2010 California Title 1 State Conference

Access, Culture and Climate, Expectations, and Strategies (ACES)
A Winning Hand for Student Success

Preparing English Learners for Algebra

University of California Professional Development Institute (UCPDI)
in collaboration with
San Diego Mathematics Project
Title 1 Conference 2010
Access, Culture and Climate, Expectation, and Strategies (ACES)
A Winning Hand for Student Success

Who are we?

• Gretchen Laue, Director, University of California Professional Development Institute
• Rafaela Santa Cruz, Director, San Diego Mathematics Project
• Los Angeles Unified School District, Local District 6

Access to Algebra
Preparing English Learners for Algebra
**Goals**
Gretchen Laue - UCPDI

Access to the Core: Support for Secondary English Language Learners

**Goals:**
- Expand the current professional development partnership between UCPDI and LAUSD to include 8th and 9th grade language arts and mathematics teachers.
- The implementation of a standards-based instructional program to improve the achievement of 8th and 9th grade second language learners in language arts and mathematics.

**Goals:**
- Build district and site-based capacity in mathematics and English classes to support second language learners in grade-level content classes.
The Challenge

• English learners in secondary classrooms throughout California have enormous challenges. They must simultaneously acquire proficiency in English, and master complex content in the core academic subjects.

• Over 20% of the state’s English learners are in Los Angeles Unified School District.

Access to the Core:
Overview

Gretchen Lase - UCPDI

Overview

www.accesstothecore.com
Content Focus
Rafaela Santa Cruz - SDMP

Mathematics
- 12 Algebra Readiness Standards
- 12 Algebra 1 Standards

Mathematics Standards

- Access to the Core – Mathematics – Units, Concepts, and Standards

<table>
<thead>
<tr>
<th>Algebra Readiness</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 1</td>
<td>Alg 1</td>
<td>Alg 2</td>
<td>Alg 3</td>
</tr>
<tr>
<td>Unit 2</td>
<td>Alg 4</td>
<td>Alg 5</td>
<td>Alg 6</td>
</tr>
<tr>
<td>Unit 3</td>
<td>Alg 7</td>
<td>Alg 8</td>
<td>Alg 9</td>
</tr>
<tr>
<td>Unit 4</td>
<td>Alg 10</td>
<td>Alg 11</td>
<td>Alg 12</td>
</tr>
</tbody>
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Quarterly Deskmats

Deskmats
Standards Inserts

Strategies
Rafaela Santa Cruz - SDMP

• Scaffolding
• Seeing, Listening, Speaking, Reading, Writing
• Teach, Practice, Assess

Instructional Scaffolding to Use with English Learners

• Modeling - Students need to be given clear examples of what is requested of them for imitation.
• Bridging - Students will only be able to learn concepts and language if these are firmly built on previous knowledge and understandings.
• Contextualizing - Academic language is decontextualized and situation-independent; in order to comprehend such language the learner must rely on language alone.
• Schema building - Schema, or clusters of meaning that are interconnected, are how we organize knowledge and understanding.
• Re-presenting Text - One way in which teachers invite students to begin the appropriation of new language is by engaging them in activities that require the transformation of linguistic constructions they found modeled in one genre into forms used in another genre.
• Metacognitive Development – It refers to the ways in which students manage their thinking.

**Instructional Scaffolding to Use with English Learners**

Instructional Scaffolding support for higher levels of performance.

**Instructional Tools for Access to the Core**

<table>
<thead>
<tr>
<th>TEACH</th>
<th>PRACTICE</th>
<th>ASSESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEEING</td>
<td>Build It (M)</td>
<td>Matching Representation (S-TR)</td>
</tr>
<tr>
<td></td>
<td>Multiple Representation (S-TR)</td>
<td></td>
</tr>
<tr>
<td>LISTENING &amp; SPEAKING</td>
<td>Sorting cards such as Commission (S-MC-TR)</td>
<td>Mathematically Speaking (M-MC)</td>
</tr>
<tr>
<td></td>
<td>Comparing Graphics (S-M)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Think-Pair-Share (MC-M)</td>
<td></td>
</tr>
<tr>
<td>READING</td>
<td>Preview the Chapter (S-B-C)</td>
<td>Reciprocal Reading (S-B-MC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cooperative Problem Solving (MC-TR)</td>
</tr>
<tr>
<td>WRITING</td>
<td>Write Match (B-C)</td>
<td>E x 3 Sentence Builders (TR-MC)</td>
</tr>
<tr>
<td></td>
<td>Quick Write (B-C)</td>
<td>Comparison Paragraph Frames (M-B)</td>
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</tbody>
</table>

**Think-Pair-Share**

What are some features of Access to Core instruction?
Collaborative Posters

Instructions Part 1:
- Have the materials person get a poster paper and problems handout.
- Fold the poster paper into three sections by turning the shorter edges to meet in middle without overlapping.
- Each group member should use a different colored marker and write his or her name in the top right corner.
- Write your assigned problem in the top section.

Instructions Part 2:
- Show your work in the middle section. Remember that each person should write using only his or her colored marker. Your group may show more than one way to solve the problem.
- Use the third section of your paper to copy and complete the sentence frames provided.
- The two co-reporter will explain their group solution to the class.
- The co-reporters should assist each other as they present.

Problem

• Marita wants to make a rectangle with a perimeter of 20 inches.

• How many rectangles can Marita make if she only uses whole numbers for the side lengths? List the dimensions.

• Which rectangle has the greatest area?
Frame A
The rectangle with dimensions ______________ has the greatest area. Its area is ______________.

Frame B
The rectangle with dimensions _______ and an area of ______ has the greatest area because ________.

Frame C
We determined that the rectangle with dimensions _______ and an area of ______ has the greatest area by ________.

Multiple Representations

Learners acquire and store knowledge in two primary ways: **linguistic** (by reading or hearing lectures), and **nonlinguistic** (through visual imagery, kinesthetic or whole-body modes, and so forth). The more students use both systems of representing knowledge, the better they are able to think about and recall what they have learned.


Multiple Representations

- **Teacher Instructions:**
  - Trim extra off of edges as edges will not match. Place one complete set in an envelope, one envelope per group (group size: 2 – 4).
  - Provide Xerox and have students cut apart the page(s) of cards. When cutting, tell students each group will work with all the pieces from both pages.
  - Students are to match the 4 representations and glue them under the column headings.

- **Variations:**
  - Leave out 2 or 3 pieces. Students are required to generate the missing pieces.
  - If students are working on a particular skill leave out all of the pieces related to it and require students to generate them.

Handout: Mix and Match Bags
Cooperative Problem Solving

- Each person has one piece of written information.
- Each person should read his or her information to the group at least two times.
- The group should work cooperatively to solve the problem.
- Avoid giving all the information to one person to solve the problem.

Handout: Cooperative Problems

Cooperative Problem Solving

- GET IT TOGETHER
- United We Solve
  Tim Erickson
Talking with Others

Talking with others about ideas and work is fundamental to learning. All students, particularly second language learners, need opportunities to develop their cognitive academic language proficiency.


Conversations about Mathematics

Classroom instruction should support bilingual students engagement in conversations about mathematics that go beyond the translation of vocabulary and involve students in communicating about mathematical concepts. One of the goals of mathematics instruction for bilingual students should be to support all students, regardless of their proficiency in English, in participating in discussions about mathematical ideas. Teachers can move toward this goal by providing opportunities for bilingual students to participate in mathematical discussions and by learning to recognize the resources that bilingual students use to express mathematical ideas.


Mathematically Speaking

Teacher Instructions:

- All students independently complete both mathematical tasks or problems.
- Student pairs are formed.
- Target vocabulary words are written on the MS chart in the left column. For lower grades, the teacher can fill in the words.
- The two students write their names across the top. One student explains half of the completed task or a given problem to the other student as he or she tallies on the chart each time a target word is used in the explanation. Students keep talking until all target words have been used.
- The other student then takes a turn doing the same.

Handout: MS Order of Operations
Professional Development Options with UCPDI

- SB 472 State Approved Professional Development Institutes – 40-hour Institutes
  - Visit our website to view all of our approved programs
- ELPD Intensive 3-day Institutes
  - Elementary (K-6)
  - Secondary (6-12)

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  - Visit ucpdi.ucsd.edu

Contact

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Questions?

Thank you!

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