

<table>
<thead>
<tr>
<th>Score</th>
<th>Pretest Score</th>
<th>Posttest Score</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>2.0</td>
<td>0.50</td>
<td>1.50</td>
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</tbody>
</table>

SIOP group Comparison group

After 1 year, SIOP group shows more than twice the gain of the Comparison group.

Writing Gains on the IMAGE test
Lela Alston Elementary School -
Phoenix, AZ (2002–05)

- Teachers were trained and coached to ensure fidelity to the SIOP Model over 2 years
- Significant growth on state reading, mathematics and writing exams at Grade 3 after 3 years of SIOP implementation schoolwide
- Moved from one of the lowest performing elementary schools in the Isaac (AZ) school district to one of the highest—became a model school for ELLs
New Jersey SIOP Study (2004-6)

- Teachers can reach high levels of SIOP implementation after 1-2 years (1 year with more support). Sustained, supported professional development (workshops + coaching) works.
- After 1 year, students with SIOP-trained teachers outperformed non-SIOP students within the Clifton district on mean scores for oral, reading, writing IPT tests and for total IPT to statistically significant levels. Same results for Year 2.
- After 2 years, with SIOP-trained teachers in Clifton, students outperformed non-SIOP students in comparison district on mean scores for oral, writing IPT tests and total IPT across districts to statistically significant levels.

% Teachers with high implementation of SIOP features

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
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</thead>
<tbody>
<tr>
<td>SIOP Teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cohort 1</td>
<td>56%</td>
<td>71%</td>
</tr>
<tr>
<td>- Cohort 2</td>
<td>N/A</td>
<td>74%</td>
</tr>
<tr>
<td>Comparison</td>
<td>5%</td>
<td>17%</td>
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</table>

IPT Total Oral Scores for Clifton SIOP and NJ Comparison Group

Center for Applied Linguistics, 2008
The Impact of the SIOP Model on Middle School Science

- CREATE (Center for Research on the Educational Achievement and Teaching of English Language Learners) 6-year study (2005-2011)
- The higher the teacher rating on the SIOP protocol, the better the students performed. This is true of both SIOP and control teachers
- For all total scores of the tests the SIOP group outperformed the control
- Groups included ELs, former ELs, native English speakers, and students with disabilities
- Analyses of the data indicated this difference was approaching significance

Difference in Performance Between SIOP and Control Students

- For all total scores of the tests the SIOP group outperformed the control
- Groups included ELs, former ELs, native English speakers, and students with disabilities
- Analyses of the data indicated this difference was approaching significance

School-Wide Intervention (2010-12)

- Curriculum interventions for science, social studies and English language arts infuse SIOP features
- Integration of the SIOP Model for comprehensive professional development
- Significant (positive) treatment effects for all measures (science vocab, science content, social studies content, English writing) except Gates reading comprehension
Let’s See What SIOP Instruction Looks Like

Science Standard
- The health, growth, and development of organisms are affected by environmental conditions such as the availability of food, air, water, space, shelter, heat, and sunlight. (5.2g)

SIOP Science Lesson: Growing Plants
- **CO:** Identify factors that affect plant growth
- **LO:** Write if-then statements about plant growth
- **Vocab:**
  - **HFW:** water, grow
  - **Science:** plant, root, stem, leaf, soil
  - **Academic:** factor, if, then
- **Lang Function:** Causation “If ___, then ___.”
  - If the plant has soil, then it can grow.
  - If the plant does not have water, then it cannot grow.
- **Science Lab**
- **Read and Write:**
  - Write an observation on index card. Do Mix & Match. Exchange cards.
**Vocabulary Development in SIOP Lessons**

- Select key vocabulary carefully to pre-teach
- Build conceptual knowledge and add related terms
- Structure opportunities to practice: Read, write and speak the terms, do word work on affixes, explore multiple meaning words
- Tap into cognates, context clues, and on-page supports for unfamiliar words

**Select Key Vocabulary Wisely**

- **Academic Vocabulary**
  - Content/Technical
  - General Academic Process/Function

- **Word Parts Vocabulary**
  - Academic Vocabulary

**Academic Vocabulary**

- **Subject-specific and technical terms** (found in informational and expository texts, e.g., stem, xylem, phloem, transpire)
- **General academic vocabulary—cross-curricular terms/process & function words** (used in all academic disciplines and often on state tests, e.g., results, occur, discuss, skim, describe, compare, however, unless)
- **Word parts: Roots and affixes** (word parts that enable students to learn new vocabulary, e.g., photo- = light, as in photocopy, photograph, photosynthesis; un = not, as in unhappy)
4 Corners Vocabulary

<table>
<thead>
<tr>
<th>Word/Translation</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desert/Desierto</td>
<td><img src="image" alt="Desert Picture" /></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Word in context</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants have adapted to a dry climate in the desert.</td>
<td>A dry, hot environment with little vegetation, little rainfall, and no permanent body of water</td>
</tr>
</tbody>
</table>

Concept Definition Map

- **Mitosis**
- **Related Terms**
- **Examples**

Shades of Meaning

Teach shades of meaning: gradation and nuances of synonyms

- hungry
- starving
- famished
- ravenous
Take Advantage of English Learners’ Native Language for Determining New Words

<table>
<thead>
<tr>
<th>SPANISH</th>
<th>ENGLISH</th>
</tr>
</thead>
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<tr>
<td>incapaz</td>
<td>unable</td>
</tr>
<tr>
<td>incómodo</td>
<td>uncomfortable</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SPANISH</th>
<th>ENGLISH</th>
</tr>
</thead>
<tbody>
<tr>
<td>velocidad</td>
<td>velocity</td>
</tr>
<tr>
<td>discutir</td>
<td>discuss</td>
</tr>
</tbody>
</table>

Oral Interaction in SIOP Lessons

• Generate discussion topics of high interest and build background and vocabulary
• Encourage students to share ideas and elaborate
• Structure opportunities to practice: Sentence starters, Signal words, Language frames
  • Link classroom discourse and interaction with engaging reading and writing texts

Signal Words for Language Functions

*Comparison*

• is similar to
• differs from
• is the same as
• both/neither
• on the one hand/on the other
• but
• in contrast
### Academic Language Frames (Seidlitz, 2008)

**Cause-Effect**
- ____ was caused by …
- If ____ happens, then ____
- The result is ____
- Because of ____ and ____ affected/aided ____ by ___

**Define/Describe**
- ____ means ...
- ____ is an example of ...
- The diagram shows that ...
- ____ looks like ...
- It has ____ but doesn’t have ____

### Express Opinions - Role Play

**Partner A**
- I think that …
- In my opinion, …

**Partner B**
- I agree. OR I disagree.
- I agree with you and …
- I agree with you but …
- I disagree because …

**Will astronauts land on the moon by 2040?**

### Practice Oral Presentation Skills

- Transition to a new point
  - First of all.
  - Next, I want to tell you …
  - Now.
  - Why is she my hero?

- List points
  - One reason/ factor is …
  - Another reason is …
  - A final reason is …

- Give examples
  - For example, …
  - Let me give you an example …
Reading Development in SIOP Lessons

- Build background and vocabulary to support access to text
- Pair fiction and non-fiction to capitalize on content and vocabulary
- Scaffold the reading process, move students towards independence
- Link classroom discourse and interaction with engaging reading and writing texts

Rich, Diverse & Relevant Literature: Multicultural, Multi-subject, Multi-lingual

Pair Fiction & Non-Fiction
Explicit Instruction in Reading Comprehension Strategies

- Plan and Monitor
- Determine Importance
- Make Connections
- Ask Questions
- Make Inferences
- Synthesize
- Visualize

Same information, different reading levels

Give Teachers Time and Support to Get Good at It
SIOP Professional Learning Program

**Design**
- 6-8 workshop days, spread out over 1-2 years
- Teacher volunteers, especially year 1
- Classroom observations and lesson plan development
- On-site coaching and feedback
- Collaborative teacher groups
- Set expectations for levels of implementation

**Topics**
- Second Language Acquisition Research
- Academic Language of Subject Areas
- SIOP Model Components: Practice
- SIOP Lesson & Unit Design
- SIOP Coaching

Support Teachers to Implement the SIOP Model
- Offer teachers time to visit other classrooms
- Set common planning time and encourage collaboration on lesson planning
- Designate a SIOP coach – ft, pt, duty period
- Offer ongoing (sustaining) professional development
- Use a SIOP walk-through checklist for supportive and specific feedback
How Do We Know If Students Are Successful?

Look at Student Performance

- Oral interaction in class
- Student work displayed on walls
- Student-generated texts
- Performance on assessments
- Growth modeling
- Student attendance

Lessons Learned

- Sheltered instruction can make a difference. Literacy and content achievement rise.
- The greater the teacher level of implementation (= fidelity), the better the student performance.
- Teacher buy-in and administrator support make a difference.
- Ongoing, job-embedded professional learning is needed.
- It takes teachers 1–2 years to reach consistent high levels of implementation.
- Coaching leads to higher levels of implementation.
Thank You